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VOLUME X.

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ERNESTI, JOHN AUGUSTUS, was born at Tennstadt, in the Thüringer Wald, on the 4th August, 1707. He was educated at Wittenberg and Leipzig, and became conrector of the school of St. Thomas, in the latter city, in the year 1731. He succeeded J. M. Gesner as rector in 1734. While engaged in this situation he acquired a great reputation as a classical scholar; so much so, that in 1742 the University of Leipzig violated its own rule of never electing to any professorship the master of a school, and appointed him professor extraordinary of anciant literature. He was made professor of eloquence in 1756, and professor of theology, with the degree of Dr., in 1758: he held the two last named professorships together till 1770, when he gave up the former to his nephew, Augustus William. He died on the 11th September, 1781. Ernesti was a man of considerable abilities, and especially of a very methodical mind, to which are due the great improvements in the system of teaching introduced by him, and still, to a certain extent, adopted in the German universities. He was well acquainted with the classics, and no mean proficient in theological learning. His Latin style is very elegant for a German, little inferior indeed to that of Ruhnken, and fully equal to that of Wytenbach: a good specimen of his Latinity may be seen in A. Matthiäi’s Elocutionis Latina. His knowledge of Greek, though less accurate, was still very respectable. The work for which he is best known is his edition of Cicero, which has been made the basis of all subsequent ones. The third and last edition of this author published by him was printed at Halle in 1775. His Ciceronis Cicero, or Index of words and subjects to Cicero’s works, is still in general use. Besides his Cicero, Ernesti’s Initia Doctrinarum Solidariorum and Institutio Interpretis Notarum Testamenti are much esteemed by students at the present day; the latter has been recently translated into English. The edition of Homer which Ernesti published in 1759-65 is merely an improved reprint of the hackneyed edition by Dr. Clark. It was republished by Dordrecht in 1824. His edition of Callimachus, which appeared in 1761, is suspected to have owed a good deal of what is valuable in it to the contributions of Ruhnken. An account of it is given in the ‘Museum Criticum,’ vol. ii., p. 151. Ernesti’s editions of Polybius, Tacitus, and Suetonius, have been quite superseded by those of Schlevöhner, Belkner, and F. A. Wolf.

ERNESTI, AUGUSTUS WILLIAM, nephew of the preceding, was born at Frohndorf, near Tennstadt, the 26th November, 1733. He was a pupil of his uncle at Leipzig, was made professor of philosophy there in 1765, and, as has been mentioned, succeeded, on his uncle’s resignation, to the professorship of eloquence (in 1770). He died of apoplexy on the 29th July, 1801. He was principally distinguished as a very good Latin scholar. His best known work is an edition of Livy, with a very copious glossary, which was reprinted twice in his lifetime; the third edition was in the press when he died, and was completed by Schäfer.

ERNESTI, JOHN CHRISTIAN THEOPHILUS, also a nephew of John Augustus, was born at Arnstadt, in the Thüringer Wald, in 1756. He was professor of philosophy in the University of Leipzig from 1782 to 1801, when he succeeded his cousin, Augustus William, as professor of eloquence. He died on the 5th June in the following year. This scholar published editions of Silius Italicus and Aesop: Lexicon Technologicum Graecorum Rhetoricarum, Lips., 1795; Lex. Techn. Romanorum Rhetoricarum, Lips., 1797 (both very useful works); Hermodii Glossae Sacrae, 1785; Suidae et Phanorvii Glossae Sacrae, 1786; a translation into German of Dumesnil’s Latin Synonyma, and a German version of the principal works of Cicero. (Cicero’s Gest 7 Kern, 1799-1802.)

EREPNUS. The celebrated orientalist, Thomas Erpenius, or Thomas van Erpen, was born at Gorcum, on the 7th of September, 1584. At the age of ten years he was sent to Leyden, where he received his education; and in 1608 he took the degree of Master of Arts in the university of that town. He had studied chiefly theology and oriental literature, and after the termination of his academic education, he undertook a tour to England, France, Italy, and Germany, for the farther prosecution of his favourite pursuits. At Paris he became acquainted with Isaac Casaubon, and availed himself of the Arabic instructions of a learned Maronite, Joseph Barbusen, then a resident in the French capital. Erpenius returned to his native country in 1612, and was in the following year appointed professor of Oriental languages in the university of Leyden, an office to which was added subsequently that of Arabic interpreter to the Netherlands. On two occasions, in 1620 and 1621, he was sent to Paris on business of the university of Leyden. With these interruptions he seems to have devoted himself exclusively to the cultivation of Oriental literature. He established an Arabic press at his own house, and employed himself in editing a number of works, which have been of the greatest utility in promoting the cause of Oriental learning. He died of a contagious disease at the age of forty, November 13th, 1624. The work which has contributed most to give celebrity to the name of Erpenius is his ‘Grammatica Arabica, quinque libris methodico explicata,’ published at Leyden in 1613, 4to. It has often been re-edited with additions and alterations, and has become the foundation of nearly every subsequent Arabic grammar printed in Europe down to that of Silvestre de Sacy. The most remarkable of Erpenius’s other publications are the following: ‘Proverbiorn Araborum centurium duas,’ Leyden, 1614 and 1625, 4to; ‘Locanni Sapiences Fabulas et selecta quodam Arabum Adagias,’ Leyden, 1615, 4to; an edition of an Arabic version of the New Testament and of the Pentateuch, the former published in 1616, the latter in 1622; an edition of the chronicle of Elmagin, with a
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Translation, published after his death, under the title of "Historia Sacrae," Leyden, 1625, fol.; two original treatises on Arabic grammar, bearing the title, "Grammatica Arabica, de ortibus et usibus," Leyden, 1617, 4to.; and a Hebrew Grammar, "Grammatika Ebraica generalis," Leyden, 1621, 8vo.

ERRATOCOLOGY. [Hippopotology.] A genus of serpents, named by Cuvier next to Eryx. The name should be written Hippopotamia.

The genus is furnished with two soft prominences, covered with scales, on the muzzle. The head is protected by large plates; these beneath the belly are not large, but those beneath the tail scarcely differ from the other scales. The tail however is very long and pointed. Cuvier, who speaks of the priority of Lacépède, who first described the genus under the name of Eryx, remarks that Merrem has changed the name to Rhinogerous.

ERRATIC BLOCKS are those weather-worn and more or less rounded fragments of the harder rocks which are found very widely scattered over the surface of the earth, and at great distances from the places whence they are supposed to have been derived.

In size they vary from ten thousand cubical feet and upwards to a few inches. M. Brongniart has proposed to designate the several sizes by particular names, as gigantic, majestic, cephalic, pupillary, &c. But in England we generally confine the term erratic blocks to the larger masses, calling those of middling size boulders, and arranging the smaller along with gravel: this is, however, too vague. The nature of erratic blocks is not less various than their size. Every species of rock seems to have contributed a portion of its substance towards the mass, though the harder, being better capable of resisting the disintegrating and corroding influence of atmospheric causes, are found in the greatest abundance, such as quartz, petrosey, greenstone, granite, phyllite, siltstone, &c. The bed of pudding-stones, siliceous sandstones, &c.

The distribution and situation of these blocks are very different. Seldom isolated, they are generally found in vast pendants, as in the environs of Geneva, the plains of Westphalia, in Sweden, &c.; or in long bands or trains, as in the north of Mecklenburg Strelitz, where they run in a direction west-north-west and east-south-east; or widely spread over considerable tracts, as between Warsaw and Goshna, between St. Petersburg and Moscow in East Prussia, &c. Sometimes they cover horizontal plains, as in the north of Germany; sometimes they rest on the sloping sides of mountains, as in the Alps and the Jura, and occasionally on the very tops of lofty eminences, as on the summits of the colossal mountains of Rettswick, of Redelberg, and of Osmund, about 6000 feet above the level of the sea. Sometimes they are seen in greatest abundance at the bottom of valleys where they open into the plains, and in other instances they are found collected in the largest quantity in the high and narrow parts of the valleys, as is observed at Detmold and other places. At times they are so abundant as to be accumulated into hills of a particular form, as is the case in Smaland, in Sweden; and sometimes they form even mountains of considerable height, as may be seen at the new Quelle, in Norway: and what is remarkable, the larger blocks are at the top, the others diminishing gradually towards the bottom.

Though generally superficially disposed, erratic blocks are however in some places found imbedded in a fine sand which has nothing of the nature of their origin, as in the plains of Westphalia. Some blocks, and they may depend either on their own particular nature, or the greater or less friction to which they have been subjected, the length of time they have been exposed to atmospheric influence, or the nature of the climate, have either lost much or all of their sharpness: though they were just detached from their native mountains, as is the case in the neighbourhood of Ger- mingen.

When the erratic blocks are not at any great distance from the place they come, they may be traced back to their origin. Thus those which are in the basin of the Rhine come from the Grisons: those of the valley of the lake of Zürich and of the Emme have been detached from the mountains of Gais; those of the Jura and of the Rhine are from the rocks at the north-east of the Jura, those of the Aar and the Jura from the lofty mountains in the canton of Berne. Even those which cover the widely extended tract from Holland on the west, to St. Petersburg and Tver on the east, are supposed by Von Buch, Häusser, von Richer, and also Brongniart to be derived from Scandinavia. It is however remarkable that, contrary to what is generally observed of transported debris, the blocks are frequently largest as they are farthest removed from the place whence they came, diminishing gradually in size as they approach the parent rocks. Thus the blocks found in Mecklenburg and Sceland, which are ascertained to be derived from the Scandinavian peninsula, are larger than the blocks of the same rocks in Scania and East Goth- land, and those of Rettswick appear altogether close to the primordial mountains whence they were derived.

In certain places the blocks are almost exclusively of a particular kind, while in others they vary greatly in their mineral character, proving, together with the ascertained situation of the same, that the rocks from which they have been detached have been detached from various quarters. This is the case with the erratic blocks of Yorkshire, and with those of Lithuanian, for though the greater part, perhaps, of those in the latter locality may be similar to the rocks in Sweden and Norway, there are many evidently derived from other places.

As for the direction in which the bands of erratic blocks seem to lie, and the quarter whence they seem to have come, they are very various. We have just seen that in the north of Germany the erratic blocks are at the north-west and east-south-east. Count Rasumovski observes that, when many blocks are accumulated they form parallel lines with a direction from north-east to south-west. Brongniart says they have a general direction north and south. Sir James Hall speaks of those in the neighbourhood of Edinburgh as coming from the west. We have said that those on the north of the Alps come from the south.

If any thing further were necessary to complicate the problem of erratic blocks, it is the immense distance at which they sometimes sometimes found from the original rocks of similar composition; thus blocks of granite are found on the mountains of Potosi, while the nearest granite rocks are in Tucuman, about four hundred leagues off. Nor is distance the only difficulty: the same rocks are found in the south of Germany and in the south of Norway, and often even at the same height; and we refer the reader to the observations and works of Solvigi, Conybear, Lycell, Buckland, Philips, Hibbert, &c.
Erratic blocks are also common in America and other parts of the world.

First what has been already said, and from the circumstance of erratic blocks lying on some of the most modern formations, it will be easily conceived that they present one of the most inexplicable of geological phenomena. The blocks have been thrown from the Alps generally, having first attracted notice, have given rise by some uncertain or more positive hypotheses, the most remarkable of which are the following:—1. De Luc was of opinion that these blocks had been projected into the air by the same force which upheaved the Alps, and that they had fallen in greater or lesser distances, according to the strength and direction of that force.

2. Von Buch, Escher, &c., attribute their existence to an immense débacle which swept down the blocks from the Alps to the foot of the Jura, up the slope of which they were supposed to have slid down in the same way as a ball rolled along with force rises up a hillside. Others, as Daubuisson, have thought that these blocks, which are almost wholly of transition rocks, were the remains of a mantle of these rocks, of later formation than the limestone of the Jura, and consequently much more recent than is generally admitted, and which, having been destroyed, left nothing but these testimonials of their former existence.

3. Dolomieu supposed that the summits of the Alps were formerly connected with those of the Jura by an isthmus of mountains, to which a great débacle in the sea swept away the whole of the mountain system, which they suppose to have been formerly on a level with the base of the Alps, and with it the blocks which had rolled down upon this calcareous plain. 7. Finally, Von Buch, extending his general theory to the particular phenomenon, shows that the dispersion of the blocks is the result of an upraising of the Alps posterior to the formation of the tertiary rocks.

M. Brouniart very justly observes that these hypotheses leave many difficulties unexplained: he conceives that as the phenomena are of a general character, the cause must be the same in all cases; and that the explanation of the phenomenon is more probable that the cause also is general. Certain it is that even if it were possible satisfactorily to assign a cause for the erratic blocks found upon the Jura, the same reasoning would hardly be applicable to other cases; and in the utter impossibility of discovering any single cause competent to the production of such different effects, we must have recourse to the more probable conjecture of M. Lavivier, that the dispersion and disposition of erratic blocks have been occasioned by the action of the winds. The more powerful cause however he conceives to be the temperature of the lower strata of the earth, and the effects of this on the shores and icebergs, in which opinion he is followed by Mr. Lyell and others.

Erratic blocks, like other phenomena, are attended with those numerous and curious effects which are the concomitants of hot and dry spots, and when not in too great abundance, they keep the soil cool and moist, sheltering it from the direct rays of the sun in the day, and thus diminishing the evaporation of its moisture. On cold soils they tend to maintain an equable warmth, by diminishing the rapidity of their radiations at night. In some countries they are the only building-stones, as in East Friesland and the neighbourhood of Groningen. In others they supply the necessary lime, as Königsberg, Revel, &c. Those of a convenient size are used in Russia and Poland, and are very plentiful, so that they are exceedingly well adapted for the repairs of roads.

Errhines (from *er* *in* (a), and *rhin* (a), 'the nose'), medicines which are applied to the nostrils, and which cause an increased flow of the secretion of the membrane which lines the interior of the nose; and with the immediate use of them, frequently also occasioning sneezing, and an unusual secretion of tears. Snuffs of different kinds are familiar examples of this class of substances, and these generally cause sneezing, at least when first employed; but others, such as the turpeth mineral, merely produce an increased secretion of the membrane. Where sneezing ensues, a considerable shock is felt over the whole frame, and of this effect advantage is sometimes taken to change the action of the system, or to remove morbid impressions, as when certain fits are impending, or for more limited purposes, such as dislodging any foreign body from the nose. The secondary effect of errhines is more frequently desired to give relief to the loaded vessels, by exciting them to mucus secretions. Hence they are used in various diseased conditions of the organ small and even of the neighbourhood, organs, being supposed to influence the vessels of the eye, and even of the brain. Some affections of the eye, and also of the head, are certainly relieved by such means, and their occasional use may be permitted; but the habitual use of errhines into most cases of the diseases of the eye, is attended by hurtful consequences. The membrane of the nose becomes thickened, its sensibility impaired, and the power of discriminating odours greatly lessened; while, if the substance be given at the same time, it may have the effect of narcotic powders, such as snuff procured from tobacco, the palate, the stomach, and other organs concerned in digestion likewise suffer, and loss of appetite with other symptoms of indisposition result.

E B R I N A. [Millepieds.]

ERROR (in law), a fault in the pleadings or in the process, or in the judgment, upon which a writ, called a writ of error (breve de errore corrigendo), is brought. It is the ordinary mode of appeal from a court of record, and is in this respect modelled after the comitia curiata of ancient Rome, in which members of the people, superior to that in which the judgment was given, by which they are authorized to examine the record, and on such examination to affirm or reverse the judgment according to law. For the cases in which this writ is issued, and the course of it, see Writs of Error.

ERKINS, THOMAS LORD, was the third and youngest son of David earl of Buechan. He was born, according to some authorities, in January, 1748, and received the rudiments of his education partly in the University of Edinburgh and partly in the University of St. Andrews. In 1764 he entered the navy as a midshipman, but not thinking his prospects of promotion in that service sufficiently good, he accepted a commission in the first regiment of foot in 1768. In 1770 he married Frances, daughter of M. de Marly, who was appointed French ambassador to England, and soon after went with his regiment to Minorca. Upon his return to England, in 1772, he appears to have become remarkable for the brilliancy of his conversational talents. (Wraxall's Memoirs, vol. i. p. 152, and Boswell's Life of Johnson, vol. ii. p. 170, ed. 1771.) In 1775, at the pressing solicitation of his mother, but it is said against his own judgment, he commenced the study of the law, and entered himself a student of Lincoln's Inn and also as a fellow commoner of Trinity College, Cambridge, but only for the purpose of obtaining a degree, and thereby saving the additional term of two years, during which his name must otherwise have remained on the books of Lincoln's Inn. He became the pupil of Mr. Bulter, and was called to the bar by Mr. Buller, and was subsequently raised to the Bench. In Trinity term, 1778, Mr. Erksine was called to the bar, where his success was as rapid as it was brilliant. In the same term he was employed as one of the counsel for Capt. Baillie, lieutenant-governor of Fort William, for attempting to place an alleged libel on the other officers of that establishment. The prosecution was in fact instituted by Lord Sandwich, then at the head of the admiralty, who, it appeared, had abused the charity by appointing isadame as pensioners to serve his own electioneering purposes. Mr. Erksine for eloquent and ignominious speech at once established his reputation; such indeed was its instantaneous effect, that thirty retainers were presented to him before he left the court. His practice and reputation increased so rapidly, that in 1783, when he was forty years of age, he was admitted to the bench. In 1785, he was admitted to the bar, he received a patent of precedence at the suggestion of Lord Mansfield, who then presided in the court of King's Bench. In the same year Mr. Erksine was returned member for Portsmouth, through the interest of Mr. Fox, with whom he had the reputation of being a man of many parts, and who was esteemed one of the ablest and most famous India Bill. In the House of Commons however his success by no means equalled the expectations which his friends had formed, though his parliamentary speeches would appear to have been far above mediocrity. In the same year also he was made attorney-general to the most famous Lord Chief Justice of Wales, an appointment which, to the disgrace of the advisers of the crown, he was called upon to resign in 1792, in consequence of his refusing to abandon the defence of Mr. Paine who was convicted and sentenced to death for his publication 'The Rights of Man.' In 1802 he was made chancellor of the Duchy of Cornwall; and in 1806, on the formation of the Grenville ministry, he was appointed lord chancellor.

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and raised to the peerage by the title of Baron Erskine, of Restormel Castle, in Cornwall. His tenure of office was however brief, for on the dissolution of the ministry in 1807, he retired from public life. After this period Lord Erskine seldom appeared in his place in the House of Lords, but in 1820 he took a prominent part on the occasion of the trial of Queen Caroline.

In the later years of his life he was harassed by pecu-
ninary embarrassments, arising from the loss of his large public and private income, and an unfortunate exposi-
tion of the fruits of his industry in land. His first wife died in 1805, and an ill-assorted second marriage increased his domestic disquiets, injured his reputation, and gave pain to his friends. He died Nov. 17, 1823.

Ery. Lord Erskine's views were peculiarly those of an
accomplished and dexterous advocate: his eloquence formed an
era at the bar, and his addresses to juries captivated their
understandings, their imaginations, and their passions;
they were for magnificence of language, richness of orna-
tment, or felicity of illustration, but by strictness, vigour
and simplicity, and a perfect freedom from colloquial vul-
garisms. A remarkable feature in his speeches is an exact
and sedulous adherence to some one great principle which
he laid down, and to which all his efforts were sub-
ordained and subsidiary. As the principle thus proposed was
founded on truth and justice, whatever might be his ingenuity in
applying it to the particular case, it naturally gave to his
address an air of honesty and sincerity which had great
influence with his clients. With this object, the external
antennae and the peduncles of the internal ones so long, and whose
foot are all monodactylous; and, finally, it cannot be
referred to the carafailles or lobsters (Astacus), whose shell
is differently formed, and which have the external natatory
blades of the tail in a single piece; but Desnarest thinks
that it is the last-named genus that Eryon most
approximates, taking into consideration its general char-
acter. He regrets that he has not been able to satisfy
himself whether the four antennae are inserting on the
same horizontal line or not which would have assisted
him in his comparison with other genera.

Example.—Eryon Cuvieri. Carapace finely granulated
above, marked by two deep and narrow notches on the two
lateral-anterior borders, and finely crenulated on the latero-
posterior borders. Length, four to five inches French.

Eryon Cuvieri.

The fossil was noticed by Richter, Knorr, and others,
besides M. Desnarest, as, indeed, he states.

ERYSIPELAS (Ignis Sacer, the Rose, St. Anthony's
Fire), an inflammation of the skin, occasioning a spreading
redness, which occupies a broad surface, on which are
formed vesicles or blisters preceded by an accompanied
with fever and shiverings. The whole of the inflamed surface
is painful, but the pain is not acut; it is rather a sensation
of burning or stinging than of severe pain. The redness is not intense
like that produced by phlegmon or boil, but is of a pale
rose colour. The inflamed part is always considerably
swollen, and the tumor is not surrounded by a definite boundary, but is
diffuse, irregularly circumscribed, and unattended with
a sensation of throbbing. The tumor is often soft and boggy.
It is characterized by the vesications which form upon it.

The proper seat of oyspalia is the skin, but the appear-
ance of the disease is somewhat modified according to the
ones have their lateral borders prolonged in angles, well
detached, as in the carafailles. Caudal-fin formed of five
pieces, of which the two lateral are entire, rather large, a
little rounded on the internal side, and the three middle
ones triangular and elongated, especially the intermediate
one. Local.—Lithographic limestone of Pappenheim and
Aichstedt in the Margraviate of Anspach. (Desnarest.)

M. Desnarest observes that this genus is entirely ano-
malous, and unjustly, in a natural classification, to form a
section by itself. According to the method of Dr. Leach,
it would belong, 1st, to the order Macroura; 2nd, to the
second section, which includes those Macroura which are
provided with a caudal flapelliform fin; 3rd, to the sub-
section B, which have the peduncles of the internal antennae
moderately elongated; 4th to the 5th division, which have
the natatory blades of the extremity of the tail formed of a
single piece, the second articulation of the abdomen not
dilated, and rounded anteriorly and posteriorly on each side;
and finally, to the number of ten.

B
part of the skin which is more especially inflamed. If the rete mucosum, or the part of the skin which is placed immediately beneath the cuticle [Skin] be the principal seat of the inflammation, the vesication is remarkable; there is commonly a considerable effusion from the vessels, and a free exfoliation of the cuticle: if, on the contrary, the inflammation be chiefly seated in the cutis vera, or the true skin, namely, that portion of the skin which lies immediately beneath the rete mucosum, the cellular tissue beneath the skin is involved, it sometimes occurs that the exfoliation, and then the tumefaction is considerable on account of the infiltration of the cellular tissue with serum poured out from the blood by the inflamed cuticle.

Erysipelas inflammation is characterized by its tendency to spread, to coalesce with a considerable portion of the external surface of the body. It creeps on in succession from one part of the skin to another until it extends to a great distance from the part originally attacked, the inflammation often disappearing from the former as it becomes established in the latter. Thus a disease of limited extent appears to pass from the external surface to the internal organs, and occasionally the disease quits the surface as it attacks the internal parts, although much more commonly the external and internal inflammation go on simultaneously, greatly increasing the severity and danger of the attack.

Erysipelas most commonly attacks the face, but it sometimes spreads on one of the extremities: the disease is always more alarming when the head is attacked than when it is seated in any other part of the body.

The inflammation which appears on the external surface of the body in erysipelas is not the primary and essential part of the disease, but a remote event depending on a previous disease. This is apparent from the fact that constitutional disturbances always precede, commonly for the space of two or three days, the appearance of the local affection.

An attack of erysipelas comes on either with chills or a disagreeable sensation in the limbs, restlessness, and that disordered state of the skin which has been expressively termed febrile unseasiness. There is from the beginning unseasiness or confusion in the head, which soon amounts to decided pain. This is accompanied with fever, a sense of drumming, that the attack may sometimes be predicted long before there is any appearance of redness or swelling in the case, from the inability of the patient to keep himself awake. The chilliness is soon succeeded by heat of skin; the skin of the face is first affected, and then the neck and arms; dry and parched, there is sometimes nausea and vomiting; the pulse is always frequent, sometimes full, soft, and compressible, but occasionally hard and tense.

After these symptoms have continued some time, always occur various signs of the inflammatory process on some part of the face a redness, attended with burning heat and tingling. Commonly a red spot appears on one cheek; after a short time a similar spot appears on the other cheek; often the redness spreads successively from one cheek to the other, and sometimes to the head, which is commonly involved in the affection: from the nose it extends to the forehead, and thence over the whole scalp. Soon after the redness appears the face begins to swell; and by the second night, or the morning of the third day, from the commencement of the fever, the eyes are completely closed, the eyelids exceedingly prominent, the nose distended, and the ears tumid, red, shining, and burning. On the fourth or fifth day the vesication appears on the inflamed surface, which bursts on the forehead, making the redness disappear, giving a yellowish hue. The whole face is now so surging that the form and expression of the features are completely lost, and the patient could not possibly be recognized by his most intimate friend.

The ulcerated skin in the blistered places becomes covered with a brownish or dark coloured scale, which often gives a livid or blackish appearance to the part; but this livid colour seldom goes deeper than the surface, and does not proceed from any degree of gangrene affecting the skin.

On the parts of the face not affected with blisters the cuticle is destroyed, and desquamates, a new cuticle being formed beneath it. Though the face, in general, however intensely inflamed, seldom goes into suppuration, yet it is by no means uncommon for matter to form in the tumid eyelids.

Occasionally, though not often, when erysipelas attacks the face, it extends to the mouth and fauces, and even to the pharynx and larynx, at the same time that it covers the neck and chest externally. Dr. Copland mentions a case in which the enormous tumour of the neck and throat with the affection of the larynx and trachea, increased by the constriction produced by the integuments surrounding the neck and throat, caused suffocation in a few hours. When the inflammation extends to the fauces, throat, and larynx a superficial ulceration of the fauces is often formed.

On whatever part of the body the inflammation appears in erysipelas, even when it is strictly confined to the skin, its appearance is not attended with any remission of the fever which preceded it: on the contrary, the fever generally increases with the augmentation and extension of the inflammation.

The progress of the disease is more or less rapid, and its duration longer or shorter, according to the age, the temperament, and the vigour of the individual. In the young, the sanguine, and the robust, the inflammation is somewhat more promptly removed on the second day, and the whole terminates on the sixth or seventh, while in the aged and the less vigorous it may be protracted to the tenth or twelfth, and the disquamation may not be completed before the fourteenth or fifteenth day. The duration of the disease may be stated to be from eight to ten days.

When the fever and inflammation are intense, delirium comes on, which sometimes rapidly passes into coma. These symptoms, indicating a morbid influence from the brain, too often a mortal inflammation of the brain. In such cases death frequently takes place, with many of the symptoms of apoplexy on the seventh, ninth, or eleventh day of the disease.

In such cases, says Dr. Cullen, it has been commonly supposed that the disease is conveyed from the external to the internal parts. But I have not seen any instance in which it did not appear to me that the affection of the brain was merely a communication of the external affection, as this continued increasing at the same time with the internal.

1 When the fatal event does not take place, the inflammation, after having affected a part, commonly the whole of the face, and perhaps the other external parts of the head, ceases. With the inflammation the fever also ceases; and without any evident cause, the patient returns to his ordinary state of health.

In the cases which prove fatal, on the examination of the body after death, the inflamed skin is found infiltrated with serum, which is sometimes mixed with pus, and occasionally issues from the cuticle or the skin, in the form of gangrene. It is remarkable that the blood in the large vessels and in the cavities of the heart is semifluid, and that the veins which proceed from the inflamed parts are in a state of inflammation, and contain pus, more especially towards the extremities, in which lies the cellular tissue and has passed into suppuration. In the cases attended with delirium and coma the membranes of the brain, and especially the arachnoid, are thickened and opaque with the effusion of serum between the membranes and into the vessels. If the disease has been complicated with inflammation of the fauces, pharynx, oesophagus, trachea, and bronchi, these organs present the ordinary signs of inflammation; and the same is true with regard to the mucous membrane of the stomach and intestines; but in all these cases the signs of inflammation are much more closely allied to those which occur in fever than to those which are proper to pure inflammation.

There is a peculiar condition of the skin which seems to predispose to this disease, especially in persons of an irritable or bilious temperament, and a plethoric habit of the body. The occurrence of the disease once renders the skin peculiarly susceptible to its recurrence. Unwholesome and indigestible food, the excessive use of spirituous liquors, and the suppression of the bowels, cause the irritable or bilious temperament to come on. The great heat however produced, whether by the direct rays of the sun or by a fire; intertemporium; unwholesome articles of diet, as shell-fish, or stale and rancid fish; rich, oily, fat, or smoked meats; impure states of the atmosphere; an impure state of the body, arising from a morbid condition of
the blood, in consequence of the suppression of its depurating processes, whence the frequent occurrence of the disease in the advanced stages of fever, greatly complicating the state of fever and exhausting the little remaining strength of the patient. Violent emotion of mind has also been observed to be an exciting cause of erysipelas, which powerfully predisposes to the disease; in whom also local irritants often induce it, as wounds or punctures in the skin, the bites of leeches, the stings of insects, inoculation with various or vaccine matter. Instances are on record in which both variolous and vaccine matter have produced in children of irritable habits, two or three days after inoculation, an erysipelatous inflammation which has proved fatal.

It is a point much disputed whether erysipelas be capable of being propagated by contagion. 'Erysipelas, says Bateman,' has been noticed in several hospitals to prevail in certain wards, among patients admitted with different complaints; but has seldom been known to spread in private houses. Dr. Wells, indeed, has collected several examples of the apparent for imitation of erysipelas by contagion, which occurred in private families. But such are at all events extremely rare, and perhaps never happened in well ventilated and cleanly houses. From the Royal Infirmary, at Edinburgh, this disease, like the puerperal fever, is propagated by various contact; found itself, and other means of purification; and it has not occurred in any hospital of late years, since a better system has been adopted in these respects. Other diseases, not infectious in themselves, appear to become united with typhus, or other morbid conditions, and thus to be propagated in their double form; the dysentery, for example, the peritonitis of women in child-bed, ulcerated sore throat, &c. The simple phlegmonous erysipelas, at all events, was never seen to spread like an infectious disease.'

The danger of erysipelas is in proportion to the intensity of the inflammation, and the severity of the affection of the brain. The danger is also imminent when there is great tension of the fontanelles, or when the inflammation approaches to the respiratory passages and the respiratory organs. As long as the inflammation is confined to the external surface, and the fever remains moderate, the brain not much affected, and the heart's action not inordinate, a favourable termination of the malady may be expected. The different varieties or species of the disease are also attended with very different degrees of danger. Authors usually describe four species, namely, the phlegmonous, the erysipelatous, the gangrenous, and the acute.

In the phlegmonous species, characterized by the presence of inflammatory matter, the method of treatment must be widely different from that proper to the erysipelatous and gangrenous, in which there is the very opposite state of the system. In the young, the plethoric, the sanguine, and the robust, at the commencement of the attack, when there is no inflammation, the external parts of the brain are intense, and the pulse is full and strong, the remedies proper in any other case of inflammatory fever are required; namely, bleeding to the extent of the subdual of the inflammatory condition of the system. In such a case there is a great necessity for keeping down the acidity of the brain, unless there be a free abstraction of blood. But it must be borne in mind that erysipelas does not ordinarily occur in the youthful and vigorous constitution; that it is not often accompanied with the signs of acute inflammation; the character of the blood-letting is required only when acute inflammation is present, and that the extent of the bleeding must be strictly regulated by the degree of the inflammatory condition. In an ordinary attack of phlegmonous erysipelas, general bleeding is not necessary, at least in the consititutions composed for carminative operations. Milder purging, diaphoretic and saline medicines, strict confinement to bed in a cool apartment, with the diet appropriate to febrile diseases, are all the remedies required. If local bleeding be necessary, it should be performed with caution, and the part not taken to apply the leeches or the blister near the inflamed surface. Various applications to the inflamed surface have been recommended, the most common of which is flour, or some other absorbent powder, to imbibe the fluid which oozes from the vesicles. The utility of such applications is doubtful. 'The application of pouderous substances,' says Dr. Bateman, 'has commonly, according to my own observation, augmented the heat and irritation in the commencement; and afterwards, when the fluid of the vesicles has been absorbed, has afforded additional irritation, by forming, with the concreting fluid, hard crusts upon the tender surface. In order to alloy the irritation produced by the acid discharge from the broken vesicles, Dr. Willan recommends us to foment or wash the parts with dilute spirit, with vinegar, with every article of water, thin gruel, or a decoction of elder-flowers and poppy-heads. In the early state of the inflammation, when the local heat and redness are great, moderate tepid washing, or the application of a cool but slightly stimulant lotion, such as a solution of tartaric or spirit of turpentine, has appeared to me to afford considerable relief.'

In the gangrenous species, when it occurs in broken-down constitutions, the result of habitual intemperance, even purgatives must be very cautiously administered; the strength of the stomach must be preserved. In the first stage, focical irritations, who have been previously attacked or are simultaneously affected with dropsey, or some other chronic disease, incident to a hectic state of the system, and induced commonly by habitual intemperance. It is always attended with much delirium, and comes on at the height of the disease, and terminate fatally on the seventh or eighth day, when the inflammation approaches to the respiratory passages and the respiratory organs. Very frequently delirium and coma come on at the height of the disease, and terminate fatally on the seventh or eighth day, when the inflammation approaches to the respiratory passages and the respiratory organs. Confinement to bed is necessary, and the parts to be kept free from all friction, by padding it with sheets, and the like. The patient should be supplied with a pillow, and a plentiful supply of water, and the like. The patient should be supplied with a pillow, and a plentiful supply of water, and the like. The patient should be supplied with a pillow, and a plentiful supply of water, and the like. The patient should be supplied with a pillow, and a plentiful supply of water, and the like. The patient should be supplied with a pillow, and a plentiful supply of water, and the like.

In the gangrenous form of the disease the colour of the affected parts is red, and the venous veins and capillaries with a livid base appear upon the surface, which frequently terminate in gangrenous ulcerations. Supppuration and gangrene of the muscles, tendons, and cellular tissue often take place, producing little caverns and sinuses, which contain an ichthyosaceous matter, mixed with albuminous substances which are ultimately evacuated from the ulcers. It is accompanied with symptoms of low fever, in the progress of which delirium comes on, soon followed by coma. It is always a tedious and precarious, and often a fatal form of the disease.

In the erisipelatous species the inflamed patches appear one after another in different parts of the body, thus travelling in succession from the face to the neck and trunk, and from the trunk to the extremities. It often happens that each accession of the complaint is less and less severe as it proceeds to a greater distance from the part first affected, and this form of the disease commonly terminates favourably in a week or ten days.

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erythema occurs in patches which are bounded on one side by a hard elevated tortuous red border, in some places obscurely papulated; but the redness persists as a regular boundary on the open side. The patches appear on the extremities and loins in old people, and remain for an uncertain time, without producing any irritation in the skin. They are connected with some internal disorder, and may be considered as indicative of such as those of diseases.

4. Papulated (Erythema papulatum) appears chiefly on the arms, neck, and breast, in irregular extensive patches, and most frequently in females and young persons. The papules are of a brown color, and often slightly elevated; and for a day or two before the colour becomes very dark, it becomes rough or imperfectly papulated. The redness afterwards continues for several days; and, as it declines, assumes, in the central parts, a bluish or pale purple tinge. This variety is attended with a very large quantity of lymph, of a dark color and a pungent smell, which does not resemble either the colour or smell of the disease.

5. Tuberculatum (Erythema tuberculatum) is merely a slight modification of the advanced stage of the papulated.

6. Nodose (Erythema nodosum) consists of large oval patches on the fore part of the legs; the long diameter of the patches is parallel with the patches on the legs. The patches are hard and painful, and quite distinct from smallpox; they do not blanch under the influence of cold, but blanch very slowly on exposure to heat. The patches are often seen on the arms, and sometimes on the head and neck. The red colour blurs blush on the ninth or tenth day, as if the leg had been bruised. It chiefly affects children, and is very seldom observed in adults. It is preceded by slight febrile symptoms for a week or more, which generally abate when the erythema appears. It is sometimes connected with the approach of the catamenia, and its prematurity disappearance is not unfrequently succeeded by dangerous internal disease, as inflammation of the lungs.

The primary causes of erythema are the friction of contiguous parts, especially in fat persons; the accumulation of sweat and perspiration on the skin, and the matter of the perspiration, of the lichenorrhoeal discharge, of the catamenia, and of the alvine and urinary evacuations, in the adult in the course of other diseases, and in the infant in consequence of a want of proper ablation. It is also constantly produced by irritating articles of food and drink, and is the sign and the result of a disordered state of the digestive organs.

In most cases the affection disappears soon after the removal of the cause which produces it—by free ablation when it is by irritating matters on the skin, and its disappearance is assisted sometimes by the application of an absorbent powder to the inflamed surface, and at other times by the use of a gently stimulating lotion, as the spirit of wine. When the disease is dependent on a disorder of the digestive organs, only by the proper measures for the removal of the stomach, the hepatic, or the intestinal derangement. For the restoration of these organs to their sound condition, the most appropriate remedies are light diet, diaphoretics, the mercurial alternatives in combination with gentian aperients, and the mineral acids as tonics. (Bateman's Practical Synopsis of Cutaneous Diseases; Copland's Dictionary of Practical Medicine.)

ERYTHRAE, a pretty genus of annual plants, belonging to the nettle family, all of which are found in Great Britain and other parts of Europe, especially near the sea. The species have small oval sessile ribbed radical leaves, diminishing in breadth as they ascend the stem; a corymbose stem, a five-cleft calyx, pink funnel-shaped flowers, with a short five-lobed limb, five stamens, two rounded stigmas, and a linear capsule. They are all extremely bitter, and are collected by country people, under the name of centaury, as a substitute for gentian, in domestic medicine. English botanists reckon four supposed species.

HYDRAECA. CENTAURIUM, Lesser Centaury, an indigenous plant, common by waysides and edges of fields, flowering in August, at which time it is to be collected. The whole plant is taken up; it has a square stem, with opposite entire three-nerved leaves. It is devoid of odour; the taste is strongly bitter, but not unpleasant: 100 parts of the fresh herb dry into 47; 10 pounds of the dry herb yield by a single cocoon 3 pounds of extract.

It contains a principle called Centaurin, which at present is known only as a dark brown extract-like mass; but which, united with hydrochloric acid, furnishes an excellent febrifuge medicine. As a bitter, it suits irritable systems better than any other of that class of medicines, and is therefore to be preferred. In other respects it has the general properties of bitter tonics.

ERYTHRICA, a genus of compositae, and a substance obtained by Bragantelli from the mutual action of nitric and uric acids; by spontaneous evaporation rhombic crystals are obtained, which have first a sharp and afterwards a sweetish taste, reddish lustrous, and are insoluble in the air. Instead of being a peculiar acid, Dr. Prout regards it as a compound of nitric and purpuric acid and ammonia.

ERYTHRINA, a leguminous genus of tropical trees and tamarisk herbs, with ternate leaves, and clusters of very large long-stalked flowers, which are usually of the brightest red; whence the species have gained the name of coral-trees. Frequently their stem is defended by stiff prickles. They occur in the warmer parts of the Old and New World. An Indian species, E. monosperma, is said to yield gum-lac.

De Candolle mentions thirty-two species; of which E. cristata galli is commonly cultivated in greenhouses for the sake of its splendid blossoms.

ERYTHROGEN, a neutral crystalline fatty matter found by M. Bidot in bile altered by disease.

ERYTHRONIUM (Dacen Canaliculatum), a pretty little bulbous plant, whose name, English dog's-tooth violet, is derived from the form of its long slender white bulbs, is a native of woody subalpine places among bushes and stones, in Croatia, Irida, and about Laybach; it also occurs in Switzerland, but more seldom, and is also met with in the north of Italy. It is not mentioned in the Flora of the south of Europe. Two or three varieties are known in gardens as gay hardy flowers appearing early in the spring; one with purple, a second with white flowers, and a third, elevated by some into a species, with a somewhat stronger habit of growth.

ERYTHROXYL'E.ZE, a group of eucogenous plants, con-
ERZ is important as a commercial town. Besides the produce of its manufactures it exports the excellent grain which is grown in the plain. But it derives other commercial advantages from its being situated on one of the most frequented caravan roads of Western Asia, which passes through Erzerum and thence from Baberum and towns of Asia Minor. This renders Erzerum an important place also in a political and military point of view. It is the seat of a pasha, and the pashalik yields only in rank and extent to that of Bagdad. (Kinneir; Brunt, in London Ger. Rev., 1893.)

ERZGEBIRGISCHE KREIS (circle of the Ore Mountains), a large province of the kingdom of Saxony, which takes its name from the mountains which bound it on the south and separate it from the kingdom of Bohemia. On the north it is bounded by the duchy of Saxe-Altenburg; on the west by the grand duchy of Saxe-Weimar, the principality of Reuss, and the circle of Voigtlând; and on the east by the circle of Meissen. It is the largest and most populous province in the kingdom, and contains an area of about 3,747 square miles, on which there are 56 towns, 13 market villages, and above 700 villages and hamlets. In 1829 the population was 483,863, and it is at present estimated at about 560,000. The surface rises gradually from the borders of the Landgraviate of Meissen circles, and rises on the southern frontier and the lofty summits of the Ore Mountains. The province is intersected in all directions by offsets from those mountains, and presents a constant succession of hills and valleys. The loftiest peaks in it are the Fichtelberg, at the southern extremity of the province, which is 3,988 feet, and the Auersberg, about eleven miles north-west of the Fichtelberg, which is 3,132 feet above the level of the sea. The Freiberg or Eastern Muldo, the largest river in the province, flows through its eastern districts, and the Schneeberg or Western Muldo through the western districts; the centre is irrigated by the Zschoppau, Flöbe, Pöhö, Schein, Bockau, Chemnitz, and other streams; the Weieritz or district partially traverses the Neisse, and the Pleisse the most westerly. There are no inland waters deserving the name of lakes, but there are a number of mineral springs, chiefly used for bathing, at Wolkenstein, Wiesa, near Annaberg, &c. The province is full of woods and forests, particularly its most elevated parts, such as the vicinity of Schwarzenberg. The average height of the Erzgebirgische Kreis above the level of the sea is estimated at 1,200 feet.

In consequence of the rugged character of the surface, the land, sandy soil, and the rawness of the climate, neither agriculture nor horticulture are pursued on a scale of sufficient extent to supply the wants of the province. Oats, rye, linseed, potatoes, and a small quantity of wheat, are cultivated; and in the eastern parts of the province, the woods are also used for the adjoining circle of Leipzig. There are fine and extensive pastures, particularly in the vicinity of Zwickau, Chemnitz, Augustusburg, Freiberg, and Nossen, where large flocks of sheep are kept; but cattle-breeding, on the whole, is not so actively carried on as it might be. The province is well known for its large trout, its salmon, carp, and other fresh water fish.

The very name of this province of Saxony, 'the circle of the Ore Mountains,' indicates the peculiar characteristic of its natural resources. It abounds in mines of silver, tin, lead, iron, coal, &c., the first working of which is said to have taken place in the middle of the twelfth century. Their most flourishing state was in the fifteenth, when the silver mines of Schneeberg and Annaberg and the tin mines of Altenberg were worked and operated on a large scale; but they soon fell into decay, and are now little more than worked for local requirements, either directly or indirectly, to upwards of 200,000 persons. The largest silver mines are in the neighbourhood of Freiberg, of which the Erbsdorf mine produces nearly 400,000 ounces of silver between 1760 and 1825; in the number of 200, with 540 pits (zechen); they occupy 4,800 hands, and their present produce is from 375,000 to 450,000 ounces annually. The other silver mines are at Schneeberg, Schwarzenberg, Annaberg, Maurenberg, &c. The most considerable mine at Altenberg and Geier; others at Schneeberg, &c. No mines in Saxony produce so much iron as those of Johann-Georgenstadt; this metal is also obtained at Schneeberg, Altenberg, &c. Near Aue and Bockau, to the south of Schneeberg, in what is called the 'Saxon Sibera,' lie the largest

ERZERUM, ERZ-RUM, or ARZ-RUM, a town in Turkish Armenia, in 39° 57' N. lat., and about 41° 15' E. long., towards the eastern extremity of an extensive and fertile plain between 30 and 40 miles in length and from 15 to 20 miles in its greatest breadth. This plain is watered by the Karâ Sû, or western branch of the Euphrates, which rises at its eastern extremity, and from whose banks the town is three or four miles distant. The town is very large, and is partly surrounded by an old castellated wall, with a ditch, and on its southern skirts stands a citadel encircled by a double wall flanked with towers very close to each other, and with a ditch: it has four gates, and includes the palace of the pasha, and partly the whole of the Turkish population. But a large portion of Erzerum is unwalled, and contains the principal bazars and khans. The houses for the most part are low, and built of wood, but the bazars are extensive, and well supplied with provisions. Erzerum has nearly forty mosques, a Greek church, and a large Armenian chapel. In the beginning of the 18th century the population was estimated at 100,000 individuals; and in 1827 at 130,000. But being soon afterwards occupied by the Russians, the greatest part of the inhabitants, like those of the Armenian lands, have fled to Russia, and the Turks retiring to the adjacent parts of Asia Minor. Since its restoration to the Turks by the peace of Adrianople the place is slowly rising from its state of decay, but in 1835 its population did not exceed 15,000.

We do not know if any of its numerous manufactures have been revived. Before the Russian invasion considerable quantities of silk and cotton cloth were made here, and much leather tanned; there were also some manufactures of copper vessels.
cobalt mines, and smalts, or blue-colour works in Germany; of these smalts the yearly produce is between 5000 and 10,000 cwt., besides large quantities of arsenic, &c. The white porcelain-earth used in the royal china manufactories at Meissen is produced and prepared in this district. Much sulphur and vitriol are made at and near Beierfeld and Geier: magnesium and porcelain earth are delivered at Elterlein; and there are coal mines of importance at Platzeritz, and other spots near Zwickau. The value of all the silver, lead, zinc, and copper mined in Saxony is estimated at 1834 about 1,000,000 dollars (141,600fl.). The coal and blue colour (smalts) produced 321,724 dollars, or about 45,500fl. The lead mines yield annually about 300 tons; the tin about 3000 cwt.; the copper about 18 tons; and the iron about 4000 tons.

Besides considerable manufactures of iron, tin, and copper, the largest of which are at Freiberg, Schwarzenberg, Wiesenthal, and Elterlein, there are extensive manufactories of thread, twist, lineas, cotton goods, woolen cloths, flannel, woolen 400 rings, &c., at Chemnitz, Zwickau, Zschopau, Oederan, &c. Laces and bobbinet are made at Altenberg, as well as Annaberg, where nearly a thousand hands are engaged in making tapes and ribbons. Much serpentine stone is worked from the quarries of Zöbitz and steel is made at St. Ambroise near Zwickau. In the upland districts various articles in wood are manufactured.

This province also includes the independent earldom of Schlobburg, which contains the town of Chemnitz, in the north-west, contains the towns of Chemnitz (see vol. vii. p. 35), Frankenberg on the Zschopau, 5200 inhabitants; Oederan, 3800; Zschopau, on the river of that name, 3300; and on the upper Zschopau, 1900; Hohnstein, 3600; Waldenburg, on the western Mulde, 3000; Penig, on the same river, 3100; and St. Mary, 3300. The bischwe in Zwickau, which is in the west and south-west, contains Zwickau, on the western Mulde, with 24,000 inhabitants; Zschopau, 5000; with 1200, and 12,000, Meissen, 3100; and Wiesenthal, 1400; on the Schwarzwasser, 1400; Wiesenthal, 1600; Johann-Georgensdadt, on the Schwarzwasser, 2700; and Schneeberg on the Schwarzwasser, 3000; and the whole district contains the towns of Anna-Bezeich (vol. ii. p. 40); Wolfenstein on the Zschopau, 1600 inhabitants; Geyer on the Pleiss, 1800; Zöbitz, 1100; Elterlein, 1200; and Stollberg, 3500; and the bischwe of Freiberg, in the east, contains Freiberg, on the eastern Mulde, the chief town of the Erzgebirge circle, 11500 [Freiberg]; Haynichen, on the Strigis, 3000; Nossen, on the eastern Mulde, 1200; Roswein on the same river, 3200, with woolen manufactures; Fraustein, 800; and Altenberg, 1800.

ERZGEBIRGE (the Ore Mountains) is a mountain-range in Germany, extending along the boundary line of the kingdoms of Bohemia and Saxony. It begins about 25 miles south-east of Dresden, on the very banks of the river Elbe, and extends a distance of over 150 miles, the sources of the river called the White Elster (Weisse Elster), about 12° 20' E. long., where it is connected with the Fichtelgebirge. The river Elbe divides its eastern extremity from the Winterberg, the most western of the mountain-chain, and the two become so closely united in length about a hundred miles, and their mean width is estimated to be more than thirty miles.

The highest part of the range, which is towards its southern border, forms partly the boundary-line between Bohemia and Saxony, but is mostly within the former kingdom. Its southern declivity, which is steep and intersected with narrow valleys, terminates in the valley of the river Eger, about 10 or 15 miles from the upper range.

The valley of the Eger divides from west to east, from 1500 to 2000 feet above the sea. The northern declivity of the range descends in more gentle slopes towards the plain of Northern Germany; and these slopes are divided from one another by wide and open valleys. A line drawn from Pirna on the Elbe to Tharand, Freiberg, Chemnitz, Zwickau, and Reichenbach, indicates with tolerable correctness where the range on this side ceases.

The undulating plain which lies contiguous to it may be from 500 to 600 feet above the level of the sea.

The highest portion of the range occurs on both sides of the E. long. at the town of Annaberg, in the districts of Keilberg, 4212 feet, the Fichtelberg, 3968 feet, the Schwarzbarg, 3988 feet, and the Hassenberg, 3248 feet above the sea. Farther east and farther west the range gradually sinks lower, the Great Chemnitz, on the banks of the Elbe, rising or to 1824 feet above the sea.

This range belongs to the primitive formation, granite and gneiss being everywhere prevalent, except along the banks of the Elbe, where sandstone almost exclusively occurs. It is rich in metals of almost every kind, from which circumstance indeed its name is derived, though it is less productive than it was some centuries ago. The working of the mines is pursued with great activity and skill, and it is stated that more than 10,000 families are dependent on them for their livelihood. Gold occurs in a few places, but in Saxony is almost unknown. Copper is not abundant, and the annual produce does not exceed 30 tons; but from the lead mines 400 to 500 tons are annually obtained; and of coal 660 tons and upwards. Copper, silver, and iron are produced in abundance, and there is also quicksilver, antimony, calamine, bismuth, and manganese. Coal abounds in the neighbourhood of Dresden and Zwickau. One of the most remarkable mineral productions is the kaolin, or porcelain clay, which occurs in layers from six to twelve feet thick, and is considered the best clay, whence it is carried to Meissen, and there used in the manufacture of the fine china-ware. Several kinds of precious stones are found, as garnets, topazes, tourmalines, amethysts, beryls, jaspers, and chalcedones.

Six great roads pass over this range. By the two most eastern roads, we communicate with Prague. The more northern of these two passes from the eastern bank of the Elbe to the town of Lowositz and Ausitz, passes near Perterwalde through the range of Zehist, and hence descends to Gieschwitz and Pirna. The more western goes from Lowositz to Töplitz, passes the range near Zschud, and descends to Hainichen, Lehnitz and Dippoldswardle to Dresden. The third road leads from Prague to Laun on the Eger, hence to Koomonot, passes the range by the pass of Risberg, and descends to Chemnitz. The fourth road runs along the Eger from Sanitz to Kauden, crosses the range by the pass of Pressmheit, and the fifth road leads to Annaberg and Chemnitz. The fifth road leaves the valley of the Eger near Kausen, passes the range near Gottesgb, and leads through Schneeberg to Zwickau.

The sixth and most western road runs from Carlsbad to Hlubelna, crosses the range by the pass of Gauernitz, and descends to Haidenberg and Neudorf. All the above-mentioned passes, being between the principal branches of the Elbe, with two large plaques in the middle of a definite number of epicyclic stamens, a single style, and minute chaffy seeds with a very small embryo lying in oily albumen. All the species inhabit South America, on the mountains, especially in alpine regions. Escallonia rubra, Escallonia densiflora, Escallonia intermedia, and Escallonia japonica have become common in warm sheltered gardens in this country.
to possess peculiar properties, and is unquestionably the most powerful direct antiphlogistic agent known. If applied in the solid state to many inflamed parts it speedily checks the morbid action, and is decidedly the best application to ulcers, and in eruptions. The actual cauterents are used either for their primary action, viz., the immediate destruction of the part, or for their secondary effects. The former object is rarely attempted, except to prevent the absorption of any poisonous or contagious matter, such as is the formation of a suppuring boil.

The secondary effects are more important, and more varied according to the degree of heat of the substance applied. The first effect is pain more or less severe, a flow of blood towards the part, and more rapid performance of the process of inflammation and absorption, terminating an inflammation, extending to a greater or less depth, according to the intensity of the heat, or form of the body employed. This increased action has often a salutary effect, which is frequently felt through the whole frame. Torpor and petechial neuretosis often disappear, and neuralgia, both of the neighbouring and even distant parts is removed. Atony and laxity of the muscular system vanish, and every part displays more energy and power.

The actual cautery may be applied in a variety of ways, i.e., by the gas, vapour, medicated, and heated iron. The first of these is a very ready means of causing vesications in some diseases. In phthisis pulmonalis, or consumption, where pain is often more relieved by vesication than any other method, the sponge is dipped in boiling water, then suddenly inverting the glass over the part of the chest where the pain is felt, will cause immediate vesication, followed by speedy relief. The vapour of boiling water, as it issues from the spout of a kettle, is another method of producing vesication, by the inflammation of the points, as in gout, morbus cæsalis, and other deep-seated diseases of the bones. As the red-hot iron is now seldom used, being confined to veterinary medicine, none affords the best substitute, and it is very convenient, that many degrees of intensity or rapidity of action can be given to it. [Maxx.]

The eschar which follows the application of the potential or actual cautery generally separates in a few days. The ulcer is then to be treated with different agents, according as it is wished to heal it or keep it open, as a further means of counter-irritation.

ESCHEAT, from the Norman French word escheter, chance or accident (a word derived from eschere, the old French form of the verb escher; 'to fail', is defined by the same etymology). As William the Conqueror came as an enemy to this country, and to the course of descent by some unforeseen contingency which consequently determines the tenure. In this case the land results back by a kind of reversion to the original grantor or lord of the land in it.

Escheat takes place when the tenant of lands dies intestate and without an heir: in such case the lands, if freehold, escheat to the king, or other lord of the fee; if copyhold, to the lord of the manor. Lands which have descended to the last tenant from a paternal or maternal ancestor, and escheat, if there be no heirs on the part of that ancestor from whom the lands descended. Since the 1st day of January, 1834, there can be no escheat on failure of the whole blood, wherever there are persons of the half-blood capable of inheriting under 3 & 4 Will. IV., c. 106.

If a bastard dies intestate and without issue, his lands escheat to the lord of whom they are held.

Escheat also takes place upon attainer for treason and murder, by means of which the blood is in law considered to be corrupt. In the event of the attainted being incapable of holding them himself, or transferring them by descent. In consequence of this extinction of heritable blood, the lands of such felons revert in the lord, except in cases of treason, when a superior law intervenes, and they revert to the crown. The word escheat is sometimes used for a prescriptive right or privilege which is, by the 3 & 2 Will. IV., c. 23, vested in any tenant in fee, and to the crown, or to any person to whose service it appertains, or to any person to whom it belongs.

The chief potential cauterents are strong mineral acids, such as the sulphuric or nitric, pure alkalis, and some metallic salts, especially nitrate of silver, or lunar caustic. These are used either to produce counter-irritation, or to remove fungous or nodular growths. Lunar caustic seems
This doctrine of escheat consequent upon the commission of certain crimes is derived from the feudal law, by which a vassal was only permitted to hold real property upon condition of well demeaning himself.

The decision of the case was that regard to extinct successions, seems to have been adopted in every civilized country to avoid the confusion which would otherwise arise from the circumstance of any property becoming common; and the sovereign power, or those who claim under it, are consequently the ultimate heirs to every inheritance to which no other title can be found.

ESCHEATOR, an ancient officer appointed by the lord treasurers, and so called because his office was to look after escheated, wardships, and other casualties belonging to the crown.

There were at first only two escheataries throughout England, one on this side and the other beyond the Trent; but in the reign of King Edward III. there was one appointed for every county, who was to conduct his office for a year only under the royal seal. In this capacity he had a body of retinue, to which he attached himself, for his term of office, and which was known as the sea-shore escheatary. Two certain species only, E. Californiae and E. crocea, have yet been introduced; a third, E. compacta, is figured in the 'Botanical Register,' but it is probably a mule between the two first. It has been recently named by Mr. E. Pfeffer, who has a beautiful figure, and a more harmonious one of Chryseis, and it is hardly to be doubted that the latter will be adopted. (Botanical Register, t. 1948.)

ESCRIVAO, [R. Lowndes].

ESCUAUGE, or ESCOTHE, pecuniary payment, by way of commutation for knight-service, whereby the tenant was bound to follow his lord into the wars at his own charge. The term esquage or escrit is of the old French seca, and that from the Latin scutum, 'a shield;' a name also given to coins on which there was the shield or escutcheon of the sovereign.

The personal attendance in knight-service growing troublesome and inconvenient in many respects, the tenants found themselves far from well pleased. They were grown too strong in their stead, and in process of time by making a predatory satisfaction to the lords in lieu of it. This pecuniary satisfaction at last came to be levied by assessments, at so much for every knight's fee; and therefore this kind of tenure was called annually scutage. It is in imitation of this that we have the pecuniary substitute for personal service. The first time this appears to have been taken was in the 5th Hen. II., on account of his expedition to Toulouse; but it soon came to be so universal, that personal attendance fell into disuse. Hence we find in our ancient historians that, from this period, when our kings went to war, they levied scutages on their tenants, that is, on all the landholders of the kingdom, to defray their expenses, and to hire troops; and these assessments, in the time of Henry II., seem to have been made arbitrary, and in the exactions of the new Latin tax, which was generally abused by his successors, it became matter of national complaint, and King John was obliged to consent, by his magna charta (c. 12), that no scutage should be imposed without consent of parliament. But this clause was omitted in the new Latin tax, when it was reborn in 1295; and it is certain that scutages or escauge should be taken as they were used to be taken in the time of Henry II.; that is, in a reasonable and moderate manner. Yet afterwards, by statute 25 Edw. I. c. 5 and 6, and many subsequent statutes, it was enacted that the sheriffs, and others in their stead, should take the common assent of the realm. Hence it is held in our old books, that escuage or escauge could not be levied but by consent of parliament (Old Ten. tit. Escauge), such scutages being called the common assent of all ascending nobility and of the land-tax of later times. (Jacobi Law Dictionary, in voce; Blackstone's Comment. vol. ii. pp. 74,75.)

ESCUAPIUS. [ESciAPiUS].

ESCUAPIUS, A pecuniary peculium procured from horse-chestnut. This acid is colours, insoluble in water, but dissolved by alcohol, and is deposited from it in crystalline grains. It forms with bases salts termed esculates, but they are quite unimportant. Eseculic acid consists of 8.35 hydrogen, 57.26 carbon, and 34.39 oxygen, in 100 parts.

ESCURIAL, or ESCORIAL, a vast edifice in the kingdom of Toledo, seven miles south of Madrid. The cost of this building was covered by the sale of all vegetable matter, except what has been conveyed there by man; and it appears to have been chosen for the advantage of procuring stone. The edifice was begun by Philip II., five years after the death of St. Quinlin, fought on the anniversary of St. Lawrence (both of which circumstances it was intended to commemorate) and was finished in twenty-two years. This extensive building is laid out, on its ground plan, in the form of a gridiron, a part (which forms the royal residence) the handle, attached to a long rectangle forming several courts and quadrangles. This part is 640 by 580 feet, and the average height to the roof is 60 feet. At each angle is a square tower 200 feet high. The plan is divided so as to form a convent with cloisters, two colleges, one for the clergy and one for to male students. The royal palace, three chapter houses, three libraries with about 30,000 volumes and some valuable MSS., five great halls, six dormitories, three halls in the hospital, with twenty-seven other halls for various purposes, nine refectories, and five chapels, is dedicated to St. Theodora of Thessalonica. There are no less than eighty staircases. The gardens and parks, formed by art, are decorated with fountains.

The monks of the order of St. Jerome were 200 in number, and had a revenue of 18,000L per annum.

The building itself is in the style of Italian Renaissance, and is a combination of the French, English, and Italian schools of architecture, with a mixture of the Chinese and Gothic styles.

The church is 374 feet long and 330 broad, and is divided into seven aisles. It is crowned with a dome 330 feet high from the ground, and is paved with black marble. In the church are forty chapels with their altars. In the vestibule and in the church there is a profusion of gilded bronze work and inlaid carvings of marbles. There are numerous paintings by great masters in the Escorial. It is possible that some of the pictures have been transferred from the Royal Museum at Madrid, formed by the late King Ferdinand (Spain Revisited, cap. 13, vol. i.) The sculpture is said not to have any great merit. Philip IV. added a beautiful mausoleum 36 feet in diameter and incrusted with marbles: the effigy of the king is in marble, and the rest in stucco. The cost of the Escorial was six millions of piastres. For some curious details of the Escorial see 'The Escorial, or that wonder of the world for architecture and magnificence of structure, &c., translated into English by a servant of the Earl of Sandwich in his extraordinary embrazing eucharist.' Londo., 1671. From the title-page it appears that there was a report in 1671 that the Escorial had been destroyed by fire. There was a similar report a few years since.

ESCUTCHEON or ESCOCHION, the heraldic term for the shield. The term has been corrupted and is in more modern times than the ancient escutcheon, and that from the Latin scutum. The first representation of arms was, no doubt, an ornament to the shield. The shield afterwards became the appropriate and legitimate insignia of kings, and it was not till after the Peloponnesian war that the escutcheon began to be used. The escutcheon, or escutcheon of arms, are embazoned. The word is derived from the French escuton, and that from the Latin scutum. The escutcheon is the first representation of arms was, no doubt, an ornament to the shield. The shield afterwards became the appropriate and legitimate insignia of kings, and it was not till after the Peloponnesian war that the escutcheon began to be used. The term escutcheon was applied to the escutcheon of arms which was worn by the king on his breast, and the escutcheon of arms which was carried on the breast of his coat of his wife, if she is an heiress and he has issue by her. In this case the surviving issue will bear both coats quarterly.

ESNE. [Egypt, p. 312.]

ETONIC [Eton College].

ESPALLIER, a treillis for training fruit trees or bushes upon, instead of nailing them to walls.

In certain situations this kind of training is not only extremely neat but possesses peculiar advantages: the trees are more fully exposed to the influence of light, and liable
to be broken by high winds, and in small gardens in particular, where room is of great importance, and where a collection of the finer sorts of fruit is always desirable, it is found highly useful, both on account of the small space which the trees occupy, and because they will bear fruit much sooner than when allowed to grow in their natural form.

In France and other parts of the Continent this kind of training is usual, in England, and the northern part of France and England in Scotland, where the borders of the kitchen-garden are frequently planted with flowers, in order to combine pleasure with utility, espaliers are trained along the back of the flower borders to prevent the vegetables being injured by the fruit trees.

When the espalier is fastened to a wall, as is very common on the Continent, peach and nectarine trees are frequently trained upon it; but where it is detached, as it is most commonly in British, apples and pears, and sometimes gooseberries, are trained on strong stock, which is usually propagated in this way. Plums and cherries are occasionally so managed, but not so advantageously as the others.

When a common espalier is to be covered, the trees should be planted from 20 to 24 feet apart, which will allow the branches space over the 12 feet. It is rarely employed, and a shorter time would elapse before they would fill this space, a duplicate tree may be planted between each, and cut away as the others grow.

Goseberries of course require a small space; three or four feet from plant to plant is sufficient. They are trained in two kinds, one is trained horizontally, and the other vertically. When the trees are young, one must be trained perpendicularly, and two others horizontally, one from each side; the two last must not be shortened, but the perpendicular shoot is to be shortened in the following year to the length of about a yard, and the other two are to be shortened to about a foot, and so on every year until the trees have attained the desired size. The proper distance between the horizontal branches must depend upon the peculiar growth of the tree, but from six to nine feet is generally allowed. Trees are sometimes trained upon a double espalier which has the advantage of giving two surfaces to train upon. It consists of two trellises instead of one, about two feet apart at the bottom, and approaching at the top.

The only kind of espalier worth notice, which differs from those now mentioned is a table-rail: this, the management of which is called table training, consists of rails resembling tables, up the centre of which the tree is trained and regularly spaced over the 12 feet. It has the essential fault of exposing the blossoms so much to the effect of nocturnal radiation that in this country a crop is rarely obtained from such espaliers.

The stakes which form the espalier are made of different materials, and are all covered with a layer of soft wood, and a sand of cast iron. The first of these is by far the most simple, and is composed of stakes, five or six feet in height, driven into the ground from one to two feet apart; the top a foot, which is nailed to each, connects the whole together. It is probably the cheapest way of espaliering when the trees are first planted, because they are not required, are unsightly, and will have to be removed before the trees have attained their intended height: for this reason, stakes of a much weaker kind will at first answer quite as well. The wire and wood rail is formed by strong vertical wires, strained from two wooden horizontal rails, which are connected and held fast by wooden posts let into the ground. The iron rail is constructed upon the same principle as the wood rail.

The objection to all iron trellises is, that they cut and canker the trees; and when the cheapness of the wooden one is considered, besides the more natural appearance which it presents, it must undoubtedly have the preference.

The best wood for this purpose is young larch, the thinning of plantations.

ESPALION, a town in the department of Aveyron, in France. It is on the left or south bank of the river Lot, 17 miles from Rodez, the capital of the department, and 339 from Paris by Fontaulineau, Briare, Nevers, Moulins, Romm, Clermont, and St. Flour. The principal street of the town is broad, and lined with well-built houses; it leads down to the bridge over the Lot. The population in 1822 was 5290 for the town, or 3355 for the whole commune. The inhabitants manufacture light wooden stuffs, and there are several tan-yards: morocco leather is manufactured. Good wine is produced in the country round Espalion.

The town has a subordinate court of justice (tribunal de première instance), a high-school, and a drawing-school.

The arrondissement of Espalion is subdivided into nine cantons or districts, under the jurisdiction of a justice of the peace, and 101 communes: it had in 1832 a population of 65,896.

ESPRITU SANTO. [Brazil, p. 336; Cuba, p. 205.]

ESPRIT SAINT, a suburb of Bayonne. [Bayonne.]

ESPLANAIDE, the ground between the fortifications of a citadel and those of the town to which it belongs. It is recommended by writers on fortification that this space should be guarded with fathom-long scroll, and running from the covered way of the citadel, that in the event of an attack on the latter the enemy may not construct batteries within breaching distance under the cover afforded by the buildings of the town.

ESQUIRER HILL. [Rome.]

ESQUIMAUX, a nation inhabiting the most northern countries of America, and, if the extent of country be considered, one of the most widely-spread nations on the globe. On the eastern coast of America they are met with as far north as Bear Island, which separates Newfoundland from the mainland of America. They occupy the whole of the great peninsula of Labrador and the whole eastern coast of Hudson's Bay up to East Main River. On the western side they live on the lower shores of the islands to the Mackenzie River, where they extend northwards over the barren lands to the Great Fish River, or Thlewecwedgezeth, on both banks of which river they are found east of 100° E. long. The whole country between this river and the Great Bear, or Mackenzie River, and all the other islands between the northern coast of America and the pole, as far as they are habitable.

In stature the Esquimaux are inferior to the generality of Europeans. A person is rarely seen who exceeds 5 feet in height, and the faces are round and apple-shaped, and the rounded form than those of Europeans; their cheekbones are high, their cheeks round and plump, mouth large, and lips thick. The nose is small, and, according to some authors, flat, which, however, is denied by others. Their eyes are in general of a deep black stout colour, of a dark chestnut colour; they appear very small and deeply seated, owing to the eyes-balls being much encumbered with fat. The hair is uniformly long, lank, and of a jet black colour. The ears are situated far back on the head. Their teeth are large, square, and white, and their upper ones are larger than the lower. Their hands and feet are remarkably small; there is, however, no sudden diminution, both extremities appearing to taper from above downwards in a wedge-like shape. Grinnel, in his Voyage to Greenland, says the Esquimaux have disproporionateley large hands and feet. They are of a deep tawny or rather copper-coloured complexion. They are not without beard, as it has been asserted, but they pluck it out as soon as it appears. Some of them even wear long beards. They show a good deal of ingenuity in making their dresses and instruments; and some of them have attracted the attention of our travellers by their display of mental powers.

Their language is different from that spoken by the other savage nations who inhabit North America; but it seems that the same language is spoken by all the different tribes of the Esquimaux, though of course each of them has expressions which are peculiar. (Parry; Mackeever; Green's Voyages and Discoveries.)

ESQUIRE (from the French, esquire, or shield bearer) is the next title of dignity to that of knight. The esquire was the second in rank of the aspirants to knighthood, or knighthood, and had his name from carrying the shield of the knight, whose banner, or arms, he bore in this capacity. The gradation of this service, or apprenticeship to arms, were, page, esquire, or bachelor, and knight, who, in his turn, after the formation of degrees of knighthood, was called a knight bachelor, as aspiring to the higher honours of knighthood. The esquire was a gentleman, and had the right of bearing arms on his escutcheon or shield; he had
the royal free town situated in a level and marshy district on the right bank of the Drave, a little to the west of its efflux into the Danube. It lies in 49° 34' N. lat., and 18° 42' E. long. The site is that of the Muria, or Murus of the Romans, which was founded in the year 125 by the emperor Hadrian, and afterwards became the residence of the Roman governors of Lower Pannonia. Constantine made it the seat of a bishopric in the year 335. It now consists of four quarters; the present castle, begun in the year 1663, is almost finished in 1719, is well built, contains 147 handsome and lofty houses, an arsenal and barracks, and is regularly fortified: an esplanade runs round it, and to the north-west of it stands the Pela-Varos (Upper Town), which is approached by a narrow and dark passage, and consists of 600 pages of buildings, the merchants and dealers, and has well-built courts. South-east of the fortress lies the Allo-Varos, or Lower Town, the site of the ancient Muria, which consists of broad and handsome streets, and has some fine churches; the best are in the eastern part of the town, composed rather of flowers and gardens than of lines of streets. The fortress and suburbs contain altogether about 1800 houses, 5 Roman Catholic churches, 4 chapels, and a church for those of the Greek persuasion, and 11,000 inhabitants. There are several houses supposed to be the first place of residence of the assembly for the states of Târgovia, the county in which Esseg is situated, the barracks, engineers' house, officers' pavilion, and arsenal. Esseg has a Roman Catholic high-school, a gymnasion, a Greek school, a military cadet academy, and a bank. A causeway or bridge about two miles and a half in length, 55 feet in breadth, and 9 feet in height, constructed in the year 1713, leads across the Drave and the swamps on its southern bank; it is about 15 to 16 feet wide, and is entitled to the name of Vârăştul, by which it is generally known. A small iron column erected in the year 1817, is now about 5700. It is the seat of mining and crown-domain boards, and has 2 Protestant and 2 Roman Catholic churches, a gymasion, a Capuchin monastery, a Protestant orphan asylum, and a hospital. The chapel of St. John the Baptist is supposed to be the first place of religion, and the church erected in these parts. The manufactures consist of woolens, linens, vitrilo, leather, arms, iron and steel ware, &c. The town has some trade, and there are coal-mines in the vicinity, as well as a number of iron works.

ESSENSEN, a township in the Prussian administrative circle of Düsseldorf, consisting of 72 townships, and 73 villages, lies on the Birne, in 51° 27' N. lat., and 7° 2' E. long. It was the spot where the foreign princes of the Rhine and of Westphalia formerly held their diet, or Fürstenag, &c. E.ssen is surrounded by walls, has about 830 houses, and a population of 4700. 7 miles from the town, in the year 1713, was extinguished by fire. The town was partly destroyed by an earthquake, at the end of the eighteenth century, which since then they have again gone out of fashion. We give a list of those contained in Alexander Chalmers' collective edition of British Essays, which includes some that have little claim to a place among these: the standard works of our language; with the names of the principal and most celebrated contributors to each.

'Thatler,—Steele, Addison.
'Smart,—T. E. S. Lauglike, Buddele, Pope, &c.
'Sguardian.—Steele, Addison, Berkeley, Pope, Tickell, Gay, &c.
'Rambler,—Johnson, almost entirely.
'Adventurer—Hawkesworth, Johnson, Jos. Walton, &c.
'Story, and the army, down to the captain inclusive, doctors of law, barristers, and physicians, are repeated essays. A justice of the peace is only an essay during the time that he is in the commission of the peace, but a sheriff of a county is an essay for life. The general assembly of this body is called the 'Spectator' to the successful revival of the style of writing by Dr. Isaac Benet, in the year 1758. The Spectator contributed so greatly to the establishment of a number of similar periodicals during the latter half of the eighteenth century, since which time they have again gone out of fashion. We give a list of those contained in Alexander Chalmers' collective edition of British Essays, which includes some that have little claim to a place among the standard works of our language; with the names of the principal and most celebrated contributors to each.

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The text is a page from a book discussing the differences between species, particularly in the context of plants. It mentions Aristotle, St. Gregory, and other philosophers and theologians. The page includes a section on the essence of things, discussing the distinction between genus and species, and how these concepts are used in determining the nature of substances. The text also touches on the differentiae of species and the importance of understanding these differences in botanical and theological contexts.
and Southend the coast rises into low cliffs. At Shoebury Ness, a low point of land at the mouth of the Thames, 6 miles from the east end of Canvey Island, where the coast turns to the north-east, the marshes reappear; and with an interval of about a mile just beyond Shoebury, they continue along the coast 11 miles, to the mouth of the river Crouch. Nearly 4 miles from Shoebury a narrow creek, with many sand-banks, which divide it from the mainland, joins the river Crouch, and with that river cuts off from the mainland several low flat islands, Russelys, Haven Gore, New England, Potten, Wallasea, and Foulness. The edge of this creek and its various ramifications, as well as the adjoining low, comprehends a great part of the sea, it are embanked, and the islands are embanked all round. The marshy tract, including the islands and the adjacent part of the mainland, is from 3 to nearly 6 miles broad; and the sand (Foulness Sand), dry at low water, is only 3 miles broad, to the mouth of the Blackwater river. In this part of the coast the sea encroaches upon the land. The marshes (Burnham Marsh, Southminster Marsh, Dengie Marsh, Tillingham Marsh) are watered by the surf of the Blackwater, nearly 5 miles inland, but gradually become narrow to the northward to St. Peter’s Chapel, where they are interrupted by the higher ground running down to the coast; the sand, which is dry at low water, has a breadth of from two miles to two and a half miles, and the river, which issues from the Colne and the Blackwater, has an average breadth of 3 miles. The lie in the inlet, the mouth of which, from St. Peter’s Chapel to St. Osyth Point, is above 5 miles over, is the island of Mersey, separated from the main by a marshy tract and an intervening narrow channel. The cut that forms this island is skirted by a very narrow tract of marsh-land; but the marshes about St. Osyth Point are from three-quarters of a mile to a mile broad. The marshes, however, terminate 4 miles beyond St. Osyth’s Point, and (with a slight variation) for about 10 miles from the coast. The island formed by the Blackwater and Colne (Holland Creek) a high broken coast extends between 9 and 10 miles to the Naze, the most eastern point of the county. This point formerly extended much farther toward the east. The ruins of buildings have been found at considerable distances north and south. The coast is from 5 to 6 miles from shore. From the Naze to Harwich, between 5 and 6 miles in a direct line north and south, the coast forms an inlet lined by salt marshes, and occupied by Harwich Island, Holmes Island, Fritwell, Island, and one or two others. This part of the coast has, however, been reclaimed by the estuary of the Stour, which is in most parts more than a mile wide at high water, extends up to Cattawade Bridge, above Manningtree. (Ordinance Survey).

The islands have been named in the course of the foregoing paragraphs. The value of the perpetual curacy, to which the chief of them.

Canvey Island is bounded on the south-west and west by the Blackwater, and on the north by a narrow creek, which separates it from the mainland. It is entirely marsh-land, banked in all round. Its extreme length from east to west is 6 miles; its greatest breadth from north to south 2. Its area is estimated at more than 2600 acres (Lib. of Useful Knowledge: Geography), chiefly appropriated to grazing andashing. In the north there is the Seabank, a part of which is used for the purpose of a ‘Clerical Guide’ (A.D. 1836) assigns to it a population of 216. Morant, in his History of Essex, states that there were then (A.D. 1768) fifty dwellings in the island. In 1822, the land being subject to be overflowed at high water in the spring tides, the owners of lands in it entered into an agreement with Mr. Croppenburgh, a Dutchman, for ‘washing and recovering the island,’ as Morant terms it. A timber chapel was built for the use of the Dutchmen employed in the work. This chapel has been twice rebuilt: the present chapel will hold 90 persons. The value of the several endowments attached, is £50; it is in the gift of the bishop of London. There is a yearly fair on the island.

Foulness Island (so called from the Saxon Fugel, a fowl, and nea, a promontory, ‘the Promontory of Fowl’s’) is bounded on the north by the river Crouch, on the east and south-east by the German Ocean, on the west by the Broomhill river, which separates it from Wallasea Island, and on the south-west by a creek which communicates between this river and the sea and separates Foulness from Potten and Mersey Island. It is 5 miles broad, 15 miles long, and 11 miles east to west, nearly 6 miles; its greatest breadth 22. Its area is given by Morant at 4500 acres, and in the ‘Lib. of Useful Knowledge’ at 5000; but in the Population Returns, Foulness parish, which does not, so far as we know, form a distinct civil body, has an average area of 3000 acres, with a population of 630, almost entirely agricultural. The soil is good, the upper part producing corn of every kind, and the lower part pasture; the only fences are ditches, which are filled at every tide. Fruit-trees thrive in the lower parts, and the waters of the sea and river. The houses are scattered over the island, upon the different farms; they are all of wood—a material which, from some cause or other, is here liable to rapid decay. The church, also of wood, is situated near the centre of the island; it will hold 300 persons. The living is a rectory, exempt from the archdeacon’s jurisdiction, of the yearly value of 300L, with a glebe-house. There is a yearly fair in the island. Beds of oyster and cockle-shells have been found on the shore of the island, which renders it probable that it was originally formed by deposits of shell-fish.

Wallasea, otherwise Wally or Wallia, so named from the sea-walls which surround it, is bounded on the north by the river Crouch, on the east and south by the Broomhill river, from the whole of the north by Foulness and Potten Islands, and on the west and south-west by Pott Creek, which separates it from the mainland. There is a causeway over Pott Creek. Its greatest length is, from east to west, 53 miles; its greatest breadth is 14 miles. The water is tidal, and the banks of the ebb and flood, on the north side of the island, are supposed to be the site of the ancient town of Broomhill. The inhabitants have to fetch fresh water from the mainland; that in the ponds is so brackish that horses do not thrive till they have been inured to it. The whole island is marsh-land; it is included in several parishes. Potten Island, New England, North, New England, and Russely or Rushley, belong to the same group as the two foregoing; they are to the south-west of Foulness and to the south of Wallasea. The whole group is in Rochford hundred. In the creeks which surround or separate these islands are fed with oysters, called Wallace oysters. Mersey Island is in an inlet formed by the estuaries of the Blackwater and the Colne. The name is derived from the Saxon Meche, the sea or a marsh, and ig, an island. It is bounded on the south by the estuary of the Blackwater and the Colne, on the south-west by the river Stour, by the estuary of the Colne, and on all other sides by a creek, which, running through the marshes on its north-west side, under the names of Mersey Channel or Peffered Creek, separates the main part of the island from a portion of it; a marsh on the north side of the island is separated from the rest by a channel called Passfet. The greatest length of the island is, from east-north-east to west-south-west, nearly 5 miles; the breadth varies from one to two miles. The land is divided into two Hundreds of East and West Mersey or Mersea, of which the former comprehends an area of 1810 acres, with a population, in 1831, of 300; the latter an area of 3029 acres, with a population of 847 — together, 4930 acres and 1147 inhabitants. There is a passage through the island called the Stour Channel, dry at low water, called ‘the Strode or Stroude,’ i.e., a bank along the side of a creek, river, or sea. The history and antiquities of this island will be noticed with those of the county at large.

Horsey Island is a low and entirely marshy island, with an inlet which occurs between the Naze and Harwich. Its greatest length is from north-west to south-east about two miles; its greatest breadth rather more than a mile. It consists almost entirely of salt marshes; a spot rather more elevated than the rest, about one-fourth of the whole, on the south-west side of the land, is banked in. In the marshes there is a decory for wild fowl. Pewit Island and Holmes Island, with one or two others are near Horsey: all these islands are separated from each other and from the main by narrow channels. Surface, Hydrography, Communities. This county has few hills of any considerable elevation; its general slope, as determined by the watershed, is towards the south and...
east; the coast and the banks of the Thames present a succession of unhealthy marshes commonly known as the hundred of Long-Bed, the north-west side of Epping Forest, near Waltham Abbey (390 feet high), Langdon hill, south of Billericay (620 feet high), Danbury hill, between Chelmsford and Maldon, of nearly the same height, and Tiptrey Heath near Witham, are probably the most extensive of the kind; and the level valley of the Colne forms the continuation of the Chiltern hills just cross the north-western part of the county in their extension towards the north-east.

The rivers of Essex are—the Thames with its affluents, the Lea and the Colne, which flows the Stort, the Roding, the Bourne Brook, the Ingerburn, and some smaller streams; the Crouch with its affluent the Broom-hill; the Blackwater with its affluents the Poda Brook or Witham river; and the Chelmer (into which flow the Sandon Brook, the Ter, and some other Basins). The Colne, with its affluent the Roman, the Stour; and the Granta or Cam.

The Thames bounds the county on the south side. Its course, though winding, is on the whole nearly from west to east. It is a tide river, and navigable for the largest merchant sailings. It is the East installations of the first class, the Lea, the Thames, and the Colne are navigable for the largest vessels, and serve for the conveyance of coal, malt, wool, and other agricultural produce to London, and for the conveyance in return of coals, timber, deals, bricks, paving stones, grocers' articles of food, beer, and wine.

The Roding rises in the western part of the county, near East Park, a short distance north-west of Dunmow: it flows southward about 15 miles to the neighbourhood of Chipping Ongar, where it receives the Cripsey Brook (about 9 miles) on the north-west side, and the Stour: at the junction of the Cripsey Brook, the Roding flows south-west in a very winding channel 14 miles past Kelvedon Hatch, Navestock, Abidge, Longoughton, and Chigwell, to Woodford bridge: and from Woodford bridge it flows about 7 or 8 miles south and south by east past Ilford and Barking into the Thames. Its whole course is about 36 or 37 miles. The banks are low and marshy from the neighbourhood of Ongar. The west bank, from Ilford, and both banks from below Barking, are protected by embankments. It is navigable under the name of the Thames and the Lea; and the low bench from Woodford bridge to the Thames, and southwards is used for the conveyance of coal and other articles for the supply of Romford and the neighbourhood.

The Bourne Brook rises between the villages of Nava-stock and Havering-atte-Bower, and flows past Romford (below which it receives a small brook from Hornchurch), and between Dagenham and Hornchurch Marshes into the Thames. Its length is about 12 miles. In the lower part of its course the Bourne Brook is connected with the marshes formed by Dagenham. This breach was occasioned in 1707 by the blowing up of a small sluice that had been made for the drainage of the land waters: an opening was formed by the rushing in of the Thames, 300 feet wide, and in some places 20 feet deep; 1000 acres of rich land in the adjacent levels were overflowed, and the surface of nearly 120 acres was washed into the Thames, where a bank was formed nearly a mile in length, and extending halfway across the river. After various ineffectual attempts, the breach (which in course of time had been, by the force of the reflux every turn of the tide, worn into a channel like the mouth of the Thames, and was stopped, by driving dove-tailed piles and other expedients, under the direction of Captain Perry, who commenced his works in 1718. Within the embankment there is yet a pool of about 40 and 50 acres, where the water is from 6 to 8 feet deep, and which extends across the creek by the banks of the Colne. The water crystals, by which the pool is supplied from the sea by the Thames, is 1 mile west of the sea; and the pool level with the sea.

The Ingerburn rises near Haverfield-n-ate-Bower, not far from the source of the Bourne Brook, and flows southward, past Upminster, into the Thames. It is about 12 miles long, and forms the continuation of about the same length, which rises close to Thornford Park near Buntingford, falls into the Thames near Purfleet.

The Crouch rises on the slope of the hills, south of Billericay, and flows east by north about 25 miles into the sea. It is navigable throughout the whole length; its tributaries are in a state of about the same nature; and median, and much lower down, the village of Burnham. The tide flows about 13 miles up the river. It is kept from overflowing the low lands by banks; in the tide way there are many arms; and the various channels by which the river communicates with the sea form the group of Foulness, Wallasea, and the adjacent islands. Just above its mouth it receives the Broom-hill river (10 miles long), which is navigable for seven miles nearly up to Rochford.

The Blackwater, which in the upper part of its course is called the Pant, rises near the village of Wimblesh, three miles from Safron Walden, in the north-western part of the county. It flows first south-east and then south about 15 miles to Maldon, where it is joined by the Little Blackwater. The Blackwater, Great Bardfield, Weathersfield, Shelford, Panfield, Bocking, Stisted, Coggeshall, Kelvedon, Great Brompton, and Little Brompton, to the neighbourhood of Witham. Here it is joined by the Pods Brook, a stream 14 or 15 miles long, which rises near Great Bardfield, and flows past Great Bardfield, Black Notley, White Notley, Foulbourn, and Witham. From the junction of this stream the Blackwater flows about 4 miles to the junction of the Chelmer; after which it flows east about 12 miles into the sea, having passed over some very marshy ground. About 15 miles west of the junction of the Colne and the Thames, the Blackwater flows from the south-east into the sea at the north-east end of Maldon, about 5 miles to the sea, with the Colne and the Thames, and forms a group about the estuary, which is at high-water from 15 to 23 miles wide, with the islands of Northey, Osey, Ramsey, and Petworth. Lawngreek and Guildenrake are channels in the oze or stream of this tidal water.

The Chelmer rises near Debden, two or three miles south of the sources of the Blackwater, and flows south-south-east about 23 or 24 miles to the town of Chelmsford, passing past Great Plumstead, Great Waltham, and Little Waltham. At Chelmsford it is joined by the Sandon Brook which rises near Thornford Park and flows northward between Billericay and Ingatestone to Witham and Whittle, and then turns east and runs into the Chelmer after a course of 12 miles. The Chelmer flows north-west about 10 miles till it falls into the Blackwater near Maldon. Its whole course is about 34 miles. The Sandon Brook, which rises near Stock, two miles north-east of Billericay, and has a course of about 10 miles, joins the Chelmer near Great and Maldon. The Ter rises near the junction of the Blackwater and the Thames, and flows south-east 13 or 14 miles into the Chelmer. It joins about two miles below the junction of the Sandon Brook, it passes Little Leighs, Great Leighs, Terling, and Tiptrey, to the north of the Colne. It is navigable for about 15 miles, and its whole course is about 33 miles.

The Colne rises in the north-western part of the county, between Great Sampford on the Pent, and Steeple Bumpstead on the Stour. It flows east about 7 miles to the town of Kelvedon, where it is joined by another stream of nearly the same name. Then it flows south-east 6 miles past Castle Hedingham and Sible Hedingham to Halstead; and from thence east-south-east about 13 miles to Colchester. Below Colchester it becomes a tidal creek, and flows past Rayne, 9 miles south-east into the sea at the north-east end of Marsey Sand. Its whole course is about 53 miles.

The Roman road about 2 miles north of Coggeshall on the Blackwater, and flows east by south about 13 miles into the tideway of the Colne, which it joins midway between Colchester and the sea. A brook eight or nine miles long from Layer Marney and Layer Breton joins the Roman about three miles above its junction with the Colne.
The Stour may be considered as equally belonging to Suffolk and Essex. Of the three springs which may claim to be its sources, one which flows past the village of Keddington is in Suffolk; a second in Cambridgeshire, and from it a small tributary of the river south-west to the town of Saffron Walden, and the stream from it passes Steeple Bumpstead. From the junction of these three streams, which takes place about 6 or 8 miles from their respective sources, the river to its outfall divides the counties of Essex and Suffolk. Its course is first east about 10 miles past Wixoe, Stoke, Clare, and Cavendish in Suffolk, to the neighbourhood of Long Melford, above which it receives two small tributaries on the Suffolk bank; from thence its course is south by east about 8 miles past Sudbury in Suffolk to Bures: and from thence east 13 miles past Newland, in Suffolk (below which it receives two considerable affluents), and Dedham in Essex to Catawade bridge, just above Manningtree. Below Catawade bridge the stream widens into a considerable estuary, 11 or 12 miles long, and the shores of the county are marshy. At the mouth of the estuary is a small island, Motenity, from Bishop Stortford along the valley of the Cam to the navigable part of that river below Cambridge, thus uniting the Thames and the Lea with the Cam and the Ouse. The tideway of the Crouch is navigable, and serves for the impor- tation of the coal of the coal measures, and for the exportation of agricultural produce. Near Burnham this river is a quarter of a mile wide (not three quarters of a mile, as Mr. Young states in his "Agricultural Survey"), and has depth of water sufficient for a 50-ton ship: a 74 might go almost up to Bungay bridge at the head of the tideway. The Blackwater does not appear to be navigable above the junction of the Chelmer. Vessels of considerable burden can get up to Maldon at spring tides. The Chelmer is navigable to Chelmsford. This navigation supplies Chelmsford and other places for the most part with coal, salt, timber, and groceries, and serves for the exportation of agricultural produce. The navigation of the Colne, which extends to Colchester, answers the same purposes for that town and its neighbourhood. The river Stour is navigable up to Sudbury; about 30 miles above Harwich. Essex has no navigable canals.

The principal roads in the county are the three roads from London to Norwich, by Ipswich, by Bury, and by Newmarket. The road from London to Ipswich, through Bow bridge, about three miles from Whitechapel church, London, and crosses the county in nearly its greatest extent from south-west to north-east, passing through the market towns of Romford (12 miles from London), Chelms- ford (26 miles), Witham (38 miles), and Colchester (53 miles), 74 miles beyond which the road crosses the Stour at Stratford bridge and enters Suffolk. The road through Bury branches off from the Ipswich road at Chelmsford, and passes through the towns of Braintree (404 miles from London), Braintree (46 miles), and Braintree (74 miles) beyond which the road crosses the Stour into the town of Sudbury in Suffolk. A branch from this road passes through the villages of Sibb Hedingham, and Castle Hedingham, instead of through Halsted, and reunites with the main road about 12 miles beyond Halsted, and 37 miles from London, which is the shortest line between 29 and 30 miles from London it re-crosses the same river into Essex, runs northward near but not through Saffron Walden, and finally quits the county at the village of Great Chesterfield, 45 miles from London.

A road which quits London by Shoreditch church enters the county at Lea bridge, and falls into this road at Snare-brook, about 7 miles from London.

From the road by Colchester and Ipswich several roads branch off to the north and east, to the Thanes, or the south and east coasts, as to Billery (23 miles from town); to Tilbury Fort (25 or 29 miles by different roads); Southend (42 miles); and Maldon (37½ miles), from which place are roads to the villages of Brad- well (51 miles), Southminster (48 miles), and Burnham (484 miles), in the marshes of the south-east coast. From Colchester there are roads to Harwich (71 miles from London), at the north-east extremity of the county, and to Neyland, in Suffolk (57 miles), on the border of Essex.

From the road from Colchester through Braintree, a road runs by Chipping Ongar (21 miles) to Dunmow (40 miles). From the Bury road, between Braintree and Halsted, there is a road by Sible Hedingham to Havering, in Suffolk (59 miles), on the borders of Essex. The towns in the northern part of the county are characterized by their proximity to the coast, and the county is bounded by a line drawn from Keddington to the village of Hempstead, six miles east of Saffron Walden, from thence to Thaxted and the village of Great Easton, the road on the coast from Thaxted to Dunmow, and from thence by the neighbour- ing towns and villages to leas on the coast. The eastern part of the Stour, is occupied by diluvial beds, consisting of loam with fragments of chalk. The coast of the north-east part of the county is covered with the sand or gravel of the upper marine formation, which occupies a considerable area of the eastern coast, and is designated 'crag.' At the headland of the Naze it constitutes about 30 feet of the upper part of the cliffs (which are about 45 feet high) resting upon the London clay: south of the Naze its thickness appears to vary from 10 to 40 feet. In the projecting cliff of Harwich it includes friable masses of ferruginous sand, somewhat cemented together, and inclosing shells. The shells of this formation are in excellent preservation, commonly in a confused mixture, but at other times in patches of particular genera; and some of them are seen to differ specifically from those of the neighbouring seas. Fragments of fossil bones washed out of the strata of this formation, in which they had been imbedded, are found on the beach at Walton, but occur in much greater quantities at Harwich. The deposits of the Naze, the cliffs south of the Naze are said to consist of loam, which contains the bones of the elephant, deer, horse, pig, aurochs or wild bull, and hippopotamus; and the strata along the south bank of the estuary of the Stour are said to contain elephant's teeth.

The greater part of the county, including Epping and Hainault or Henhaut Forests, is occupied by the London clay. This formation extends on the south and east to the banks of the Thames, to the coast, and to the tract which they form. It is bounded by a line drawn from the banks of the Stour about Boston near Neyland to the junction of the Stour with the Lea. These may at least be taken as its approximate limits, for some of the beds of the plastic clay formation, which im- mediately underlie the London clay, are so thin, that it is difficult to trace exactly the line of demarcation. The London clay of the cliffs near Harwich contains beds of stratified limestone: the same cliffs are very productive in the fossils with which this formation abounds. South of the Naze, near the Orford, abundance of shells are found, which are sent by sea to Harwich, where they are manufactured by government into a cement. The principal elevations in the county, High Beach, Langdon and Denbury Hills, and Tiptree Heath, are formed of London clay.
surface of the vegetable mould does not commonly rest immediately on the London clay, but on alluvial beds of rich marl and loam, which often alternate with gravel and sand, and sometimes have a thickness of 30 or 40 feet. The sands and clays of the plastic clay formation skirt the eastern parts of the county, and clay on the downs of Haslingden and Coggeshall, with the intermediate tract, are both on the plastic clay. The border of Essex, near Harling, is the most northerly point at which this formation has been found.

In the north-western extremity of the county, about Saﬀron Walden, consists of chalk: the great chalk district, in its extension from south-west to north-east, just crosses that part of the county. The chalk appears also at Purfleets and Gray’s Thurnock, on the banks of the Thames. At the former place the ancient boundary stone of the Manor of Westwell, long known as Gun-flints are made at or near Purfleets. A subterranean forest underlies the marshes on the banks of the Thames.

Agriculture. The climate of Essex is favourable to vegetation; the sea and the numerous estuaries which bound it have long soften the rigour of winter, and keep up a certain degree of moisture in summer. The same cause, however, produces cold fogs and exhalations in spring and autumn, which are very prejudicial to the health of those who are not used to it. In consequence of the immediate vicinity of the most fertile portions of the county, which lie along the Thames and the sea coast, towards the Colne river, and which are usually called the hundreds of Essex, contain few sects of men of fortune; and notwithstanding the rise of the soil, the market gardener may be said to lead a more liberal life than the farmer. The luxuriance of the soil for feeding cattle, few men from other counties venture to take farms in this part of Essex. This reprobation to the climate of the hundreds of Essex is rapidly diminishing, since the marshes have been better drained and the woods, which prevented the free circulation of air and the dispersion of the fogs, have been gradually cut down, and the land brought into cultivation. The soil, all along the coast, and 10 or 12 miles inland, is of a very excellent quality, being a friable loam of greater or less tenacity, free from turf and chaff, but not adapted for the cultivation of wheat, beans, and oats. The Isle of Mersea, which lies at the mouth of the Colne river, has been long noted for the fertility of its soil, which is a fine alluvial loam composed of the various earths deposited from the river and the sea, like the warp lands along the Humber, or the polders in the Netherlands. The whole island is protected by a sea-wall, and produces every kind of grain which is usually cultivated; wheat, barley, oats, beans, and rape seed are the principal produce. Sir Humphry Davy found that the land of the Isle of Mersea bore more than 600 bushels of wheat to the acre, which Linnæus attributed to the soil being so little exposed to the atmosphere in less time than any other on which the experiment was tried; and this gives perhaps a better measure of fertility than any chemical analysis of its constituent parts. The best soils of Essex lie low in the river valleys, and are protected by the meadows and by enclosures.

Many marshes which formerly produced nothing but herbage, and were subject to inundations, are now converted into arable fields; and a great tract of land all along the coast, which used to be overflowed by the sea at high tides, is now laid dry by dykes and broad ditches here called fleets, and protected by high and well-constructed sea-walls, the repairs of which are a great expense to the proprietors. In some of these marshes the want of fresh water in summer was often felt severely. But this evil has been remedied by artificial canals, which have been attended with great success, especially in the marshes at St. Osyth, where the finest springs of water have been found, which flow over the surface, and keep ample reservoirs continually full. The depth at which the water was found did not exceed fifty feet. This discovery greatly increases the value of these marshes in dry summers, such as that of 1836. The soil in the uplands along the coast consists chiefly of good loams varying in tenacity from a strong clay to a light gravel; most of it is of such a nature as to suit both wholesome and beef cattle. The higher lands, as well as the lightest, which form the two extremities, are more inland. The whole county has an undulating surface, which is very pleasing when fields and woods are interspersed, as is very generally the case in this county. The only level tract is that along the Thames, which extends to its mouth and along part of the south-eastern coast. The remainder consists of gentle elevations just sufficient to give a great variety of soil and aspect. The clay soils, on the whole, prevail in most parts of the county, and from this circumstance arises the modes of cultivation and the rotations of crops which are most commonly adopted. There are very few such light soils in Essex as there are in Norfolk and Suffolk, except at the northern end of the county, and on the borders of Hertfordshire and Cambridgeshire, chalk and marl are rare.

The cold wet clays have given rise to a mode of tillage which is minutely described by Arthur Young in his 'View of the Agriculture of this County,' and held out as a pattern for the cultivation of cold wet clays. It consists of repeated ploughings in spring and summer, and exposure to frost in winter; two things, no doubt, highly beneficial to stiff land. But since the introduction of extensive under-draining and ploughing methods, the winter laying-out of the land is more extensively practised, and harrowing has been saved. The peculiarity of the Essex method, on stiff clays, was to work the following winters for barley, during which period the land was ploughed in all directions eight or nine times, and even more, until it was sufficiently pulverized. The rotation was fallow; barley; fallow; wheat; beans: that is, two falls in five years. The beans were frequently omitted: so that the land was alternately cropped and fallowed. No stock was kept on the farm, but a few cows for the use of the dairy, and a couple of horses to pull the plough, and the soil not being favourable for artificial grass, very little manure could be made except upon those farms which have marshes attached to them, which is not generally the case where the soil is the stiffest. There was consequently no sufficient manure for the land, and farmers were anxious to keep the soil in a moderate state of fertility. From sixteen to twenty bushels of wheat per acre, and from twenty-four to thirty of barley, was a common average produce on very good clays, which, with under-draining and proper manuring, might exceed thirty bushels of wheat and forty-eight of barley. The follows at the same time are now removed to every fifth or sixth year.

The present mode of ploughing in Essex is similar to that of Norfolk and Suffolk: the ploughs most commonly in use are the narrow ones, or long-ploughs without wheels. The great manufacture of these implements is that of Messrs. Ransom, at Ipswich, which chiefly supplies the three eastern counties. In good loams, not too stiff, two horses are driven abreast with reins, whether the plough has wheels or not. In the young grass, three horses are used, who walk one before the other in the furrow. The object is that the plough may tread the land less; but some very judicious agriculturists maintain that three horses treading the bottom of the furrow render it quite impermeable, and lighten the work of the horse. This is a winter plough, and one strip is sometimes ploughed over the already ploughed, where they would only have trod in small cavities. This is rather a new mode of viewing the subject, but it is worth considering, and making trials to ascertain the real effect.

The landing of stones near the sea, which has been continued in, and before winter the field is laid in narrow ridges which are formed by two turns of the plough, and sometimes by four turns, or two boats, as they are called. The ploughmen are expert in this, and lay the ridges very regularly, sometimes diagonally across the field, which has a good effect in dividing the soil more completely. In this form a greater surface is exposed to the frost and air, and in spring it is mellow and crumbly, where in autumn it rose in an unbroken furrow. If a fellow is intended to clean the land, it is necessary to plough a second time, without stones, which is called ploughing, which is ploughed, which is ploughed clean, and burnt; and if it is not very clear of these by wheat-sowing time, it is put in ridges again till the next spring, by which time it is quite pulverized, and fit to be manured for barley and clover. If wheat is sown in autumn, the manure is put on before the last ploughing.

The most common rotation on the stiffest clays which will not bear turnips is now 1, fallow, 2, wheat or barley; 3, clover; 4, oats or wheat; 5, beans; and where manure is abundant, a second crop of wheat is taken in the sixth year. The manure is applied in very small stiff clays, which bear turnips the usual rotation is turnips, barley, clover, wheat, beans, oats, or wheat. The manure is put on for the turnips and the beans: pease and tares are taken on part of the land, which otherwise would have had clover, and on that where the clover has failed. The mode of manuring has been used with good effect in many stiff soils, but the treading of the horses when the ground is soft, the only
time when the mole plough can be used with effect, does a great deal of harm on such land, so that this instrument is not so generally used as it might be. The method of destroying moles by means of their effects to the mole plough, that this instrument will soon be laid aside, except in old pastures, where it may sometimes save the expense of draining. The subsoil plough is not yet generally introduced, but will, no doubt, soon be found an admirable method of improving heavy soils, and give them to the cattle in yards or stables, together with straw and oil-cake. When the soil will not allow the carts to go over the fields where the turnips are without doing harm in winter, asses with paniers are used to bring the turnips to a cart on the hard roads is often to the yard, if it is near at hand. Asses and boys may be employed in this manner with advantage in many situations, and the expense will not exceed that of horses and carts, although they bring but a small load at a time.

In those farms which have marshes attached to them a great number of cattle is constantly kept, and all the straw is converted into manure, by which the arable land is kept in a high state of fertility. Along the Thames the salt marshes are extensive, and profitable from the number of eels and eel-grub. When they have been over worked and require rest, or when they have met with some accident. Where there is not a sufficient number of horses taken in to stock the marshes, oxen and sheep are bought to complete the number, the principal roads is often to the yard. Besides the common crops usually cultivated, a considerable quantity of cole or rape seed is raised on the richer alluvial soils of the hundreds. It is a profitable crop, owing to the abundant supply of manure brought from London by the Thames. In other situations it has been found to deteriorate the succeeding crops too much, and the cultivation has been abandoned. Flax is not cultivated anywhere in the county, at least to any extent, and very little hemp is sown. A few hops are raised in the western part of the county, Hertford, and Essex, which is peculiar to this county, is described under CARAWAY.

In that part of Essex which lies within a few miles of London the cultivation of the soil partakes more of the garden culture. Vegetables, especially cabbages, are raised in a very extensive manner, and are almost entirely devoted to the raising of potatoes. The ground is ploughed, and very highly manured with stable dung from London. The potatoes are usually set by hand, and moulded up with the plough. They are taken up with the common three-pronged fork, and wheat is immediately sown after the principal crop is taken up. Those which are of an early kind, and taken up in June or July, are followed by cabbages. Mangel wurzels for the London cowmen are also raised in considerable quantities. The meadows within five miles of London are supplied by the Whittley market with hay, and every cart brings back a load of dung.

The cows and horses in Essex are chiefly reared in Suffolk, and Scotland supplies the oxen to fattens. There are a few considerable dairies about Ipswich; but in general the number of cows kept on a farm is not considerable. Many calves are fattened, which are killed in the country, or go to Romford to be sold to London butchers.

Sheep are now kept in greater flocks by the Essex farmers, and with considerable advantage. By means of draining, the land has been made capable of being folded over even in winter. It is not a sheep-breeding county, although many fine lambs are reared; but they are generally bought from the breeders in Wiltshire and Berkshire in the spring after the succeeding spring. The Southdown breed is preferred in general; but there are also many improved Leicesters, and lately the Norfolk sheep have come into favour with some farmers, who think them hardy and profitable, and whose fences are in such a state as to repress their rambling propensities. There is no peculiar breed of horses. The Suffolk ponies seem to be in general use for farm work, and it is scarcely possible to find a breed better adapted for every kind of work. When crossed with a half-bred horse of some substance and action, a Suffolk mare produces admirable carriage horses. In the marshes a good many horses are bred of various kinds, chiefly for draught. Essex has been long noted for a superior breed of mares. Horses have been produced and improved by crosses with foreign breeds, chiefly the Neapolitan, which has very little hair, and the Chinese. The common Essex pigs have long ears standing upright, and thin in their texture. The best breeds are those of black, and sow with black and white, the head and rump being generally black, and the back and belly white. They fatten early, and make excellent small pork when fed on the refuse of the dairy. Lord Western's breed is in great repute, not only in Essex, but all over England.


**Divisions, Towns, &c.**—Essex is divided into twenty parts, of which fourteen are called hundreds, five half hundreds, and one royal seatte, which we subjoin a table of these divisions, with their situation, their respective areas, and population in 1831. We have distinguished by the letters (a) and (i) the half hundreds and the liberty.

<table>
<thead>
<tr>
<th>Division</th>
<th>Acreage</th>
<th>Inhabitants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barstable, S.</td>
<td>73,290</td>
<td>13,181</td>
</tr>
<tr>
<td>Becontree (a), S. W.</td>
<td>35,950</td>
<td>34,924</td>
</tr>
<tr>
<td>Chafford, S. W.</td>
<td>34,930</td>
<td>9,998</td>
</tr>
<tr>
<td>Colchester, Central</td>
<td>81,500</td>
<td>17,175</td>
</tr>
<tr>
<td>Clavering (a), N. W.</td>
<td>18,140</td>
<td>4,965</td>
</tr>
<tr>
<td>Dengey or Dengie, S. E.</td>
<td>59,110</td>
<td>13,746</td>
</tr>
<tr>
<td>(including the borough of Maldon.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dunmow, Central</td>
<td>54,670</td>
<td>12,791</td>
</tr>
<tr>
<td>Epping (a) or Freshwell (a), N. W.</td>
<td>27,740</td>
<td>6,234</td>
</tr>
<tr>
<td>Harlow (a), W.</td>
<td>29,660</td>
<td>7,796</td>
</tr>
<tr>
<td>Havering (a), S. W.</td>
<td>12,550</td>
<td>6,812</td>
</tr>
<tr>
<td>Hinchinford, N.</td>
<td>109,610</td>
<td>40,183</td>
</tr>
<tr>
<td>Lexden, N. E.</td>
<td>73,850</td>
<td>37,677</td>
</tr>
<tr>
<td>(including the borough and liberty of Colchester.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ongar, Central</td>
<td>58,060</td>
<td>14,715</td>
</tr>
<tr>
<td>Rochford, S. E.</td>
<td>57,980</td>
<td>13,604</td>
</tr>
<tr>
<td>Tendring, N. E.</td>
<td>82,900</td>
<td>27,083</td>
</tr>
<tr>
<td>(including the borough of Harwich.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thurstaston, E.</td>
<td>23,640</td>
<td>5,942</td>
</tr>
<tr>
<td>Uttlesford or Uteslow, N. W.</td>
<td>59,550</td>
<td>17,257</td>
</tr>
<tr>
<td>(including the corporate town of Saffron Walden.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waltham (a), W.</td>
<td>25,240</td>
<td>8,531</td>
</tr>
<tr>
<td>Winstree, E.</td>
<td>23,790</td>
<td>4,411</td>
</tr>
<tr>
<td>Witham, Central</td>
<td>37,830</td>
<td>10,999</td>
</tr>
</tbody>
</table>

There is no city in Essex. There are nineteen market-towns: three of these are parliamentary boroughs; Colchester, on the Colne, population of the borough and liberty in 1831, 16,167; Harwich, at the mouth of the Stour, population in 1831, 4,597; and Maldon, on the Blackwater, population in 1831, 3,831. Chelmsford, the county town, is on the Chelmer; population in 1831, 5,435. Of these places, as well as of Barking, a market-town on the Roding (population of the town ward in 1831, 3,404; of the whole parish, which includes Ilford, 8,635), an account is
given under their respective names. Of the other towns
we subjoin an account.
Billerica is in the hundred of Barstow: it appears in
our ancient records, under the name Beleua, which is probably a variation of the old word Baleua or Banleua (in French Banlieu), the territory or precinct round a manor or
borough. The town stands on an eminence on the road leading from London, through Bocking, to Rochford and Southend. In ancient times the market was considerable, but for a long time past it has been much decayed. The
town has been much improved of late years by a number of
good houses, and from its situation commands a beautiful
prospect over the valleys which extend southward to the
Thames. It is in the parish of Great Barningham or Barningham, the church of which is about a mile and a half or two miles south of the town. There is a chapel in Billerica, sup-
posed to have been founded in the fourteenth century: the
tower, which is surrounded by a handsome structure, may
be the remains of the chapel: the body of the chapel is of more modern
origin. There are places of worship for Baptists, Independents, and Quakers.

The inhabitants of the parish of Great Barningham, in 1831,
were 1877, of which about two-fifths were engaged in agri-
culture. There is a weekly market on Tuesday. There
are scarcely any manufactories. The living is a vicarage,
with the chapel of Billerica annexed. By the Education
Returns of 1833, there were in the parish twelve day
and five night schools, with 260 children, and two Sunday
schools with 171 children. One of the day-schools, with
49 scholars, has a small endowment. There is a parish
alms-house for poor women.

At Blunts-walls, near Billerica, are some earth works,
the banks and rampart of an ancient fort, enclosing an area of
about four acres: within the area were some artificial
mounds, now chiefly levelled. Some remains of Roman
pottery, several Roman copper coins and two silver coins,
one of Trojan and one of Adrian, have been found in
the neighbourhood.

Barking is in the hundred of Hindeford, and on the
north bank of the Plym: it is on the high road from
London to Norwich, through Bury, 404 miles from London
and 114 from Chelmsford, the county town. Antiently the
manor of Barking belonged to the king in fee as of the
comprehending the neighbouring parish of Rayne as well as
that of Barking: part of the lands in it belonged to the
bishops of London; it was alienated by Bishop Ridley at
the time of the Reformation: the manor-house (long since
destroyed) was an episcopal palace. The parish was dis-
membered from that of Rayne, of which it was previously a
hamlet, about the time of John or Henry III., the
former of whom constituted it a market-town. The growth of
the place is to be ascribed to its situation at the junction of
the high roads from London to Cambridge, via Ely and
Safford, and from London to Norwich. A range of
buildings of inns and lodging-houses for the reception of the
numerous pilgrims to the shrines of St. Edmund at Bury, and
our lady of Walsingham in Norfolk. At the Reforma-
tion this source of its prosperity failed, and the town, and
the church, at the west end, is of early English, and is sur-
mounted by a lofty shingled spire of much later date. This
church was enlarged in the time of Henry VIII., the
expense of the alteration being partly defrayed by the
revenues of the monastery of Barking. There are places of
worship for Independents, Baptists, Quakers, and Methodists.
Barking Church is remote from the town: it is spacious and handsome, and chiefly in
the perpendicular style: the tower is lofty and well designed. In a
neighbouring hamlet, Barking Church, is an ancient pri-
tice, formerly the parish church. Some coins, sepulchral urns, and other Roman antiquities, have been found.

The parliamentary returns for 1832 assign to the parish of
Barking an area of 8,790 acres, 703 inhabited houses, and a population of 3,422, about one-sixth agricultural: to
that of Bocking an area of 3,800 acres, 647 inhabited houses,
and a population of 3128, about one-fourth agricultural,
giving an aggregate of 6,300 acres, 1,353 houses, and 6,550
souls, a proportion of population distributed over a small
degree superseded by that of silk and crape, which is carried
on to a considerable extent. The market is on Wednesday
for corn, eggs, poultry, and occasionally cattle and live-
stock of all kinds. There are several fulling and corn mills
on the Pant.

The living of Barking is a vicarage, of the yearly value of
212l., with a glebe-house, in the archdeaconry of Middle-
sex: that of Bocking is a rectory, of the yearly value of
952l., with a glebe-house, in the peculiar jurisdiction of the
Bishops of Ely and Norwich. Barking has two poor rate
assessments: one for Poor Rate, and one for Poor Out
relief, or that of his commissary, who is called Dean of
Bocking.

There is at Bocking an almshouse or hospital, originally
for seven poor people, but now divided into nine tenements, and
being leased out to different individuals. The returns made to parliament show that there were in the two parishes in 1833
twelve day or boarding and day-schools (two of them with 255 to 275 scholars, endow-
ded, and three others with 340 scholars, supported by
benefactors), containing 813 to 833 scholars; one dame or
infant school, with 60 or 70 scholars; and four Sunday-
schools with 549 scholars.

Coggeshall is in Lexden hundred, on the northern
bank of the river Blackwater, 44 miles from London by
Bishops Stortford, and 18 from Colchester. The road
road turns off from the Ipswich and Norwich road. It
is sometimes called Great Coggeshall, to distinguish it from
the adjacent hamlet of Little Coggeshall. This town has by
some antiquaries been considered to be the Cenonon
Antonius; and several Roman remains have been found
in and about the town, but these are not deemed by others
sufficient to prove anything more than that a Romish villa
existed here. Morden, the historian of Essex, ascribes the
origin of Coggeshall to an abbey, founded here in 1142 by
the monks of St. Albans and Maud, his queen, for Cistercian monks. To this abbey succeeding princes granted various privileges,
among which was that of holding a market weekly.
The yearly revenue of the abbey at the dissolution was 2984l. 5s. 2d., and
an chantry. The town was formerly much en-
graced in the clothing trade, and assisted houses, with a
white baxe of superior fabric, called Coggeshall Whites.
The clothing trade has much declined for many years
past.

The town is irregularly laid out, and the streets are
narrow and ill paved. The church, at the north-eastern
end of the town, is a spacious and handsome building in the
Perpendicular style of English architecture: the windows,
especially the east window, are large and handsome: there
are also three other windows in the north side of the Pant or bap-
tisterium, of which the abbey is yet remaining; and near it is a bridge of three
arches, originally built by King Stephen over a cut made
to convey the water of the river nearer to the abbey. The
abbey has some good plain lancet windows, and the interior
of the church is very pleasing. The street is occupied as a farm-house. At Little Coggeshall, a hamlet of the
town, half a mile south of it, said to have been once
a distinct parish, were formerly two churches, one of them
built by the monks of the abbey for their own use, the other
the parish church: the former has been long demolished;
the latter, or what remains of it, is now used as a barn.
There are meeting-houses for Independents, Baptists,
Quakers, and Methodists.

By the returns of 1831, the parish comprehended an area
of 2,770 acres, and had 628 inhabited houses, with a
population of 3227, about two-sevenths agricultural. no
silk manufacture has been introduced here, and constitutes the principal manufacture of the place; that of woollens has declined. Some of the inhabitants are engaged in toy manufacturing. There are places valuable for the growth of corn, butter, eggs, and poultry, and occasionally live stock.

The living is a vicarage, of the yearly value of 215l. with a glebe house, in the archdeaconry of Colchester.

There are three unendowed almshouses near the church, and three almshouses for the relief of the poor, erected by the Rev. H. G. Balfour, for 1833 assign to Coggeshall eleven day, or boarding day, or evening schools, one endowed and one Lancasterian, with 294 scholars; thirteen dame or infant schools with 169 scholars; and six Sunday-schools with 490 scholars.

Dunmow, or Great Dunmow, Dunmow hundred, on the south-west bank of the river Chelmer, 38 miles from London by Epping, Harlow, and Hatfield Broad Oak; 40 by Chigwell, Abridge, and Ongar; and 42 by Chelmsford, Great Waltham, and Barnston. Great Dunmow is consis-
tently the most populous of the six stations in the Roman station Caesaromagus, which others fix near Wuford, two miles south-west of Chelmsford. A number of Roman coins, of different emperors, have been found here. It is on a Roman road, crossing the county from west to east from Hertford to Colchester.

Dunmow is pleasantly situated on an eminence, and consists principally of two streets. The market-cross in the centre of the town was erected in 1758, and repaired in 1761. The church stands a considerable distance from the market, which is in the middle of the town, with 330, and forms a group called Church End. It is a spacious building, with an embattled tower at the west end; it has some portions in the Decorated style, and some in the Perpen-

dicular style: the west window, which is very fine, is of De-
corated style. It has a meeting house for Independents, Baptists, and Quakers.

The area of the parish is 7910 acres; there were in 1831, 459 inhabited houses, and 2462 inhabitants: nearly one-
half of the population is agricultural. The manufacture of lace and straw hats is carried on. Some sacking and coarse cloth are made. The market, which according to our latest authorities has been dis-
continued, was on Saturday.

The living is a vicarage of the yearly value of 421l., with a glebe house, in the archdeaconry of Middlesex. There is an almshouse for six poor persons.

About two miles east of Great Dunmow is the village of Little Dunmow (population in 1831, 378), where was a priory of Augustinian canons, founded in 1104 by the Lady Joan de Rale, wife of Roger de Bay, Bishop of London. It had a yearly value of 173l. 2s. 4d. gross, or 150l. 3s. 4d. clear. The monastic buildings are now razed, and the site partly occupied by the manor house. The priory church was a large and stately fabric, partly in the Decorated and partly in the Early English style of architecture. The roof was supported by pillars, having capitals ornamented with oak leaves elegantly carved. Some of these remain in the part now used as the parish church. The well-known custom of the water which descended from a fountain was conveyed to the manor of Little Dunmow. [Dunmow Bacon.]

Easton Lodge, the seat of Viscount Maynard, is situated on high ground in a spacious park about two miles north-west from Great Dunmow. It is a venerable pile of the Elizabethan period and style. In the returns of schools made to parliament for 1833, no account is given of those at Great Dunmow, except that there was a national school for girls, containing 103 scholars; and that a national school for boys, suspended from various causes at Christ-mas 1832, had at the time of the suspension an average attendance of 75.

Epping is in the half hundred of Waltham, and on the high road from London to Norwich by Newmarket, 17 miles from London. The principal part of the town, called Epping Green, is about a mile and a half a mile in length, lined with irregularly built houses, and having in the centre a row of decayed mean-looking shambles. The church is situated two miles north-west of the street, and with the houses grouped round it constitutes what is distinguished as Epping Upland. The church is pleasantly situated on a rising ground: it is dedi-
cated to All Saints, and is not distinguished by its archi-
tecture. In the 'Street' is a chapel of ease originally belonging to the abbot and monks of Waltham, to whom the great tithes had been granted, and who kept the parish in their own hands as a curacy. The chapel is now vested in trustees for the benefit of the inhabitants. It stands at the London entrance to the town, and has lately been rebuilt. There are places valuable for the growth of corn, butter, eggs, and poultry, and occasionally live stock.

The parliamentary returns for 1831 assign to Epping an annual inhabited district of 2530 acres, with 2624 inhabi-

ants, of which 83 houses and 427 inhabitants are in Epping Upland and the hamlet of Ryhill, the last in Harlow hundred. In Epping Upland four-fifths of the population is agricultural, in the whole parish about two-fifths. The surrounding country is celebrated for butter, pork, and sausages, of which articles it furnishes a considerable supply to the metropolis. The market is on Friday. In the spring great numbers of sucking calves are brought to Epping market from Suffolk, and those parts of Essex were formerly the fair ground of the county.

The living of Epping is a vicarage 'in the peculiar jurisdic-
tion of the Court of the Commissary of London, concurrent

with the Consistorial Episcopal Court.' [Lewis's Top.

Dictionary.] Its yearly value is 729l, with a glebe-house:
the chapeiy is of the yearly value of 120l, arising from en-

dowments.

The returns made to parliament in 1833 assign to the parish of Epping four infant or dame schools, with 50 chil-
dren, eight boarding or day schools (one of them a charity school), and one charity school for boys. About 70 girls from this parish attend the national school of Thodyton Gannor or Thedyon Gernon (two miles south-east of Epping Street), to which the parishioners of Epping contribute largely.

The parish of Epping is Copped Hall, a mansion erected near the site of an older structure raised by the monks of Waltham Abbey when they had possession of the manor; it was built near a century ago, and has since been much improved. It is one of the finest seats in the county. Near the mansion are the remains of an ancient camp, probably British, now overgrown with trees, called Ambreys, or Amberbury banks.

Epping gives title to Epping Forest, a considerable tract of waste land in the south-west part of the county. This forest was formerly called the forest of Essex, being the only forest in that county, the whole of which was antiently comprehended in it. By a charter of king John, dated 25th of March, in the fifth year of his reign, and confirmed in the eighth of Edward IV., all that part of the forest east of the remains of an ancient camp, probably British, now overgrown with trees, called Ambreys, the boundaries of which were formerly known as the forest of Epping, have been disafforested. The forest was further reduced by a perambulation made in the twenty-ninth of Edward I., in pursuance of the Act of Parliament for the disafforestation of forests; but the boundaries of it were finally determined by an inquisition and perambulation taken on the 8th of September, 1640, by virtue of a commission under the great seal of England, in pursuance of an act of the 16th of Charles I., for settling the boundaries of the forest. The boundaries as thus settled include the whole of the eleven parishes of Wannsted, Leyton, Walthamstow, Woodford, Loughton, Chigwell, Lambourne, Stapleford Abbotts, Waltham Holy Cross, Epping, and Nazeing, and parts of the ten parishes of Chingford, Stratford, East Ham, West Ham, Little Ilford, Great Ilford, Barkingside, Dagenham, Haverton, and Thoday Bois. The extent of the forest is estimated at 60,000 acres, of which 48,000 acres are estimated to be enclosed and private property; the remaining 12,000 acres are the uncleasued wastes and woods. What is called Lambton, on the east side of London, is part of this waste. [Fifteenth Report of the Commissioners of Land Revenue, quoted in Young's Agriculture of Essex.]

Tending hundred had been disafforested by king Stephen before the grant of John mentioned above. [Moran's His-

tory of Essex: vol. ii. p. 417.]

Parson's piece contain the churches of All Hallows, Nether

dorners in what are termed 'gipsy parties;' and on the first

Friday in July a kind of fair is held round the spot once

occupied by an enormous oak called Fairlop oak. The fair

retains the title of Fairlop Fair. On Easter Monday there

is a stag-hunt much patronized by the ancient gentry of

London. The kennel for the hounds and the building belong-

ing to the hunt were rebuilt several years ago at an expense

of many thousand pounds.

Gray's Thurrock is in the hundred of Chafford; it is on

the bank of the Thames, 24 miles from London, through
Romford, Uppminster, and Stifford. This little town consists chiefly of one irregular street on a creek of the Thames, accessible to boats and other small vessels. The church, near the north end of the town, is built in the form of a cross, with a tower on the north side. The church is 127 acres; the number of inhabited houses by the census of 1831 was 243, the population (including that of the liberty of Lee, in East Tilbury parish, Barstable hundred), 1248. The population had greatly increased before the census, owing to the number of labourers employed in brickmaking. The market is on Thursday, and is chiefly for the sale of corn; it is much frequented: there is one yearly fair.

The living is a vicarage of the yearly value of 160L, with a glebe-house: it is in the archdeaconry of Essex, and poor-law union of West Thurrock. The living is valued at £150. There are 138 scholars, 20 of whom (boys) were educated from the proceeds of an endowment; and two Sunday-schools, with 202 children.

There are two villages near this town which also bear the name of Thurrock: Little Thurrock, to the east of the town (population 592), and West Thurrock, to the west of the town (population 804). The chalk-quarries of Purfleet are in the parish of West Thurrock. In Little Thurrock parish, and in Chadwell parish, which adjoins it, are some remarkable caverns or holes in the chalk, to which tradition has assigned the name of the ancient Danes. It is conjectured that they were granaries of the ancient Britons. They are also called 'Dane-holes,' from having been used by these invaders as lurking-places or receptacles for plunder.

Chelmford is in Hinckford hundred, on the north-east bank of the river Colne, and on the road from London to Bury by Norwich, 46½ miles from London, and 17½ miles from Chelmsford. It is supposed that a market was established here in the Saxon times: a hill at the upper end of the town, on which, for several centuries it was held, retains the name of Chepping hill.

The town stands on the slope of a gravelly eminence, rising from the river, and consists of the main street along the Norwich road, and some other streets. The church is near the centre of the town, and is a large square structure, erected in 1218, of accommodating 1,200 persons, and consisting of a nave, chancel, and side-aisles, chiefiy in the Perpendicular English style: the chancel is in the Decorated style, with a good window of five lights, and others of two lights. There is a tower at the west end surrounded by a wooden spire, the third that has been erected on the same tower, two previous ones having been destroyed by lightning. There are places of worship for Independents, Baptists, and Quakers. There is a house of correction at Halsted.

The market town of Chelmsford has an area of 4620 acres; and had, in 1831, 999 inhabited houses, and 4637 inhabitants: about three-eighths of the population was agricultural. The silk manufacturer is carried on to a considerable extent: the manufacture of baste and other light woollens has been developed, and, in consequence, a market is held every Friday, one of the principal in the county for corn and occasionally for cattle and other live stock. Some hops are grown round the town.

The living is a vicarage, of the yearly value of 300L, with a glebe-house, in the gift of the bishop of London: the minor canons of St. Paul's are the impropriators. There was a college of priests at Halsted before the Reformation; the foundation was for eight, but it is doubtful there was ever the full number. The revenue at the dissolution was 267L. 5s. 11d.

There were in Halsted, according to the returns made to parliament for 1833, ten infant or dame schools, with 150 scholars; four day-schools, one supported by voluntary contributions, containing 40 children, and three others with 100 children; and four Sunday-schools, with 552 scholars. There is a grammar-school, founded by Dame Mary Ramsey, for 40 poor children of Halsted and Colne Engaine (a neighbouring parish), which is not distinctly mentioned in the return.

A church house in this parish is a Greek inscription, brought from a village near Smyrna, where it was erected one hundred and fifty years before Christ, to the honour of Crato, a musician. ( Beauties of England and Wales, 1803.)

Near Halsted are the remains of the ancient manor-house of Stansted Hall.

Manningtree is in the hundred of Tendring, on the estuary of the Stour, 60 miles from London, through Chelmsford and Colchester. This place was antiently known by the name of Sceldinehov; the origin of its present appellation, formerly written Many-Tre, is not known. It is a small place, irregularly laid out. The church or chapel, built out of the ruins of a monastic cell, which is now called the hospital, was formerly very small, but has been lately enlarged. There are meeting-houses for Independents, Quakers, and Methodists.

The parish, or rather the chapel, by the return of 1831, comprised only 168 acres, and had 224 inhabited houses, and a population of 1237, a very small proportion of which was agricultural. Manningtree appears to be the residence of an unusual proportion of genteel families. A considerable trade in malt is carried on: and corn, coal, deals, iron, and nails are shipped from the port. The town contains 112 houses.

The living is a perpetual curacy, united with the rectory of Mistley (of which the parish of Manningtree is a dependency) and the vicarage of Bradfield. The whole are of the yearly value of 100L, with a glebe-house. They are in the archdeaconry of Colchester.

The chapel was contained, in 1833, one national school, containing 223 children; and one Sunday-school, with 60 children.

Mistley is adjacent to Harwich. Mistley Hall, the seat of the Rigby family, is on a pleasant eminence in the midst of gardens and plantations elegantly laid out. On the bank of the Stour is a quay with warehouses, at which considerable trade in corn, malt, and coal is carried on. These belong to the proprietor of Mistley Hall as Chipping Ongar from another parish of the same name (High Ongar), is in Ongar hundred, near the right or west bank of the Roding, and the left or east bank of the Cripsey brook, just above the junction of these two streams: it is 21 miles from London by Woodford bridge, Chigwell, and Abingdon; or 24 miles by Epping.

A castle was built here by Richard de Lucy, one of the principal nobles of the time of Henry II.: the keep stood on the summit of a lofty artificial mound. The castle having been pulled down, it was converted into a weal, or market on Sunday, one of the principal in the county for corn and occasionally for cattle and other live stock. Some hops are grown round the town.

The town chiefly consists of one long and wide street, extending from the bridge over the Cripsey brook, up the slope towards Mistley. At the entrance is a tower, in a central situation, is a small neat structure: the windows are remarkably small, so as to resemble the loop-holes of a castle. The church contains a monument of Jane, one of the daughters of Oliver Cromwell. Many Roman bricks have been found, and incorporated into the buildings. Several of the Roman buildings are said to have been dug up in the churchyard. The principal road from Loundium (London) to Camulodunum (Colchester) is supposed by some to have passed this way, though others make it pass near or through Romford and Chelmsford. The town is within the area of an ancient entrenchment, which may still be traced on its different sides. It was antiently called Ongar ad Castrum, perhaps with reference to this entrenchment. There is an independent meeting-house.

The area of Manningtree parish is 280 acres; the number of inhabited houses in 1831 was 134, and the population 798, of which a small proportion is agricultural. The market is on Saturday.

The living is a rectory in the archdeaconry of Essex, of the yearly value of 127L, with a glebe-house.

There were in 1833 nine boarders or day-schools, with 140 scholars; and two Sunday-schools, containing 95 children. One of the day-schools is endowed.

High Ongar, which is on the other side of the Roding, is a much smaller place than Chipping Ongar and had, in 1831, a population of 1265, chiefly agricultural.

Rochford is in Rochford hundred, on the Broomhill river, which is navigable to within about one mile of the town, 40 miles from London through Romford, Brentwood, and Billericay. The town consists principally of two streets running one into the other in the form of the letter T: the houses are ill built: the market-house, which is of timber, stands...
near the centre of the town, and has on it the date 1707: it is not used as a market-house now. There are two bridges over the river, which close to the town is an inconvenient brook. The church, which is a little removed from the town, is a good-sized building, consisting of nave, chancel, and side aisles, with a lofty brick tower at the west end. The wall of the church was covered with thin stone, and the population of 1256, to which more than a third was agricultural. The chief trade is in corn. The market is on Thursday.

The living is a rectory, in the archdeaconry of Essex, of the yearly value of 570L., with a glebe-house.

Rochford, Rectory of Rochford, is in the deanery of Shoeburyness, and within the jurisdiction of the seat of St. Andrew's, and at the east end of the town. It is the parish church of the place, and has a population of 1256.

Rochford is in the liberty of Haverting atte Borough, and on the Bourne brook: it is a great thoroughfare, being on the high road from London to Chelmsford, Colchester, Ipswich, Bury, Norwich, Yarmouth, and other large towns in Suffolk, Norfolk, and Essex; between 11 and 12 miles from each of these. It is 7 miles from London, which is disputed, some contending that it is derived from Roman ford, others from two Saxon words signifying broad ford. This place, or some spot in the neighbourhood, is supposed to be the site of the Durolithum of the Itinerary of Antoninius.

The town consists almost entirely of one long wide street, near the centre of which is the market-house and town-hall, which was repaired in 1768 at the expense of the crown. The houses are tolerably good, and the street is paved with cobbles. The northern end of the town is on the left hand, and is tolerably large building erected in the early part of the thirteenth century; it is dedicated to the Virgin Mary and St. Edward the Confessor, and consists of a chancel, nave, and north aisle, with a spire and octagonal turrets. The chancel was rebuilt in 1711, and the figure of Edward the Confessor in stained glass, the arms of that king, and another coat of arms. The Independents have a meeting-house at Collier's Row, a hamlet of the parish, which was erected near the end of the thirteenth century. There were formerly cavalry barracks at the London end of the town: they were of wood, and have since been pulled down.

The parish comprises an area of 3340 acres, and had, in 1831, 766 inhabited houses, and a population of 4294, of which less than one-third is agricultural. The general market is on Wednesdays, and has quarter sessions for which are held at Rochford. Commissions for trying felonies within this liberty may be obtained by a small payment to the crown, but no commission has been applied for for many years. (Leyden's Essay on English Fishing, 1689.)

The parish of Hornchurch, of which Rochford was originally included in the parish of Hornchurch, the limits of which were once coextensive with those of Havering liberty, but separated from it by act of parliament, a.d. 1638. The living is of the annual value of 80L., with a glebe-house, in the patronage of the Vicar of New Church, and the charity of the town. There were, before the Reformation, a chantry and a small gild attached to Rochford chapel, the lands of which were valued at 4L. 10s. 2d. per annum.

There were in 1834, in the parish, one endowed day-school with 121 scholars, six other day-schools with 172 scholars, and two Sunday-schools with 143 scholars.

Walden or Saffron Walden is in the hundred of Uttlesford, which occupies the north-western extremity of the county; it is near the river, and a little to the right of the road from London to Newmarket and Norwich, 42 miles from London. It was conjectured by Doctor Stukely, but without sufficient authority, that this was a Roman station. Its name is derived from two Saxon words, Weal, or wide, and she, a valley: its epithet 'Saffron' is derived from the great quantity of that plant formerly cultivated in the neighbourhood: this cultivation has been long abandoned. At the period of the Domesday survey the lordship of this town was held by a Norman knight, one of the companions of the Conqueror. This nobleman erected at Walden a castle, which, judging from the remains of it, must have been of great strength. The remains occupy the highest part of the town, and consist of some parts of the walls and towers built with flint bound together by a very hard cement. Geoffrey, the grandson of the founder of the castle, having deserted the party of Stephen for that of the Empress Maud, obtained of her permission to remove the market from the neighbouring village of Weeldehill, to the castle of Walden; but, however seized by Stephen, he could only obtain his freedom by the delivery of his castles, Walden being one of them, to the king. The same nobleman founded here in 1136 a Benedictine priory, which was some years later raised to the rank of an abbey, and abbeys obtained several valuable benefactions, and had, at the time of the dissolution, a yearly revenue of 450L. 15s. 11d. gross, or 375L. 18s. 1d. net. The site was granted to Sir Thomas Audley, lord chancellor, and the title of Lord Audley of Walden was in the year 1303 granted to the Archdeacon of Essex. In the monastery, enlarged by a subsequent addition of 300 acres, stand the present mansion and park of Audley End.

The town is irregularly laid out, and the houses are many of them considerably antiquity. The church is a large and very elegant church of the late thirteenth century. It has a nave and aisles, large south porch, and chancel and aisles. The clerestory windows of the nave are very large and of six lights; those of the chancel, which has a lower roof, are much smaller, and two in each arch. The north window of the chancel, which is a beautiful one, has a spire and octagonal turrets. The stonework of the porch is covered with lead, appear to be of later date than the church. The interior of this church is very fine, the piers being remarkably light and elegant. Rickman's Essay on Gothic Architecture. Since the above extracted account was written the wooden spire has been replaced by one of stone more in character with the rest of the building. There are two places of worship for Calvinistic or Particular Baptists, and one for Arminian or General Baptists, and one each for Independents, Quakers, and Wesleyan Methodists. The town-hall is a noble and spacious building erected of stone in 1577, and the market house is a noble and spacious one erected on the site of the castle for a museum, and for the meetings of a literary society established in the town. Audley House, or as it is usually termed, Audley End, the seat of Lord Braybrooke, is a noble mansion bequeathed by the Earl of Suffolk, who at the time of James I., had inherited the estate of the Lord Audley of Walden. The grounds are beautiful, and the Cam, which flows through them, though here an inconsiderable stream, expands so as to form a considerable sheet of water in front of the house. The park, or rather plantation, which the estate contains, is still one of the finest in the county; it is said to have been laid out by Leonardo, and its area is given at 190,000 acres. The house contains some interesting portraits and other pictures. On a green near the town is a singular remain of antiquity called the Maze. It consists of a series of windings into four outworks cut in the chalk, which he rises to the surface. The architecture here is unknown: Dr. Stukely conjectures that it was a British curvus or place of exercise for the soldiery. A short distance from the town are the remains of an antient encampment of an oblong form called Poll ditch, or Ditches. The south bank is 730 feet long; 20 high, and 50 broad at the base, and 6 or 8 wide at the top: the west bank is 588 feet long: both banks and ditches are extremely bold and well preserved.

The parish of Saffron Walden contains 7360 acres, and had in 1821 941 inhabited houses and a population of 4762, of which about one-fourth was agricultural: there are
many genteel families in the town. The chief trade is in barley and malt: the market is on Saturday. Walden is a
municipal though not a parliamentary borough. By the
 Municipal Reform Act the corporation consists of a
 mayor, four aldermen, and twelve councillors. The borough is co-
extensive with the parish.

The living is a vicarage in the archdeaconry of Colchester,
of the annual value of 257£, with a glebe-house. Lord
Brabrooke is patron and impropriator.

The town was in 1533 one infant school with 70 children:
two national schools, containing 124 boys and
106 girls (with the addition of 10 boys on Sundays); a
school for 25 boys and as many girls, chiefly supported by
Lord Brabrooke; and six other day-schools with 212 chil-
dren, 100 boys, and 112 girls (all entirely supported by
the church); the rent of the abbey was 10s. 6d. per annum.

Waltham Abbey, or Holy Cross, is in the half-hundred of
Waltham, 12½ miles from London, a little to the right of the
road to Ware, Royston, and Huntingdon. It is on the
river Lea (which here separated into several channels,
now receiving back of the town) near the mouth of the
Cobbin brook, which flows a short distance from the
town on the east and south.

The first notice of Waltham occurs in the reign of
Canute, whose standard-bearer, Tovi, founded here a reli-
gerous house, with tithes, prebends, and profane revenues.
Augustine. The place derived sanctity and name (Holy
Cross) from a cross with the figure of Christ upon it found at
Montacute and transferred here, to which miraculous powers were ascribed. Harold, after the battle of
England, entered the abbey of Tovi, a.d. 1062, furnished it with
ample endowments, increased the number of canons to 12,
one of whom had the rank of dean, rebuilt the church, and
established such a school of learning as the state of the
age admitted. When the unfortunate Harold fell in the
battle of Hastings, a.d. 1066, his body, which had been
given up to his mother, was brought to Waltham for inter-
ment and his tomb erected. William the Conqueror treated
the religious of Waltham harshly, and deprived them of
their monastic revenues, but left their endowments untouched
nearly so. In the reign of Henry II. (a.d. 1177) regular
canons were substituted for seculars, the number enlarged
to 16, the endowments of the establishment augmented,
and the dignity of abbot conferred upon the head of it.
Subsequently marches formed the establishment, Henry
III. frequently resided in the abbey, and granted to the
inhabitants of the village the privilege of a market and a
fair. Some accounts make the market more ancient. In
the reign of this king, a.d. 1242, the conventual church
was again restored, and the church of the king, the
remains of which being present, the yearly revenues of the
abbey at the dissolution were 107£ of glebe-house, various,
or 900£. 4s. 3d. clear.

The town consists principally of one main street, running
nearly east and west. The church, formerly part of the
estate, is near the centre of the town. As the conventual church
it was very extensive, consisting of nave, transept, choir,
and chapels. At the intersection of the transept, which may
still be traced, rose the great tower, which contained a ring
of bells, belching forth of the town falling in the
rest of the church. The altar of the abbey is sur-

vestry and school-room, under which is a fine crypt.
Another little chapel, at the south-east end of the church,
is now a repository for rubbish. These chapels have some
beautiful and well-executed portions in the Decorated
style. There are here various inscriptions with
windows of different dates. The font is apparently very
antient, and there is a fine wooden screen. The building
has been much injured and its beauty defaced by dilapidation
and alterations, but it is still well worthy of attention.

The remains of the tower of the abbey, the remnants of
the abbey church, the remnant of the nave of the abbey are but few. They consist of an entrance-
gateway, and bridge across an arm of the Lea, which bounds
the enclosure of the abbey on the west side; some walls,
and a few vaulted arches in a garden belonging to the abbey
church, which are on the east side of the church; the
dry-stone wall of the churchyard is really the wall of
the abbey; and what is now the abbey farm is said to have
been antiently the stables. The gateway is in a much
later style of architecture than the church.

In the gardens formerly belonging to the abbey, now occupied as a nursery-
ground, is a plantation of poplar trees, subject to the

There are at Waltham Abbey meeting houses for
Baptists and Wesleyan Methodists.

The parish of Waltham Abbey is extensive, comprehending
11,876 acres: it had in 1831, 769 inhabited houses, and
a population of 4104; but of these 364 houses and 1062
inhabitants were in the three hamlets of Holyfield, Seward-
stone, and Upshire; leaving for that part of the parish
which contains the town 416 houses and 2202 inhabitants:
only a small proportion of the population of the town divi-
sion lives there; it is the bushy part of the
hamlets is so. The powder-mills belonging to go-

government employ many hands: many are engaged in
the printing of silk handkerchiefs, and some in the manufac-
ture of pond silk; some also, though not in the town division, are
engaged in the spinning and spinning silk. The market is on
Tuesday.

The living is a donative curacy, in the peculiar jurisdic-
tion of the bishop of London: it is of the annual value of
£120.

There were in the year 1833 one infant school, with 115
children: three day-schools, viz., one endowed for 20 boys
and 20 girls, one national school for 60 girls, and a school
with 24 boys at High Beach, besides many small private
day-schools; the annual expendent for the support of the
church, including contributions, was £31, 10s. 6d., and for
the support of the school £133, 11s. 6d., with 42 boys;
and four Sunday-schools, with 310 children.

Waltham is in the hundred of Waltham, and on the high
road from London to Norwich by Ipswich, 35 miles from
London.

The town consists of two parts: the larger portion
consists of one main street along the high road and a
short street across the fields from the church; the
church, which is the church, is situated half a mile to the north of the principal
part, on Chepping Hill, mentioned above. There is no

kind of manufacture carried on; but the trade of the place
arises from the wants of the neighbourhood, and its situ-
a

ation on a great public thoroughfare. Several genteel
families reside in the town; and a mineral spring, Waltham
Spa, attracted some years since, and perhaps still attracts,
visitors in the summer. The church is a tolerably large
building, and contains the following places of worship: or Independents, Baptists, Quakers,
and Catholics; and several almshouses, but none very extensive or richly endowed.

The parish comprehends an area of 3280 acres; and had,
in 1831, 532 inhabited houses, and a population of 2735, of
which less than a fifth was agricultural. The market is on
Tuesday.

The living is a vicarage, in the archdeaconry of Colchester,
of the yearly value of £734, with a glebe-house, in the gift
of the bishop of London.
There were, in 1833, fifteen day-schools with 361 children; two boarding-schools with 40 girls; and one Sunday-school with 200 children, and a lending library attached. Of the day-schools, one (for 100 boys and 50 girls) is partly supported by an endowment; another (for 70 girls) partly by voluntary contributions.

The village, or hamlet, from which the name of Harlow is derived, is an ancient manor-house, different parts of which have been erected at very different periods. A tower gateway of curious architecture is supposed to be as old as the time of Stephen.

Aside the above market-towns, there are several villages which are of sufficient importance of people to call for notice. The following were formerly market-towns, and some of them still retain their place as market-towns in many of our common maps:—Great Bardfield, Brentwood, Dedham, Harlow, Hatfield, Hornord, Ingatestone, Leigh, Thaxted, and Witham.

Hatfield is in the half hundred of Frosolone or Freshwell, on the south bank of the Panta or Blackwater, one of which has a strong brick bridge. In the south aisle of the church are some coats of mail, &e., said to have belonged to the Lumley family. The population, in 1831, was 1029, about half of them agricultural. The market has long been given up.

The market is on the road to Chelmsford and Colchester, 13 miles from London and 11 from Chelmsford. Some Remainders of it obtained its present situation in the 13th century. The assizes for the county were formerly held here. The place consists chiefly of one main street along the high road, with irregular and mean houses: from its situation on a great thoroughfare, it has many public-houses and inns. The grammar-school of Essex, founded about 1277, for the benefit of the tenants of which are bound to put them in repair if ever the assizes should be held in the place again.

There is an ancient chapel in the town (for Brentwood is only a chapelery in the parish of South Weald, and the living a perpetual curacy), with a painted ceiling (ancient chancel is a small building, dedicated to St. Thomas & Becket, of whom it contains a fine screen, and a large and covered school: races are held in the neighbourhood; and at Wareley, not far off, are cavalry barracks. The area of the chapelry is 730 acres: the population, in 1831, was 1642.

The market has not been discontinued many years. There are two yearly fairs, at which a great number of cattle are usually sold: it is one of the fairs from which the farmers of the hundred get their live stock.

Dedham is in Lexden hundred, on the south bank of the river Stour, just on the right hand of the road to Ipswich and Colchester, at the head of the port of the river. The site of Richard II. this place was famous as one of the seats of the clothing trade. It is situated in a picturesque valley, and a small place, consisting chiefly of one street. The church is a large building in the Perpendicular style of English architecture; it has a fine tower at the west end with octagonal turrets crowned with rich pinnacles. There is a bridge over the Stour. The population of the parish, in 1831, was 1770, about half agricultural: many genteel families reside in the place. There is an endowed free grammar school, supported by a fine woolen manufacture and of a considerable trade. The church is in a central situation, and is of tolerable size: it was originally in the form of a cross, with a central tower rising from the intersection of the transepts; this church was much injured by fire in 1714, and on its restoration a cupola was substituted for the tower: the church is adorned with much painted glass. There is a place of worship for Baptists, several almshouses, and a charity school.

At Harlow Bury, a mile north of the village, is a large ancient chapel, used as a barn or farm-office. It has a fine semicircular-headed door, the shafts of which have small panels like those of the Galilee at Durham. There are some small windows with round heads and others with pointed heads.

The parish of Harlow contains 4300 acres, and had in 1831 a population of 2101, above half agricultural. There are three corn, and three milk, fairs in the year for horses and cattle; the second, held on Harlow Common, and about three miles south of the village, is the most frequented: horses for all purposes, black cattle and other live stock, and wool, are brought for sale, and the fair attracts a considerable crowd for fifteen or twenty miles round, and even from the metropolis. The living is a vicarage of the gross value of 353l., with a glebe-house, in the archdeaconry of London.

A large sum of money (6000l.), bequeathed by Mr. Geo. Fawcett, has already been given or promised in the establishment of a day school and library at Harlow, and for furthering or otherwise advancing in the world those educated at the school.

Hatfield is in the half hundred of Harlow, on the road from London to Harlow to Dunmow, 30 miles from town: it is on the Pinye brook, which flows into the Stort. This place was formerly part of the royal demesne, from which circumstance it obtained one of its distinguishing epithets, Hatfield Regis: its other designation of Hatfield Broad Regis, was only a fag-end of land, and was barrased here in the Saxon times. A portion of this tree (if we may trust the accuracy of Mr. Arthur Young's statement) was yet remaining in Hatfield Forest, a mile or two north of the town, when that gentleman published his agricultural book: it was once an elm of remarkable size, and was estimated at the yearly value of 157l. 2s. 2d. gross, or 122l. 13s. 2d. clear. The parish, which is very large, had in 1831 a population of 1825, chiefly agricultural. The church has a western tower and a large porch in the Perpendicular style: other parts are of a character betokening a more ancient date. The Methodists have a place of worship. The living is a vicarage, worth 210l. a year, with a glebe-house, in the archdeaconry of Middlesex.

Hornord, distinguished from other two parishes of the same name by the epithet 'on the hill,' is in Hornord hundred, and is situated, as its name imports, on an eminence, from whence there is a fine view. The church is in the middle of the town; it has a stone tower, embattled. The parish had in 1831 a population of 511, chiefly agricultural. The church is a large and interesting building, the south porch of which is notable; and contains several monuments of the Petre family. There is an almshouse and an Independent meeting-house. Ingeston-Hall, a little way south of the town, was once the seat of the Petre family: it is a very ancient and irregular pile. The grounds and park of this estate are still extensive, and was formerly surrounded by a park. The population of the parish, which is small, was in 1831 789, chiefly agricultural; to these we may add perhaps 300 for that part of the village which is in Fryerning parish. It may be observed that the syllable Ing (or Iing, which appears to be a form of it), which enters into the name Ingeston, is found in the names of several other parishes or manors in this neighbourhood, as Fryern-ing, Margarett-ing, Mountneys-ing, Ginges-joiberd (commonly called Buttsbury), Ingrave or Ingr-nalp, and Trestling-ing or Thrustling-ing; to which we may add Burks-ing.
Raleigh or Rayleigh is in Rochford hundred, 34 miles from London. It was, at the time of the Domesday survey, one of the numerous lordships of Suene, who, having joined with early predecessors, retained his possessions. He built a castle here, of which some earthworks yet remain, consisting of a mound with an oval base, surrounded by a double ditch and embankments.

The village stands on an eminence, and has, at the upper end, the church, centrally placed, with portions of an earlier date: the tower has a short spire and, a staircase turret battlemented. The Baptists have a place of worship here. When Morant wrote, a weekly market was held at Rayleigh; it is now given up. There is a cattle fair also. The population of the parish in 1831, 1339, chiefly agricultural. The living is a rectory of the yearly value of 774l., with a glebe-house, in the archdeaconry of Essex.

Thaxted is in the hundred of Dunmow, 44 miles from London. St Benet, Hatfield Broad Oak, and Dunmow, this is a very ancient place, and probably existed in the time of the Saxons. It was incorporated by charter of Philip and Mary, and its government vested in a mayor, bailiffs, and chief burgesses; but the corporation became extinct in the time of James II., the corporate officers having retired from their offices on being served with a Quo Warranto.

The town is irregularly laid out; its chief ornament is the church, which is in the centre of the town, and is one of the finest in the county. It is mostly in the Perpendicular style, and has a nave and chancel with side aisles, transept, and tower at the west end. The nave is not so wide as either of the side aisles, from which it is separated by eight clustered pillars on each side with pointed arches. The windows are mostly large, and most of the ornament is of stone and painted glass, but the latter is much broken and otherwise defaced.

The north and south porches are richly ornamented with sculpture. The tower is sustained by buttresses, and is embattled, and terminated with a very rich crocketed spire, supported by flying buttresses. Most of the buttresses have side aisles with fine pinacles, and are enriched with panelling. The height of the tower and spire is 183 feet, which is also the length of the church: the breadth of the church is 67 feet. It is supposed to have been built in the fourteenth century. These are Thaxted meeting-houses for Quakers, Independents, and Baptists. There is a free grammar-school, which contained, in 1833, 30 boys on the foundation and 30 others whose education was paid for by their parents. Upon the same foundation 20 girls were educated at the school.

The population of Thaxted parish (which comprehends 5890 acres) was, in 1831, 2293, more than half agricultural. The living is a vicarage, in the archdeaconry of Middlesex, of £210, and a glebe-house. The market, which had been languid, was revived about the close of the last century, but was not much attended, and has since been again discontinued. There are two fairs in the year. There are several almshouses in the place, and the benedictions to the poor have been very considerable. Near Thaxted is the ancient hall, Horeham-hall, the seat of Sir William Smith: it is a castellated gothic mansion partly covered with ivy.

Beside the above, which have been market towns, there are several other villages which, from their importance, call for notice.

Ashdon, the parish of which, including the hamlet of Barlow End, had, in 1831, a population of 1103, is in the half hundred of Freshwll, three miles from Saffron Walden. In 1834, we visited the famous house, with its better and its dreadful battle fought between Edmund Ironside and Caute; but the battle was more probably fought at Assington in the hundred of Rochford. At Bartlow hills, in the parish of Bartlow, Cambridgeshire, two miles north of Bartlow church, there are numerous barrows, which have been regarded as the tumuli raised over those who were slain in this battle, but this rests on tradition only.

Brightlingsea (population in 1831 1784) is on the estuary of the Crouch, in Tendring hundred. The inhabitants are engaged in the oyster fishery. The parish forms a peninsula, surrounded by the marshes of the Colne and its inlets, except on the north-east side, where is the only entrance to the parish, except by a ford. The church is near this entrance, the village is a mile distant near the sea.

Morant speaks of an establishment for preparing coppers here, and 'the coppersers house' is marked in the Ordnance Survey. Brightlingsea is a member of Sandwich in Kent, and is a decemvir of the parish. It is said the population has nearly doubled within the present century.

Burnham is in Dengie hundred, on the north bank of the estuary of the Crouch, which has here a depth of water sufficient for a ninety-gun-ship. It had a good street to the quay, but the ruins of the church are nearly a mile from the village. The population in 1831, was 1398: the inhabitants are engaged in the oyster fishery.

Chigwell lies between Epping and Henham forests: from the high road to Chigwell, on the border of the latter, a most extensive view is obtained over the south of Essex and the Thames into Kent. There is an endowed grammar-school which, in 1833, had six scholars, and another endowed school with sixty boys. Population in 1831, 1815.

Chipping in Becomesend, and in the immediate neighbourhood of London. West Ham parish occupies the south-west corner of the county, and is bounded by the Thames and the Lea, by which it is respectively separated from the counties of Kent and Middlesex. It is divided into four wards: All Saints, Church Street, Plashow, and Stratford. West Ham had formerly a market, the charter for which was procured in the thirteenth century. There was formerly at Stratford Langthorn, in this parish, an abbey for Cistercian monks. The abbey having become redundant was sold to the monks of the marshes, and which it was built, the monks were removed to Burgestede (now Burstead), near Billericay, until 'one of the Richards, kings of England,' (probably Richard II.) repaired the abbey and brought the monks into it again. In 1807 the abbots of the abbey of Chipping were presented by the canons of Westminster to the reversion of the revenues of this house were estimated at 573l. 15s. 6d. gross, or 511l. 16s. 3d. clear. The chief remains now existing of the conventual buildings are a brick gateway, the entrance to the precincts, and an ornamented arch in the early English style, which appears to have been a gateway to the chapel: they are nearly half a mile south-west of the church. The site of the precincts was moated and contained about sixteen acres. West Ham church consists of a nave and chancel, and side aisles to both: it is large, but not distinguished for its architecture.

Stratford, which is one of the wards of this parish, lies along the road to Romford, Chelmsford, &c, and may be regarded as a prolongation of the suburbs of the metropolis, being joined to it by an almost continuous line of buildings, which extend from the village of Plashow to the River End in Middlesex. A new church has been lately erected here. The Newmarket road branches off from the Chelmsford and Colchester road at Stratford.

The population of West Ham parish was in 1831 11,580, of which 6643 were one-sixth agricultural. A considerable number of the inhabitants are labourers, employed in the East and West India docks at Poplar and Blackwall. Calico and silk dyeing and printing are extensively carried on: chemicals are manufactured, and porter is bottled there. The West Ham water-works supply the eastern suburbs of the metropolis with water. Several of the wealthier inhabitants of London have residences at West Ham.

The living of West Ham is a vicarage, in the archdeaconry of Essex, and in the gift of the crown: its yearly value is £1000. There are several dissenting meeting-houses.

There were in this parish in 1833 two infant schools, partly supported by contributions, with 150 children; three day schools with 257 children, some of whom were clothed; a national school, partly supported by endowment and subscription, with 50 boys; a school with 40 children, supported by contribution of Roman Catholics; another of 10 children, supported by Dissenters; and an infant school with 100 children, supported by public and private subscriptions; and four Sunday-schools, with 390 children. There were also many private boarding and day schools, containing 488 children.

East Ham parish joins that of West Ham. The church consists of a nave with two chancels; the upper chancel, which forms the eastern extremity of the church, is semi-circular at the east end, and has narrow pointed windows. Part of the walls of the nave and lower chancel are in the Norman style, as is the lower part of the tower; but the
battlements, partly in the Norman and partly in the Early English style: the tower is of much later date. In the churchyard is a monument of Edmund Nevill, Lord de Vere, who died a.d. 1359, which, with its effigy of a knight in plate armour, is a notable object.

Leigh is in the hundred of Rochford, about 36 miles from London. The houses are principally arranged in one street running along the foot of an eminence and on the bank of the Thames. The summit of the eminence commands a fine vista, and the view from it is one of the most striking in Essex. It is associated with a monument of the Nevill family, the churchyard, but, at his own desire, without any monument. At Green Street, a hamlet of this parish, is an ancient manor house, which was a seat of the Nevills in the 15th century, and is now occupied by a poor clergyman, and a place of worship for Wesleyan Methodists.

The Hedingham are in Hinxworth, and on a road branching off from the Bury and Norwich road at High Garrett, turn or go past it, and beyond Braintree, and on the north side of Bishops Tye, a little beyond the county for Suffolk. They formerly constituted one parish: from the time of Henry III. they appear as two: Sible Hedingham, on the south-west bank of the Colne, 48 miles from town; and Castle Hedingham, on the north east bank of the same river. We subjoin the following particulars respecting them.

Sible Hedingham, area 5490 acres. Population in 1831 2194. Living, a rectory in the jurisdiction of the Commissary of Essex and Herts, concurrently with the consistorial court of the bishop of London, of the yearly value of £964, with a glebe-house. Castle Hedingham, area 2600 acres. Population in 1831 1220. Living, a donative in the archdeaconry of Middlesex, of the yearly value of £129. The population of these places is more than half agricultural.

Sible Hedingham church is a neat and tolerably spacious building, supposed to have been erected in the reign of Edward III. There was formerly a chantry here, founded by a monk of the abbey of Luneburgh, or Luneborough; on the death of the chanter, now demolished, stood in the church: the house of the chantry priest is still standing; it had been originally built for the reception and entertainment of destitute pilgrims, and still retains the name of the hospice. The porch, which bears the name to the present day, in which it stands, was built by the De Veres, to which family the lordship of Hedingham was given by the Conqueror. Its architecture, which is very similar to that of Rochester Castle, leads to the supposition that it was erected about the same time. The other brick building on the site of the earlier or the beginning of the twelfth century. Maud, wife of king Stephen, is said to have died here. In the civil wars of the reign of Henry VIII. it was held by Robert de Vere, earl of Oxford, for the barons, and was taken a.d. 1626 by the king; it was retaken in the beginning of the reign of Henry VIII. by Louis, dauphin of France, but recovered by the earl of Pembroke, governor to the young king. In the reign of Henry VII. that prince was sumptuously entertained here by John de Vere, earl of Oxford, who had suffered severe reverses, which obscured the luster of his once brilliant career. He had been one of the chief instruments in placing the crown on Henry's head. As the king was departing, he observed that the earl, to do him honour, had put liveries on his retainers, and in return for his hospitality compelled him toCompound by a fine of 15,000 marks for breaking a statute recently passed, forbidding such a practice. The De Veres retained the castle until a.d. 1625. It has since passed through various hands. The keep is the only part remaining; it is one of the finest and best preserved Norman keeps in the kingdom. The walls are above 100 feet high, and from 114 to 127 feet thick at the bottom, and from 94 to 10 feet thick at the top: the eastern wall is at least a foot thicker than the others, having been so built, it is conjectured, in order to withstand the violent easterly winds. The builder is a parallel-sided, of 53 feet on the east and west sides, and 62 feet on the north and south. At each angle on the top there was formerly an embattled turret; two of the turrets are remaining: the parapet, now destroyed, was also embattled. The castle is built of red brick, in two stories, except the basement, and sand and fluid mortar, and is covered on the outside with squared stone very neatly and regularly put together. It has five stories, including the ground-floor and platform: the principal entrance is on the first story, and on the west side, was the porter's lodge, on the eastern side: every story of the ground-floor were made with great labour in 1720 by the proprietor, who wished to convert that floor into an out-house. The whole building is worthy of attention; it has some fine Norman enrichments in the interior. Castle Hedingham church is an ancient fabric of stone with brick

St. Oysth is in the hundred of Tendring, 62 miles from London and 11 from Colchester, on the marshy coast at the north-eastern side of the mouth of the Colne. A small creek, or arm of that river is navigable for small boats up to the town of Colchester. The value of the town in 1831 was £283, chiefly engaged in agriculture. The original name of the place was Chich, and it took its name of St. Oysth from a virgin said to be of royal blood, but whose history involves too glaring an anachronism to be worthy of credit, who founded here a nunnery. Afterwards destroyed by the Danes. An abbey for the canons of St. Augustin was subsequently founded here in or before the year 1118, in honour of St. Peter, St. Paul, and the above-mentioned St. Oysth. The yearly value of the revenues of this abbey at the dissolution was £204. 6s. 8d. and a nunnery.

The church contains several monuments of the D'Arcy family. Prittlewell is in Rochford hundred, 39 miles from London, on the northern shore of the estuary of the Thames. Milton, now a hamlet of this parish, is said to have been an antient district parish; part of it is
swallowed up by the sea gaining on the land. Morant, writing near the middle of the last century, says, "it had a church, or chapel of ease, the remains of which were visible not long ago at low-water mark." The village consists of a group of a half mile right with each other, and having the church at the vortex on the summit of the hill. The church has a nave and chancel, a side aisle running the whole length of the building, and of nearly equal breadth with the nave. There is a fine western tower (in the Perpendicular English style) embellished, with strong buttresses and rich pinnacles: from its height and lofty situation it is a good sea-mark. There was once a priory of Clunian monks here, cell to an alien priory of the same order at Lewes, in Sussex, but afterwards made independent: its yearly revenue at the dissolution was 19l. 14s. 3d. gross, or 15l. 11s. 2d. clear.

Southend is a hamlet of Prittlewell. It is pleasantly situation on the side of a wooded hill, and is in some repute as a bathing-place. The terrace, in what is commonly called Here on Wend, or the evening Wind, is a handsome range of buildings. There are a good hotel, an assembly-room (beside one at the hotel), a theatre, and a library, the last somewhat in the Gothic style. There is an independent meeting-house. The population of the whole parish of Prittlewell was, in 1851, 2266; nearly half agricultural.

Stansted Montfichet is 3½ miles from London, on the Newmarket road, partly in Clavering half hundred, and partly in Uttlesford hundred. It consists mainly of a long straggling street. The name, Stansted, is supposed to have been derived from a street called "stone street" or one of a stone way, on or near which it stood; the epithet Montfichet was the surname of William Geron, to whose father the lordship had been given by the Conqueror, and who built a castle here; the artificial mound on which the keep was built has never been thoroughly explored, and may be doubted whether it placed, took its name from the builder of the castle, or rice versal: populated in 1831, 1560.

The sokens, including Kirby le Soken, Thorpe le Soken, and Walton le Soken, are in Tendring hundred: these parishes are consolidated, and form a benefice in the diocese of London ( exempt from the archdeacon's jurisdiction), of the annual value of 513l., with a glebe-house. The word Sok is derived from the Saxon Soc, or Soc, signifying a peculiar power to administer justice within itself, and likewise the circuit within which such power was exercised. These villages possess some peculiar immunities, to which they owe their designation. They comprehend the promontory of the North End, which formerly extended much farther to the west, but has been inconsiderably diminished by the opening of the sea. Ruins of buildings have been discovered under the water, particularly on a shool called the West Rocks, nearly five miles from the shore, which is left dry at great ebb. The sea where the ruins are found is distinguished by the name of The Tothill, and the whole that was given name to Walton parish. There is a church in each parish; that at Thorpe is the largest. There is also a Baptist meeting at Thorpe, and a customary market is held there. The whole, by reason of the recommendation of a firm and extensive beach, has been resort ed to for bathing by invalids from the eastern parts of Essex.

The population of the three parishes in 1831 was as follows:—Kirby 972, Thorpe 1173, Walton 469; total 2614.

Been tree has 3 miles to the left of the Newmarket road, about 6 miles from London, between the marshes of the Lea and Epping Forest. It contains a number of good houses usually occupied by persons engaged in business in London; but Walthamstow is not so much resorted to by the town formerly; the population has therefore diminished. The population in 1831 was 4258; above a third were employed in agriculture. The church possesses no architectural beauty. There are copper and oil mills in the parish. Wanshead, in the same neighbourhood, is a village of 110, where Mr. H. W. Wanshead, by persons doing business in London; it is much smaller however, containing in 1831 only 1403 inhabitants. Wanshead House, formerly the seat of Earl Tollemache, was one of the finest residences in the county of Essex. It was pulled down a few years since, and the estate sold at public sale as far as the grazing of cattle. A tessellated pavement of considerable dimensions, and several other Roman antiquities, were dug up in the year 1735.

Wivenhoe is in Lexden hundred, 4 miles from Colchester and 55 from London. It is on the north-east bank of the river Colne, just at the junction of the Roman. The village is on the slope of a hill, and commands a pleasant prospect down the river. Wivenhoe has a commodious church: the tower and parts of a nave were erected in the time of Colchester. The population of the parish in 1831 was 1714, of which about one-fourth was agricultural. The living is a rectory, of the yearly value of 371l., with a glebe-house.

Woodford is in Becontree hundred, 8 miles from London on the Newmarket road. It is a long straggling place with a number of good houses, inhabited by merchants and tradesmen from London. The population in 1831 was 2548, of which about one-fourth was agricultural; the number of inhabitants has diminished since the previous census. The church is a modern erection, but in the ancient English style. A group of houses about a mile north from the main part of the village takes the name of Woodford Wells, from a mineral spring, now in little repute.

Writtle is a large village, in Chelmsford hundred, about 3 miles west from the town of Chelmsford. It was formerly a market-town, but dwindled as Chelmsford rose into importance. Morant was inclined to place the Casaromagus of the Itinerary here; but there is no proof of its having ever been a Roman station. King John is said to have had a palace here, and a square plot of ground, with a moat round it, in which the foundations of a building were dug up this month of the last century, is thought to have formed a part of it; but the abbeys and monasteries, and the monuments, some of them elaborate and elegant. There was, before the Reformation, a hermitage in this parish, attached to St. John's Abbey, Colchester. The population in 1831 was 2348, nearly two-thirds agricultural.

There are several large villages in Essex beside those already noticed. Four (Dagenham, Finchingfield, Hornchurch, and Great Waltham) had, in 1831, above 2000 inhabitants; five others had above 1500; and nineteen others had more than 1000.

**Diocesan, Ecclesiastical and Legal Pursuits.**—Essex constitutes the largest part of the diocese of London, which is in the ecclesiastical province of Canterbury; and is divided between the three archdeaconries of Colchester, Essex, and Middlesex. The office of rural dean has been disused for many years; the county is, however, still divided into deaneries, which are thus arranged.

The deaneries of Colchester, Lexden, Tendring, Newport, and Sandford constitute the archdeaconry of Colchester. The deaneries of Burstable, Barking, Chafford, Chelmsford, and Mersea, constitute the archdeaconry of Essex. The deaneries of Dunmow, Harlow, and Saffron Walden constitute the archdeaconry of Middlesex, which extends beyond this county.

The number of benefices we cannot exactly give. The number of parishes is 471. The number of parishes and 4 district chapels (Basildon, Brentwood, Canvey Island, and Epping), together 413 benefices; but of three (Bures, Haverhill, and Kedington or Kilton) are mostly in Suffolk; and Ballingdon or Brundon (anciently Berington) is for ecclesiastical purposes united to the parish of All Saints, in Sudbury. The parishes of Bocking, Stisted, Latchingdon-with-Lawling, and Southchurch are in the peculiar jurisdiction of the archbishop of Canterbury. There is little to say about the above parishes, 16 are in the borough and liberties of Colchester, 5 in the borough of Harwich and 3 in that of Maldon.

Morant, in his History of Essex, gives the following as the number of churches and chapels. In the archdeaconry of Colchester, 101; in that of Essex, 175; in that of Middlesex, 85; peculiar 4. This no doubt, includes chapels of ease, or non-parochial chapels. In Gorton's Dictionary the number of parishes is given at 450, which agrees with the number in the Population Reports, of the which three are mostly in Suffolk, and of that Ballingdon, which is in the same county. Lewis's Dictionary gives the number of parishes at 500, of which 220 are rectories, 134 vicarages, and the remainder perpetual curacies.

The number of churches in Essex is considerable. It is doubted whether the number in the county, or in any part of the county, can be given. In the independent; nearly all the towns and many of the villages have congregations of this persuasion, and some of the congregations are very large. The Baptists have also many meeting-houses; the Wesleyans, we believe, not so many,
The quakers gave places of worship in several of the large towns.

Essex is in the home circuit. The assizes and quarter-sessions are held at Chelmsford, where is the shire-hall, an elegant structure, and the old county-gate. The county town is Chelmsford, a village about a mile from Chelmsford, on the road to Colchester.

For the election of members of parliament the county was, by the Reform and Boundary Acts, divided into two parts, each returning two members. The northern division comprehends the hundreds or half hundreds of Claverley, Dunmow, Freshwell, Hinchinford, Lexden, Tendring, Thurstable, Uttlesford, Wissington, and Witham. Braintree is the chief place of election, and the polling-places are Braintree, Colchester, Saffron Walden, and the hundreds or half hundreds of Barstable, Beeston, Chafford, Chelmsford, Dengie, Harlow, Ongar, Rochford, Waltham, and the liberty of Harvington. The chief place of election is Chelmsford, and the polling-places are Chelmsford, Billericay, Romford, Epping, Rochford, and Maldon. The boroughs of Colchester, Harwich, and Maldon continue to return two members each, as before the Reform Act. By the Boundary Act an addition (the parish of Heybridge) was added to Maldon. The boundaries of the other three parliamentary bodies of the old days, the parliamentary bodies disfranchised or the new ones created by the Reform Act are in this county. The only change in the number of representatives made by that act was by the division of the county and the consequent addition of two representatives.

History and Antiquities.—In the earliest dawn of the authentic history of our island, Essex was inhabited by the Trinobantes (Tri Nora), a powerful tribe whose dominions perhaps extended across the Stort and the River Lea to the Thames. At the time of Julius Caesar’s invasion (b.c. 55 and 54), Imaunenuis, as he is called in Latin, prince of the Trinobantes, had been slain by Cassivaelinus, the predominating chiefman of a neighbouring tribe, and his son, Mandubrius, had been driven into the woods and长城 by Caesar. Mandubrius succeeded to the rule of the tribe, and, as Caesar’s success induced the Trinobantes to implore of him the restoration of their native prince, and Caesar, acting upon the usual policy of the Romans, which was to secure allies in or near the countries which were the objects of their attack, complied with their request. Mandubrius was restored, and afterwards secured in the possession of his throne by an express stipulation in the treaty between Caesar and his British opponents. The alliance of Rome seems to have promoted the amalgamation of the Trinobantes, Canuobii, king of whom was one of considerable name, and some coins of his yet extant attest the commencement of civilization and the arts in this county. [Braintree.] Canuobii (Cumauenas, Dion.), or, as he is commonly called (after Tacitus), Cassivaelus and Togodumnus (Tacitus), son of Cumuobtii, succeeded to their father’s power, and had to bear up against the weight of Roman hostility when the invasion was renewed in the reign of Claudius (a.d. 43). After sustaining several severe defeats, the Britons retired into the marshes of Essex, and fighting with the vigour of despair, were enabled for a time to repel their assailants, though with the loss of Togodumnus, one of their leaders. But the arrival of Emperor Claudius was the signal for the renewal of the attack. The Trinobantes were destroyed and part of one of the greatest of the Roman colonies, Kent (Cenomannum, Dion. Canuobii, Potii), was taken, and subsequently made the seat of a Roman colony, which was however destroyed in the revolt of the Britons under Boadicea, and the Roman garrison slaughtered. The defeat of the natives was now the signal to open the coast and the valleys of the country, under the command of Cerialis, who escaped with his cavalry to his camp and there stood a siege, added to the exultation of the Britons, who captured Londinium and Verulamium and massacred the inhabitants: but the capture of London by Boadicea’s men was a signal for an end to their revolts, and decided, though it did not complete, the reduction of South Britain. Several of these events occurred in this county. In the Roman division of Britain, Essex was included in Flavia Caesariana.

Mr. Letheliusier (Morant’s Essex) places the final defeat of Boadicea somewhere between Epping and Waltham, near which a fine camp remains; but others place it in the fields immediately north of London. [Britannia.]

Several Roman stations were in Essex. Of these the most important is Camulodunum, upon the determination of which the fate of the others depended. These sites in this county have been proposed, Waltham, Maldon, and Colchester. One antiquary (N. Salmon) places it at Castle Camps, in Cambridgeshire; others, opinion, which place it in Yorkshire or in Scotland, may be dismissed at once. For Walden little seems to be urged but the pleasantness of the situation, an attribute which Tacitus ascribes to Camulodunum; for Maldon there appears to be little evidence, except the resemblance of the name and the opinion of Camden; while abundance of Roman antiquities, the peculiar situation of Saffron Walden, its distance from London with that in the Itinerary of Antoninus, and the termination of its name—chester—a usual indication of a Roman station, agree in supporting the claim of Colchester. Perhaps the first part of its name also may pertain to the same station, which the Colne (whence Colchester) obtained its designation from the Roman colonia, which graced its banks.

The two Iters of the Antonine Itinerary which connect Camulodunum and Londinium are E. Colchester, and must nearly have coincided with the modern road from London to Colchester, which is probable.

It is supposed however to have crossed the Lea at Oldford, not Stratford; but this seems doubtful; possibly there were two branches of this road, one passing at Stratford.

The positions assigned to these stations in Morant’s Essex agree with those in the Society’s map, except that Durolium is placed below Brentwood, and Cesaromagus at Chelmsford, or rather Writtle, which is a mile or two west and not far from Writtle. Another station of the Roman colonia near Writtle, named from London with that in the Itinerary of Antoninus, and the termination of its name—chester—a usual indication of a Roman station, agree in supporting the claim of Colchester. Perhaps the first part of its name also may pertain to the same station, which the Colne (whence Colchester) obtained its designation from the Roman colonia, which graced its banks.

It will be observed that although the distances between Cesaromagus (the only intermediate station mentioned in both Iters) and Londinium and Camulodunum respectively do not agree, the total distance between the two extremes is the same in both, viz. Millia Passuum lit. about equal to 48 English miles, which is nearly the distance of Colchester from London in a straight line, and it is known that the Roman roads were commonly straight. The distances given in Iter ix, which we take to be the most correct, will agree tolerably well with the positions assigned to the other stations in the map of ancient Britain published by the Society for the Diffusion of Useful Knowledge, viz. Durolium, near Romford; Cesaromagus, near Writtle, a village about a mile south-west of Chelmsford; and Can, near Kelvedon. If these positions are fixed with tolerable accuracy, it would appear that arms and other works necessary for the support of a Roman station at Colchester, which are near Writtle, and must have coincided with the modern road from London to Colchester, which is probable.
Roman road was formerly visible at Watton bridge, between Brundock and Stowe, Bungay, near the town, where is a Roman camp, and at Great Chesterford (near Saffron Walden), which was undoubtedly the site of a Roman station. Antiquaries have sought to identify this station with the Cambodunum or Isani of Antoninus; but it is thought that the name points to the site of the town of Isani, which was the seat of the Litus Bencenses, the name of which is a corruption of the word "Bennet," which means "the land of the river." The town was probably the site of a Roman fort, and was a important place in the Roman period.

When the Saxons established themselves in Britain, Essex, with parts of Hertfordshire and Middlesex, was a small kingdom, the possessions of which were, for the most part, of undetermined boundaries. The Saxon kings who ruled over the area had to maintain a certain degree of order and control to ensure the safety of their subjects. The Saxons, however, had a different perspective on the boundaries of their kingdom, which was not as well defined as the Roman kingdom. The Saxons had a different view of the world, and they did not have a concept of a national state. Instead, they had a more decentralized system of governance, with various local leaders and chiefs who had their own territories.

When Alfred, after the recovery of his throne, assigned to the bishop of Domesday, a settlement in Ireland, and about 600, the Saxon kingdom was included in the ceded territory. One or two of the naval conflicts between the ships of Alfred and the ships of the Saxon Danes were fought in the waters of the River Thames. In 899, a fleet of Danish vessels was destroyed in the mouth of the Thames, near Harwich (A.D. 898); but the victorious fleet was destroyed near the Thames mouth by some ships fitted out by the men of East Anglia in violation of their engagements with the king. The death of Godwin (A.D. 990) returned to the government of Alfred, who appointed Bertelin, a member of the king's household, to the see of Canterbury. When Harald, the king of the Danes, had not only the use of the time to press the siege, Alfred in person, and afterwards when he was called away, his general, maintained a close blockade on the land side, and at last the Dane sallied for peace and agreed to retire from England on the condition of leaving all his followers and the English paid him 1000 marks. After these events, though not immediately connected with the county of Essex, they are among the most important occurrences in the county annals of the East Saxon kingdom.

The death of Sæberht (A.D. 610), Saxerel, Siward, and Sigebert ascended the throne, and reigned conjunctly: they restored Paganism and persecuted Christianity, and appear to have been killed together about A.D. 624. Sigebert the Little reigned after them from A.D. 624 to 651, and after his death, Sigebert the Great, who was converted by his friend Oswy, king of Northumbria, whom he used frequently to visit, and baptized by him, bishop of Lindsey, restored Christianity in Essex, and sent for some Northumbrian monks to come and instruct his subjects. Cedd, one of these, was consecrated bishop of the East Saxons (A.D. 633). Sigebert was assassinated two years afterwards (A.D. 635). The sub-sequent kings of Essex were as follows:—Swithelm, Sibbi, and Sehere; the latter died A.D. 653, and Sibbi turned monk A.D. 694; Sigebert and Sehere, Oxen on Rome, and turned monk, A.D. 707: Sigebert, called Seched by some, but erroneously: Swither was reigning A.D. 735. There were a few others, whose very names are unknown. The dates are from Morant chiefly, but in so uncertain and confused a period they cannot be relied on as very exact.

In A.D. 823, Elbert of Wessex, who had just gained over Boernwulf of Mercia that victory which established the permanent supremacy of Wessex over the other kingdoms of the Urtarchy, despatched his son Ethelwulf and the warlike statesman Eadstan or Alastan, bishop of Sherborne, into Kent and Essex; and these ships, which his court into more dependencies of Mercia, were subdued, and probably united under the designation of the kingdom of Kent, occupied by Ethelwald as successor to his father, and of which mention is occasionally made in the history of Ethelwald and Eadulf. The kingdom of Essex then formed, as in the case of the other Saxon kingdoms were finally incorporated; and England, with the exception of those parts which were occupied by the Danes or retained by the Britons, was consolidated under one sceptre.

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A.D. 994 the east of this county was ravaged by them; they were again bought off. Essex was one of the counties ceded by Ethelred to Svein, king of Denmark, by treaty A.D. 1010 or 1011.

Essex was the scene of a fierce battle between Canute and Edmund Ironside, who had succeeded to the throne and the hostility of their respective fathers, Svein and Ethelred. Canute, by the treachery of Edric (brother-in-law and foster-father to Edmund), obtained the victory. The battle was fought the Assingdon, which some suppose to be Ashdon, in the north-western part of the county, near Saffron Walden; others, with more probability, fix the scene of conflict at Assingdon, or Ashendon, in the hundred of Rochford. At Canewdon (the name of which is probably derived from the belief of the victor), a part of which adjoins Assingdon on the east, are the remains of a camp, supposed to have been that of the Danes; its form is oblong, and it comprehends an area of about six acres: the vallum has been levelled, but the fosse is yet visible. (Brewers of England and Wales.)

The history of the county is not marked by any particular event until the civil war between king John and his barons. In A.D. 1213 the earl of Winchester, one of the confederated lords, with an army of foreigners whom he had brought into the country, besieged Colchester castle, but withdrew upon hearing that relief was coming from London. However, he or some of his party soon afterwards took it and plundered the town. The king however retook it after a few days' siege. During the minority of Henry III. it was a place of some notice; in A.D. 1218, who had been invited over by the discontented nobles. At the siege of Calais by Edward III. Colchester furnished five ships and 170 mariners.

In the reign of Richard II. occurred the arrest of Thomas Wycliffe, the son of the king's uncle, who was at the time residing at his castle of Pleshey in Essex, about 6 miles north-west of Chelmsford. There the king visited him, and at the close of his visit invited him to return to town. At Stratford the king had placed in ambush the archers, who also were on a charge of high treason. He was subsequently smothered at Calais, and his body being brought to England was buried in the church of Pleshey, which he had himself founded.

Of the troubled period to which the above incidents may be referred Essex contains several memorials in the encampments, castles, and other ruins which are found in it. Various camps may yet be traced referrible to the British, Roman or Saxon periods, as that which incloses the village of Lecha, or the site of the Lecha by; also that between Chelmsford and Maldon; those at Maldon (probably the work of Edward the Elder), at Witham, at Ambrosebury banks, near Epping, at Ruckholt, near Barking, at South Weald, near Brentwood, at Canewdon, and at Blunt's woods near Crayford. Of the Normans, there are also several remains. Those at Colchester, Hedingham, Walden, Ongar, and Ralegh, have been noticed in this article or under their respective heads. Pleshey was the site of a Roman camp or station, and some Roman antiquities have been found at it. The castle was probably built by William de Magnaville, to whose father, Geoffrey de Magnaville, the place had been granted by the usurper Stephen. The keep with the moat which surrounded it were within the wall of the town. It is not probable that the castle was ever used, and it is probable that the building was built, and the bridge which led to it over the surrounding moat, are all that remain of the once proud structure. Of Hadleigh Castle, near Ralegh, dilapidated portions of two towers yet remain, forming picturesque masses of ruin. At Clavering in the north-west part of the county are the mound on which the keep stood and the moat of a castle, long since destroyed.

Of the halls and manor-houses which succeeded the Norman castles and gave indication of a quieter period, there are very few. Among the English, in that the nation had not quite settled into peaceful security, may be mentioned Heron Hall, near East Horndon, Nether Hall, near the confluence of the Lea and the Stort, Tolleshunt Beckingham or Tolleshunt Magna, between Maldon and Colchester, which is the seat of Mr. Thelwall; Belloua or Bellas House, near Purfleet, Covet or Covell Hall, near White Roding, Eastbury, near Barking, Danbury Place, between Chelmsford and Maldon, New Hall, near Chelmsford, and Toppinghoe Hall, between Chelmsford and Witham. Of Heron Hall two picturesque round towers remain; and of Nether Hall, a vast gateway with four embattled turrets. Of Layer Marney Hall, the gateway and part of the south front have now standing, and are converted into a farm-house and offices: it was originally a large quadrangular building, inclosing a spacious court, to which the existing gateway was the principal entrance. Of Covet Hall there remains a gateway of brick, much ornamented. The other houses are, for the most part, new, except New Hall, of which however a large portion remains, formerly occupied by some English nuns from Liege, who took refuge in England from the French Republican armies. Other ancient houses have been already noticed in the course of this article, and we have only further to mention Gosfield Hall, near Halsted, which belongs to the duke of Buckingham, and is probably of the time of Henry VII. This house is of brick, and incloses a quadrangular court, into which all the lower tier of windows formerly opened. There were no outside windows on the ground-floor, and those of the upper story were strongly barred, so as to give to the house considerable strength. The house as originally built consisted of only one room in thickness, and there was no communication round the inside but by passing through the upper windows and doors. Some additions have been made in modern times. There are a few good features, the rest have been removed to Stow, another manor of the duke. The park is extensive.

At the Reformation Essex possessed several religious houses, of which the following remain. There were at the time of the Suppression seven of the greater religious houses, that is, of those which according to the valuation of their lands and endowments possessed a clear yearly revenue of above 200l.; they were as follows:

<table>
<thead>
<tr>
<th>Place</th>
<th>Description</th>
<th>Yearly revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chichester (or St. Oysth)</td>
<td>Abbey for Augustines</td>
<td>10804 6 2 from 4894 2 5 clear</td>
</tr>
<tr>
<td>Colchester</td>
<td>Abbey for Cistercian monks</td>
<td>2938 9 0</td>
</tr>
<tr>
<td>Stratford Langthorne Abbey</td>
<td>Abbey for Cistercian monks</td>
<td>573 15 6</td>
</tr>
<tr>
<td>Walden</td>
<td>Abbey for Benedictines</td>
<td>5266 11 5</td>
</tr>
<tr>
<td>Waltham</td>
<td>Abbey for Augustines</td>
<td>1079 10 1</td>
</tr>
</tbody>
</table>

For any further particulars of these see above, or in the articles Barking and Colchester.

Of the smaller religious houses, the following remains may be noticed in addition to those which have already mentioned.

The remains of Bileigh or Beleigh Abbey, near Maldon, have been converted into a farm-house and offices; the chapel, the most perfect portion, having been used as a hogstye. It is small, 36 feet long by 18 broad, formed of a fine-grained limestone, and has groined arches, supported by three slender Purbeck columns. These ruins are chiefly in the Perpendicular style, with some portions of earlier date.

Of Tithey priory, between Dunmow and Thaxted, the east end of the church remains, and is of earlier date than the church: there are also a few of the cloisters yet standing. The church is remarkably fine specimen of decorated work, with bold buttresses at the eastern angles, and two rich niches for statues. The east window is very fine, ornamented with tapestry, and in the interior of the church are some rich stalls.

Of Byknacre Priory, between Chelmsford and Maldon, the central arches of the church and a small portion of the ancient wall remain. They are of very late Norman or Early English character, and are of equal excellence. Of Lakes Priory, near Harlow, there are some remains used as a barn; they show that the building contained some good Decorated work. Of Lees Priory, between Chelmsford and Braintree, there is a gate-house, with an embattled octagonal tower at each corner, and in the perpendicular style; the church is of the same name near Ingatestone, there are some slight remains.

The churches of Blakemore or Blackmore Priory, between Danesfield and Maldon.
Ingatone and Ongar, and of Hatfield Peverel Priory, between Chelmsford and Witham, have been made parochial; the latter has been much altered; it retains a good Norman door, with zigzag mouldings.

Of the early churches, the only two which we have already had occasion to mention, the following deserve notice — Greenstead church, near Ongar, is a very curious edifice, and one of the most ancient in the kingdom; it seems probable that it was built as a sort of shrine for lodging the body of St. Edmund, king of East Anglia, on its being taken back from London to bury St. Edmund's, in the early part of the eleventh century; and that it was afterwards enlarged to serve as a parish church. The nave is entirely composed of wood, the sides being formed of the trunks of large chestnut-trees (or oaks) split and sawn, and set upright close to one another. They are let into a wooden sill at bottom, and into a plate at top, and secured with wooden pins: two vacancies are filled up with plaster. There is a boarded tower at the west end, but this does not appear to be so ancient as the nave; also a wooden porch on the south side of the nave. The chancel is purely of brick, and the nave is strengthened by brick buttresses. The entire length of the original or wooden part of the church is 29 feet long by 14 broad, and 3½ high to the spring of the roof, which is tiled, and not so ancient as the sides. 'Little Maplestead church (near Halstede) is a building of great interest, being the latest of the few round churches in the kingdom: it is of pure Decorated character, and its details plain, but very good. The chancel end of this church is also somewhat peculiar, and is probably the latest portion of a form in England. The diameter of the circular part is about 26 feet (or 30 feet according to others); it has a peristyle of six clustered columns, supporting pointed arches; the whole length of church and chancel is about 60 feet. Some miles nearer the coast, and near the main road, there is a blockhouse, which may be seen, and is elaborately and variously enriched Norman door; Corringham and some other churches have Norman portions.

With the Catholic religion regained a temporary pre-dominance over the Reformation under Mary I, the persecution was very severe in Essex. Seventeen persons (five of them women) were burnt at Colchester, and nine in Ipswich and two persons (one a woman) were burnt at Stratford.

The year 1571 was remarkable for the settlement of the Flemish refugees at Colchester; they introduced the wooden manufacture into that and several other towns in Essex.

When the Spaniards were expected to attack England with their Invincible Armada (A.D. 1588), a camp was formed at Tilbury, where a body of more than 18,000 men, under the earl of Leicester, was posted. Tilbury Fort was then a block-house, which had been built by Henry VIII. to defend the Thames estuary, and is the last remaining portion (upon the alarm caused by the Dutch sailing up the Medway, A.D. 1667, and burning the ships at Chatham), enlarged and made a regular fortification, as it is at present. The castle was restored by Elizabeth, whose presence increased the general enthusiasm. Colchester on this occasion furnished two ships and a pinnace to the English fleet. In 1595 the same town furnished three ships for the expedition to Cadiz.

The war with Spain at the beginning of the reign of Charles I, a Spanish fleet caused alarm by appearing off Harwich; but they made no attempt to land (A.D. 1625).

In the civil war at the close of the same reign, Essex was almost entirely in the interest of the parliament, and joined in an association for mutual aid and succour with the other eastern counties of Norfolk, Suffolk, Cambridges, and Herts; this was called the Eastern Association. The towns of Essex and Suffolk, upon a requisition from the committee of both houses, raised 2,000 men for the service of the parliament, but supplied both of men and money which they sent to the parliament about ten times. The county appears to have been exempt from the immediate sufferings of the civil war during the continuance of the main contest; but in the year 1648 it was the scene of one of those outbursts of popular excitement and the attempts of the royalties, the narratives of which form so many harrowing episodes of the war. A part of the royalist forces, which had been raised in Kent under Goring, earl of Norwich, and Sir William Waller, and were pressed by Fairfax and the parliamentary army, crossed the Thames into Middlesex, and retreating thence into Essex, were joined by the royalists of that county (who had previously seized the parliamentary government at Chelmsford) and by some royalist gentlemen from Hertfordshire. Their leaders were the earl of Norwich, Lords Loughborough and Capel, Sir Charles Lucas, Sir George Lisle, Sir Bernard Gasygne, Sir William Campan, Sir William Compton, Sir William Ley, and Sir Richard Eltingham and many other officers and gentlemen. They retired first to Chelmsford, from thence to Braintree, taking in their way Lees House, the seat of the earl of Warwick, and from thence to Colchester, which they entered by convention, after a slight skirmish with the Parliamentary forces. They remained in Colchester for several months, and then, after some fighting, they were driven from the town. The royalists repulsed him, but with the loss of one of their men of note, Sir William Campan, and nearly 200 men killed and wounded. The Parliamentary loss was probably nearly 1000 killed, wounded, and taken. Fairfax now laid close siege to the town, which was blocked up on every side; and two small frigates of ten and eleven guns, which lay in the river to assist the king's party, were taken by some parliamentary vessels from Harwich. After a siege of seven weeks and three months and several severe actions, the royalists were forced to surrender at discretion. The parliamentary general, deeming it necessary to make an example of the leaders of this rising, and being sanctioned by the determination of the council of war, they were executed on the scaffold, Sir George Lisle, Sir Bernard Gasygne, and Colonel Farre to be executed the day the town was given up. Farre had escaped; Gasygne, who was a Florentino, was reprieved; but the other two were shot under the walls of Colchester City.

In A.D. 1665 and 1666 Colchester suffered severely from the plague. In the abovementioned year 4731 persons died of it; nearly 200 of them in one week. In A.D. 1684 the charter of Colchester was surrendered to the crown, and a new charter was granted to them the same year, which was remodelled by James II. A.D. 1685; but after the Revolution the original charter was restored.

The history of the county presents no later events of any interest.

Morant's History of Essex: Beauties of England and Wales; Ordinance Survey of Essex; Conybeare and Philips's Outline of the Zoology of England and Wales; Young's Agriculture of Essex; Rickman's Gothic Architecture; Turner's Anglo-Saxons: Excursions to Essex: Parliamentary Papers, &c.

STATISTICS.

Population.—Essex is an agricultural county, and but few of its inhabitants are engaged in manufactures. Of 79,023 males twenty years of age and upwards, living in the county in 1851, 41,683 were engaged in agricultural pursuits, and only 571 in manufactures or in making manufacturing machinery. Of these latter 500 were employed in the manufacture of silk goods, principally at Braintree, Great and Little Giggleshall, and Bocking: at Harwich there were 20 silk-machine makers; about 30 men were engaged in the manufacture of gunpowder at the government establishment at Waltham Abbey. At West Ham, in the vicinity of the metropolis, operative chemistry gives employment to several of the inhabitants. Essex ranks 8th or 9th in the list of counties by acres, and in this respect retains the same position as in 1811.

The population of this county at each of the four periods in which the census was taken during the present century was

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Inr. per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1801</td>
<td>158,389</td>
<td>262,437</td>
</tr>
<tr>
<td>1811</td>
<td>147,679</td>
<td>121,674</td>
</tr>
<tr>
<td>1821</td>
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</tr>
<tr>
<td>1831</td>
<td>159,915</td>
<td>317,907</td>
</tr>
</tbody>
</table>

Showing an increase between the first and last periods of 91,670, or a little more than 44 per cent, which is 12 per cent, below the whole rate of increase throughout England.

The following table is a summary of the population, &c., of every hundred as taken in 1831:

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### HOUSES.

<table>
<thead>
<tr>
<th>Hundred,</th>
<th>Habitable,</th>
<th>Uninhabitable,</th>
<th>Total,</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barstable</td>
<td>2,247</td>
<td>2,614</td>
<td>4,861</td>
</tr>
<tr>
<td>Becontree</td>
<td>6,118</td>
<td>7,197</td>
<td>51,388</td>
</tr>
<tr>
<td>Chafford</td>
<td>1,762</td>
<td>1,952</td>
<td>15,407</td>
</tr>
<tr>
<td>Chelmsford</td>
<td>4,916</td>
<td>5,668</td>
<td>13,924</td>
</tr>
<tr>
<td>Clavering</td>
<td>809</td>
<td>870</td>
<td>1,679</td>
</tr>
<tr>
<td>Dengie</td>
<td>1,609</td>
<td>1,949</td>
<td>36,369</td>
</tr>
<tr>
<td>Dunmow</td>
<td>2,367</td>
<td>2,663</td>
<td>17,661</td>
</tr>
<tr>
<td>Finchingfield</td>
<td>1,332</td>
<td>1,488</td>
<td>31,197</td>
</tr>
<tr>
<td>Harlow</td>
<td>1,365</td>
<td>1,682</td>
<td>31,247</td>
</tr>
<tr>
<td>Haverhill, Bury</td>
<td>1,217</td>
<td>1,332</td>
<td>6,534</td>
</tr>
<tr>
<td>Hinchinbrooke</td>
<td>7,887</td>
<td>8,500</td>
<td>22,984</td>
</tr>
<tr>
<td>Lexden</td>
<td>3,350</td>
<td>4,375</td>
<td>21,725</td>
</tr>
<tr>
<td>Ongar</td>
<td>2,414</td>
<td>2,785</td>
<td>7,280</td>
</tr>
<tr>
<td>Rochford</td>
<td>2,274</td>
<td>2,617</td>
<td>9,873</td>
</tr>
<tr>
<td>Tendring</td>
<td>3,955</td>
<td>4,725</td>
<td>15,923</td>
</tr>
<tr>
<td>Thaxted</td>
<td>1,166</td>
<td>1,276</td>
<td>7,777</td>
</tr>
<tr>
<td>Uttlesford</td>
<td>2,210</td>
<td>2,647</td>
<td>15,916</td>
</tr>
<tr>
<td>Waltham</td>
<td>1,581</td>
<td>1,816</td>
<td>11,166</td>
</tr>
<tr>
<td>Winchelsea</td>
<td>735</td>
<td>707</td>
<td>1,543</td>
</tr>
<tr>
<td>Witham</td>
<td>2,123</td>
<td>2,342</td>
<td>20,616</td>
</tr>
<tr>
<td>Colchester (borough)</td>
<td>3,218</td>
<td>3,468</td>
<td>18,207</td>
</tr>
<tr>
<td>Harwich (borough)</td>
<td>681</td>
<td>783</td>
<td>3,069</td>
</tr>
<tr>
<td>Halstead (borough)</td>
<td>671</td>
<td>724</td>
<td>21,798</td>
</tr>
<tr>
<td>Saffron Walden (town)</td>
<td>941</td>
<td>1,000</td>
<td>33,123</td>
</tr>
</tbody>
</table>

**Totals:** 57,152, 65,319, 354, 1,860

### OCCUPATIONS.

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>P. C. No. 499</td>
<td></td>
</tr>
</tbody>
</table>

### PERSONS.

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>P. C. No. 499</td>
<td></td>
</tr>
</tbody>
</table>

---

**County Expenses, Crime, &c.—** The sums expended for the relief of the poor at the four dates of

<table>
<thead>
<tr>
<th>Date</th>
<th>£ s. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1801</td>
<td>137,140</td>
</tr>
<tr>
<td>1811</td>
<td>312,220</td>
</tr>
<tr>
<td>1821</td>
<td>349,537</td>
</tr>
<tr>
<td>1831</td>
<td>272,593</td>
</tr>
</tbody>
</table>

The sum expended for the same purpose in the year ending March 1833, was 185,394, 17s.; and assuming that the population had increased at the same rate of percentage since 1831 as in the ten preceding years, the above sum gives an average of 11s. 6d. for each inhabitant. These averages are above those for the whole of England and Wales.

The sum raised in Essex for poor-rate, county-rate, and other local purposes, in the year ending the 24th of March, 1833, was 211,561, 18s., and was levied upon the various descriptions of property as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>£ s. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>On land</td>
<td>251,571</td>
</tr>
<tr>
<td>Dwelling-houses</td>
<td>25,157</td>
</tr>
<tr>
<td>Mills, factories, &amp;c.</td>
<td>6,892</td>
</tr>
<tr>
<td>Manorial profits, navigation, &amp;c.</td>
<td>1,373</td>
</tr>
</tbody>
</table>

The amount expended was:

<table>
<thead>
<tr>
<th>Description</th>
<th>£ s. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>For the poor of the relief</td>
<td>263,829</td>
</tr>
<tr>
<td>In suits of law, removal of paupers, &amp;c.</td>
<td>8,190</td>
</tr>
<tr>
<td>For other purposes</td>
<td>39,998</td>
</tr>
</tbody>
</table>

Total | 313,747 |

In the returns made up for subsequent years, the descriptions of property assessed are not specified. In the years 1834, 1835, and 1836 there were raised 291,010, 2s., 266,424, 5s., and 298,811, 19s., respectively, and the expenditure of each year was as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>£ s. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1834</td>
<td>329,045</td>
</tr>
<tr>
<td>1835</td>
<td>389,166</td>
</tr>
<tr>
<td>1836</td>
<td>418,304</td>
</tr>
</tbody>
</table>

For the poor of the relief | 329,045 |

In suits of law, removal of paupers, &c. | 6,886 |

For other purposes | 39,484 |

Total money expended | 375,419 |

The saving effected in the whole sum expended in 1836, as compared with that expended in 1834, was therefore about 20 per cent.; and the saving effected on the sum expended for the relief of the poor was not quite 23 per cent. in 1836, as compared with the expenditure in 1834.

The number of turnpike trusts in Essex, as ascertained in 1834, is 11; the number of miles of road under their charge is 245; the annual income in 1834, arising from the tolls and parish composition, was 34,504. 15s. 1d., and the annual expenditure 39,557. 12s. 4d.

The county expenditure in 1834, exclusive of that for the relief of the poor, was 18,847. 10s. 6d., disbursed as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>£ s. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridges, buildings, and repairs, &amp;c.</td>
<td>728</td>
</tr>
<tr>
<td>Gaols, houses of correction, &amp;c.</td>
<td>10,311</td>
</tr>
<tr>
<td>Shire halls and courts of justice—building, repairing, &amp;c.</td>
<td>245</td>
</tr>
<tr>
<td>Prosecutions</td>
<td>2,382</td>
</tr>
<tr>
<td>Clerk of the peace</td>
<td>1,385</td>
</tr>
<tr>
<td>Conveyance of prisoners before trial</td>
<td>759</td>
</tr>
<tr>
<td>of transports</td>
<td>297</td>
</tr>
<tr>
<td>Vagrants—apprehending and conveying</td>
<td>315</td>
</tr>
<tr>
<td>Constables—high and special</td>
<td>552</td>
</tr>
<tr>
<td>Coroner</td>
<td>343</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>1,254</td>
</tr>
</tbody>
</table>

Total | 18,847 |

The number of persons charged with criminal offences, in the three septennial periods ending with 1820, 1827, and 1834, were 1908, 2866, and 3837 respectively; making an average of 2733 annually in the first period of 384, in the second period, and of 579 in the third period. The number of persons tried at quarter-sessions, in each of the years 1831, 1832, and 1833, in respect to which any costs were paid out of the county-rates, were 386, 351, and 398 respectively. Among the persons charged with offences, there were committed for:

<table>
<thead>
<tr>
<th>Year</th>
<th>£ s. d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1831</td>
<td>293</td>
</tr>
<tr>
<td>1832</td>
<td>319</td>
</tr>
<tr>
<td>1833</td>
<td>321</td>
</tr>
</tbody>
</table>

The number convicted | 293 |

Acquitted | 52 |

Discharged by proclamation | 32 |

[Vol. X—P]
In 1836 at the assays and sessions 619 persons were charged with crimes in Essex. Of these 49 were charged with offences against the person, 31 of which were for common assault; there were 74 offences against property, committed with violence; and 442 committed without violence; 1 for sending threatening letters; 8 for forgery and uttering false money; 1 for killing cattle; 2 for deer stealing; and 42 for riot. Of the whole number of offenders, 446 were convicted, 123 were acquitted, and against 31 no bill was found, or no prosecution ensued. Of those convicted, 29 were condemned to death, none of whom were executed. 17 had their sentence commuted for transportation, and three for imprisonment; 133 were sentenced to transportation for various periods; 279 to imprisonment, 233 of whom for only six months or under; 2 were whipped; 5 were fined, and 6 discharged on sentence. Of the number of offenders, 446 were males and 72 females; 293 could neither read nor write; 253 could read and write imperfectly; 31 could read and write well, and only 1 had received superior instruction; the state of instruction of the remaining 11 could not be ascertained.

The number of persons qualified to vote for the county members of Essex is 11,119, being 1 in 29 of the whole population, and 1 in 7 of the male population, twenty years of age and upwards, as taken in 1831. The expenses of the last election of county members to parliament were to the inhabitants of the county £5,600; and were paid out of the general county-rate.

There are fifteen savings' banks in Essex. The number of depositors and amount of deposits on the 20th of November were:—

Number of depositors: 5,263; Amount of deposits: £2,866,333.

The various sums placed in the savings' banks in 1832 and 1836 were distributed as under:—

<table>
<thead>
<tr>
<th>Date</th>
<th>Depositors</th>
<th>Deposits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1832</td>
<td>1,572</td>
<td>£268,333</td>
</tr>
<tr>
<td>1836</td>
<td>2,210</td>
<td>£2,866,333</td>
</tr>
</tbody>
</table>

Education.—The following summary is taken from the parliamentary returns on education, made in the session of 1835:—

<table>
<thead>
<tr>
<th>Description</th>
<th>School</th>
<th>Scholars</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant schools</td>
<td>32</td>
<td>348</td>
<td>1,163</td>
</tr>
<tr>
<td>Number of infants at such schools: ages from 2 to 7 years:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex not specified</td>
<td>92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total children of all ages</td>
<td>1,163</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Daily schools | 2 | 438 |
| Number of children at such schools: ages from 4 to 14 years: | | |
| Males | 13,550 | |
| Females | 12,993 | |
| Sex not specified | 4,653 | |

If we assume that the population between the ages of 2 and 15 has increased in the same proportion as the whole population since 1821; and that the whole population has increased in the same ratio since 1831 as during the ten years preceding that period, we find that the number of children between the ages of 2 and 15 residing in Essex in 1834 was 119,911.

Thirty-seven Sunday-schools are returned from places where no other schools exist, and the children (1513 in number) who are instructed theren cannot be supposed to attend any other school; at all other places Sunday-school children have opportunity of resorting to other schools also. The number or in what proportion duplicate entry of the same children is thus produced must remain uncertain. Seventy-seven schools, containing 5,250 children, which are both daily and Sunday-schools, are returned from various places, and duplicate entry is therefore known to have been thus far frequent. At a few of the Sunday-schools some scholars are 16 and 17 years of age. Making allowance for these two causes therefore, it appears that perhaps not more than one-half of the children between the ages of 2 and 15 are receiving instruction in this county.

Maintenance of Schools.

<table>
<thead>
<tr>
<th>Description</th>
<th>School</th>
<th>Scholars</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant schools</td>
<td>32</td>
<td>348</td>
<td>1,163</td>
</tr>
<tr>
<td>Number of scholars</td>
<td>2</td>
<td>438</td>
<td></td>
</tr>
</tbody>
</table>

The schools established by Dissenters included in the above statement are:—

<table>
<thead>
<tr>
<th>Description</th>
<th>School</th>
<th>Scholars</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant and other daily schools</td>
<td>32</td>
<td>348</td>
<td>1,163</td>
</tr>
</tbody>
</table>

One hundred and one boarding-schools are included in the number of daily schools given above. No school in the county appears to be confined to the children of parents of the Established Church, or of any other religious denomination, such exclusion being disallowed in almost every instance, especially in schools established by Dissenters, with whom are here included Wesleyan Methodists, together with schools for children of Roman Catholic parents.

Lending libraries of books are attached to forty-five schools in this county.

ESSEX, EARLS OF. WALTER DEVEREUX, first earl of Essex, the son of Sir Richard Devereux and Dorothy, daughter of George, earl of Huntington, was born in Caermonthen-shire, at the castle of his grandfather, Walter Viscount Hereford. In the year 1540, he succeeded to the titles of Viscount Hereford and Lord Ferrers of Chartley in his nineteenth year, and was early married to Lottie, daughter of Sir Francis Knolles. When the rebellion, headed by the earls of Northumberland and Westmorland, broke out in 1569, Lord Ferrers was a principal actor, and, in conjunction with other forces, compelled the rebels to retreat into Scotland. The courage that he displayed during this warfare recommended him to Queen Elizabeth, who had ever esteemed his loyalty and superior intelligence: in gratitude for the service that he had rendered her, she conferred on him the order of the Garter, and created him earl of Essex (1572).

He now became so great a favourite with the queen, that Leicester and others about the court, jealous of his increasing influence, encouraged Essex to enter upon a scheme for supplanting and occupying the influence of Ulster. He had for some time contemplated such an expedition, and having been persuaded to take the command, embarked from Liverpool in August, 1573, in company with Lord Darcy, Lord Rich, and other persons of distinction. He was contracted to finish one half of the expense of the undertaking, in consideration of which he was to have one half of the colony as soon as it was established. His arms at the outset met with various success; but after a time his English friends deserted him, and their loss, together with the vanity of many of his and his of his subjects, and the unrest and difficulties, had made him resolve to return. He was compelled to resume the government of Ulster, which he had previously resigned; and he was compelled to make peace with O'Neale when his pursuit of the rebels under that leader gave every promise of success. He was permitted to return home without charge, and when he had nearly dispossessed the Scots, who had invaded the western islands in his territory, and with no higher title than that of captain was made to serve at the
hand of a small body of 260 men. Feeling himself harassed and oppressed, he returned to England; but having received, with the title of Earl Marshall of Ireland, promises that he should have greater liberty of action allowed him if he would go back to that country, he consented to return to his province. However, he was so well that his spirits were affected; the effects of grief were soon visible in his constitution; a dysentery attacked him, and, after a month's pain and misery, he died at Dublin, on the 29th of September, 1576: his body was re-

</p>

<h2>ESS</h2>

<h1>ESS</h1>

<a>View Larger Image</a></div>

<p>Robert Devereux, Earl of Essex, the son of the pre-
ceeding Walter Devereux and Lettice Knolles, was born at Netherwood, in Herefordshire, in November, 1557, and was educated in Oxford. In 1573, on the death of his brother, Essex was recalled from his studies in Italy, and took his seat in Parliament. In 1575, he married Anne Fortescue, daughter of Sir Walter, and was appointed a knight of the privy chamber. He was a man of great spirit and courage, and a lover of learning and letters. He was always ready to assist his friends, and was known for his frankness and freedom of speech. He was a good scholar, and a patron of learning. He was a great admirer of Shakespeare, and is said to have been one of the first to appreciate his genius. He was a great correspondent with the leading men of the time, and was a great benefactor to literature. He was a great patron of the arts, and was a great lover of beauty. He was a great reformer, and was a great champion of the Reformation. He was a great statesman, and was a great advocate of liberty. He was a great patriot, and was a great champion of the commonwealth.

<p>In 1576, he was appointed to the council of the north of England, and was sent to negotiate with the Scotts. He was a great statesman, and was a great advocate of liberty. He was a great patriot, and was a great champion of the commonwealth.

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<p>In 1577, he was appointed to the council of the north of England, and was sent to negotiate with the Scotts. He was a great statesman, and was a great advocate of liberty. He was a great patriot, and was a great champion of the commonwealth.
that his general popularity was unimpeached. So deep was his impression of resentment against those whom he conceived to have injured the queen against him, that he listened to the rash and desperate advice of Cuffe, his secretary, to remove Cecil, Cobham, and Raleigh by force from the queen’s counsels. In order to strengthen his intentions, he had offered an audit to persons who were discontented with the queen or her advisers. With the same view, he courted both the Roman Catholics and Puritans, and a concourse met daily to hear sermons in his house. The multitude that attended the delivery of these discourses could not fail to attract the attention of the vigilant government. Essex was warned to be careful of his safety, and his attendance was required before the council. At this summons he took alarm, fearing a renewal of his imprisonment, and consequently the death of his enemies. He determined to commence his proceedings on the following morning (Sunday, February 5, 1600); and during the night messengers were sent in all directions to acquaint Essex’s friends that his life was threatened by Raleigh and Lord Cobham. In consequence of the intelligence of Lord Sandys and Monta- eagle, the earls of Rutland and Southampton, with nearly 300 other gentlemen, assembled at Essex House, where it was divulged that Essex had resolved at once to rid himself of his enemies by forcing his way to the queen, and informing her of the design of those who were about to kill him. They exercised their influence with her majesty. Essex having shut up within his gates the lord keeper, the chief justice, and others whom the queen, aware of what was passing, had sent to inquire into the cause of the tumult, proceeded with his councilors, acting on the principle that if a queen, a plot is laid against my life,” he tried to enlist the citizens in his favour. But notwithstanding his popularity, not one man took arms. The cause of the tumult was either mistaken or unknown. At length the earl endeavoured to reach the queen. The crowd of soldiers and a skirmish ensued, in which he was twice shot through the hat. At length he reached Essex House, but after a short defence he was compelled to surrender himself, and with Lord Southampton was committed to the Tower; and the rest of the mob were dispersed. He was tried for treason in Westminster-hall on the 19th of February, condemned, and executed 29th of the same month. (Criminal Trials, vol. i.)

A sketch of the character of Essex has lately appeared in an article in the Edinburgh Review (vol. xxiv., p. 21), which also displays the ingratitude of Lord Bacon towards his zealous friend and patron. We extract the following remarks:—Nothing in the political conduct of Essex could be wittier or more sickening to him with which he regarded his early and terrible end is diminished by the consideration that he put to hazard the lives and fortunes of his most attached friends, and endeavoured to throw the whole country into confusion for objects purely personal. Still, in so far as he despised the advice of his brave, high-spirited, and generous: for a man who, while he conducted himself towards his sovereign with a boldness such as was then found in no other subject, conducted himself towards his dependants with a delicacy such as has rarely been found in any other patron. Unlike the vast host of benefactors, he desired to inspire not gratitude but affection. He tried to make those whom he befriended feel towards him as towards an equal.” His mind was ardent and susceptible, and naturally disposed to the admiration of all that was manly and noble. Yet he left one son (of whom we give an account in the next article) and two daughters. Frances married first the earl of Hertford, and afterwards the duke of Somerset. Dorothy was the wife first of Sir Henry Shirley, and lastly of William Sidney, of Bishamton, in Northamptonshire.

ROBERT DEVEREUX, third earl of Essex, was born in Essex House, in the Strand, in 1592. He was sent to Eton by his grandmother, who, after his father’s death, received him into her house; and in 1602 he was removed to Morton College, Oxford, where the warden, Mr. Sir Henry Savile, who had been an intimate friend of his father, took charge of his education. He was restored to his hereditary honours in 1603, and three years after he was unhappily married to Lady Frances Howard, a child of marriage, the couple being too young to live together, Essex was sent to improve himself abroad; while the bride, who was celebrated for her beauty, continued with her mother. It was four years before he returned to claim his wife, and in the meantime she had contracted so great an affection for lord Rochester, afterwards earl of Somerset, that until she was compelled by her father, she could not be brought to cohabit with her husband. The union never was a happy one. The Earl of Essex being raised to the peerage, he instituted proceedings against him praying for a separation on a real or pretended charge of physical disability. A divorce was granted, and the lady was soon after married to lord Rocher. The slur thus cast upon Essex drove him to the retirement in a country-house and the pursuit of rural occupations. After some years however, a solitary life became irksome to him. Tired of inaction, he joined lord Oxford in 1620, raised a troop, and marched with the Elector Palatine in the war against Holland. In the winter he returned to England, and was kindness of a second choice of a wife (the daughter of sir him at home was so little agreeable that he willingly renewed his military avocations abroad during the two following summers, and in 1625 again raised a troop, with which he sailed to the United Provinces. His disposition and capability for military service now struck the king, and he was appointed vice-admiral of a fleet which was employed in a fruitless expedition against Spain. He engaged in another expedition in the Low Countries, and was sent to Newcastle to control the multitude of his soldiers. He was anxious to be appointed to the command of his fleet, which was at that time on the point of leaving for the Indies. The king granted his request, and the earl took the command of a fleet that sailed to Holland in 1635, he spent his time either in his house at Charty, or in London. His inclination to seek popularity among the presbyterians was evident and undisguised; nevertheless the king never attempted to control him. When he refused the appointment in the fleet that sailed to Holland in 1635, he was sent to the house of commons in London. He was one of twelve peers that signed a petition that a parliament should be called and an attempt made to settle the difficulties of the state without further delay. He was also one of the commissioners sent to Ripon to treat with the Scots; and when, at the opening of the Long Parliament, the king saw that it was necessary that he should endeavour to conolve the presbyterian party, he made Essex lord high admiral. It is said, however, that he suspected that Essex, whose popularity was great among the presbyterians, should also have been placed at the head of the army, but Charles, who disliked him on account of the roughness of his manner, and doubted the firmness of his attachment to the crown, refused to make him general, and sent him on a lot of further than to make him lieutenant-general of his forces south of the Trent. When the Commons demanded of the king that a guard should be raised in the city of London, it was Essex whom they desired to have placed at its head. Charles, who was willing to listen to this request, left London suddenly, and called upon Essex to follow him; but Essex, indisposed to the king on account of the thankless inutility with which he had always been treated at court, refused to follow, pleading his duty to remain in attendance on the chamberlain. With the queen, who instantly deprived him of all his offices. Essex now became the chief favourite and leader of the parliamentary or presbyterian party. He became parliamentary general in 1642, and was in consequence proclaimed a traitor by the Earl of Strafford. He, however, went to Elshtead (1642); he also took Reading (1643), but on account of a disease with which his troops were infected, he was obliged to abandon any further attack; at which the disappointment of the parliamentary leaders was so great, that they nearly dismissed him from his command. On the recovery and reinforcement of his soldiers he triumphantly entered Gloucester, from which he had driven the king away, surprised Cirencester, and after fighting courageously at the doublet battle of Newbury, succeeded in his designs. As the usurpation of the crown was supposed to be numerous in Cornwall, in the hope of increasing his forces he marched to that county pursued...
by the royalist troops; the number of adherents however had been exaggerated, his expectations were disappointed, his designs were frustrated, his plans were abandoned. The asseizes were not carried out, the courts were not held, the assizes or excuses from such as did not appear to the summons or the writ. Wherefore it was called the asseiz day.

The asseiz or general return day is now regulated by 1 W. III. c. 5, which provides that the courts shall return on the third day exclusive before any of his majesty’s courts of King’s Bench, Common Pleas, or Exchequer respectively, on general return days, may be made returnable on the third day exclusive, before the commencement of each term, or on any day, not being Sunday, between that day and the third day exclusive before the last day of the term; and the day for appearance shall, as heretofore, be the third day after such term.

ESTATE, in law, signifies that title or interest which a man has in lands, tenements, hereditaments, or other effects. In personal or in real estate. In either real or personal estates, he holds or enjoys for an estate of freehold; or personal, comprising interests for terms of years in lands, tenements, and hereditaments, and property of every other description. Personal estate [ Chattels goes to the executors, and is primarily liable for payment of debts.

Real estate may be considered under three heads: (1) the quantity of estate, i.e., the amount of interest in the owner; (2) the time when that interest is to commence; and (3) the quality of estate, or the mode in which it is to be enjoyed.

1. Real estates not being of copious title [Copyhold] or what are called customary freeholds, are either of freehold or less than freehold. The former may be divided into two kinds; freeholds of inheritance, and freeholds of tenure, not of inheritance. A freehold of inheritance is a further subdivision, into inheritances absolute, called fees simple, and inheritances limited, called qualified or baronial fees and fees conditional. A freehold of inheritance absolute or fee simple is the largest estate which the law concedes to a subject, and the hereditary interest of which a person holds, whom he pleases in his lifetime by deed or by will, and if he dies without making any disposition, it descends to such of his kin as the law marks out as his heir.

A qualified or baronial fee has some qualification or limit annexed, which prevents the enjoyment of the estate, as in the instance of a grant to A and his heirs tenants of the manor of Dale. Whenever A or his heirs cease to be tenants of that manor, their estate is entirely determined, though its continuance the proprietor has a recognizance and rights and privileges as if he were absolute tenant in fee simple.

A conditional fee at common law was a fee restrained to some particular heirs exclusive of others, as to a and the heirs male of his body, by which limitation his lineal heirs female and collateral heirs were excluded. If no male child was born, no alienation was made, the land should revert to the donor on the failure of heirs male of his body, for all reasons. If it was made for a male child, it was a fee simple, on condition that the donee had male issue; for it is a rule of law, that when any condition is performed it is then forever entirely gone, and the thing to which it was annexed becomes absolutely and wholly unconditional. The nobility however, being anxious to preserve their estates in their own families, procured the Stat. Westm. the Second, 13 Ed. I, c. 1, commonly called the Statute de Donis Conditionalibus, to be made, enacted that the will of the donor should be observed, and that the holder should be to the extent that there were any, or if none, should revert to the donor. Thus the donor acquired an estate in reversion, which could only be allowed, consistently with the nature of estates in reversion, by considering the conditional fee to be changed into a freehold, or, as it is termed in technical language, a personal estate. This kind of estate was called an estate fail, from the word talliare, to cut, being as it was a portion of the whole fee. Means were soon however discovered by the ingenuity of the lawyers to enable the donee and his heirs of the specified description to cut off the entail, as it was called. [Conventance, Fine, Recovery.]

A freehold, not being of inheritance, is an estate which the owner has for his own life only, or the life of some other person, or until the happening of some uncertain event. The following are instances:—A gift to A until B returns from Rome; but if the gift had been to A and his heirs
Estates are also legal or equitable. It is a legal estate when the owner is in the actual seisin or possession, and also entitled to the beneficial interest himself or in trust for some other person. An equitable estate is when some other person, not having the seisin, is entitled to the beneficial interest of the property of which that other is in possession. The power of the beneficial owner over his equitable estate is as complete as if he possessed the legal estate. [Trust; Equity.]

ESTAT, COUNTRY OF. If B returns from Rome, the estate would have been a qualified or base fee; and if B had died without returning from Rome, would have become a fee simple absolute. Some freeholds not of inheritance, arise from operation of law, as tenant in tail after possibility of a new interest, which is where the estate is limited to A and the heirs of his body to be begetten on the body of B his wife, which is called an estate tail special (as distinguished from an estate tail general, i.e. to A and the heirs of his body, without specifying the woman from whom they must spring). If B dies without having devolved upon his executors or administrators.

An estate at will arises where a man lets lands to another expressly at the will of both parties or without limiting any certain estate; either party may put an end to the tenancy, though, for the sake of general convenience, the court may construe them as tenancies from year to year, for the purpose of rendering a six months' notice necessary to their determination. An estate by sufferance arises where a tenant, who has entered by lawful title, continues in possession after his interest has terminated, has devolved upon his executors or administrators, may be put an end to at any time by the lawful owner, though, after acceptance of rent, the law would consider it as a tenancy from year to year, as in the case of a tenancy at will.

Neither of these two last estates confers any power of alienation. All these estates, real and personal, freehold or less than freehold, freeholds of inheritance or not of inheritance, may become subject to another qualification, and be called estates upon condition, being such whose existence depends upon the happening or not happening of some uncertain event whereby the estate may be either originally created or enlarged or finally defeated. [Condition; Mortgage.]

2. Estates are either in possession or in expectancy. The former kind of estate requires no explanation here. The latter, involving some of the ncest and most abstruse learning in English law, are divided into estates in remainder and reversion, and by executory devise or bequest; and again, remainders are divided into estates in remainder vested, and estates in remainder contingent. A remainder vested proceeds upon the happening or not happening of some uncertain event whereby the estate may be either originally created or enlarged or finally defeated. [Condition; Mortgage.]

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3. Estates may be enjoyed in four ways; in severalty, in joint tenancy, in coparcenary, and in common. An estate in severalty is when one tenant holds it in his own right without any other person being joined with him. Where a component is limited to two or more persons at the same time, in which case the law construes them to be joint tenants unless the words of the grant expressly exclude such construction; they have unity of interest, of title, of time of serving, and of possession, and upon the decease of one, his whole interest, unless disposed of by him in his lifetime, remains to the survivor or survivors.

An estate in coparcenary is when an estate of inheritance descends from the ancestor to two or more persons, who are called coparceners, and amongst paraceners there is no survivorship.

An estate in common is when two or more persons hold property, by distinct titles and for different interests, but by unity of possession. All these three last-mentioned modes of joint and undivided possession may be put an end to by the parties interested, either by prescribed modes of conveyance or by partition. [Partition.]

Estates are also legal or equitable. It is a legal estate when the owner is in the actual seisin or possession, and also entitled to the beneficial interest himself or in trust for some other person. An equitable estate is when some other person, not having the seisin, is entitled to the beneficial interest of the property of which that other is in possession. The power of the beneficial owner over his equitable estate is as complete as if he possessed the legal estate. [Trust; Equity.]

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the ruins of the ancient Ateote, lies in the Venetian state, north of the Adige, in the province of Padua. The emperor Frederick Barbarossa, at a court held at Verona, a. for the distribution of the marquises of Milan and Genoa, which were then merely nominal, as the two cities had become free; yet the emperors would not discontinue the prerogative of appointing the titular marquises of those former imperial jurisdictions.

1619. In 1619, after this period, his son Ercole I. became King of Ferrara. His House of Este over Ferrara was first laid. The family of Adalardi had long been the popular leaders at Ferrara, and enjoyed the chief authority in that community. Marchesella, the last offspring of this family, was betrothed by her uncle and guardian Genoese, to Reggio, his death to one of the Torelli, a rival family. But the girl was carried away and compelled to marry Azzo of Este, the son of Obizzo, and from that time the Este were considered as citizens of Ferrara. A veil has been thrown over the whole transaction, which seems to imply that fraud or violence had been committed.' (Litta, Famiglie celebri Italiane.)

This Azzo, styled the Fifth, died about the end of the twelfth century, and was succeeded by his son Azzo VI., who was elected in 1206 by the citizens of Ferrara as vicar or lord of that city, with power to appoint his successor. 'This,' says Litta, 'was the first example of a free Italian city giving itself over to a lord, and the beginning of those numerous principalities into which Italy became divided.'

Aldobrandino succeeded his father Azzo VI. in 1212, and was the first to attempt to establish a free state of his own. His uncle, who took part with the Pope against Frederick II.; for the Este were naturally of the Guelf party. He was mainly instrumental in the fall of the tyrant Ercolano: he favored learning, patronized the Provençal troubadours whose songs are still sung in the Tuscan dialect, and these songs lived in that city. He was succeeded by Rinaldo, and the latter by Obizzo in 1222. Obizzo was elected lord of Modena in 1238, and of Reggio in the following year, according to the prevailing fashion of the Italian cities at that period. These lordships of Modena, Reggio, and Ferrara, however, were not held by the Este in undisturbed possession, for they were repeatedly invaded and recovered during the frequent wars of the Italian states in the fourteenth century. While the family of Este were acquiring a princely dominion, they lost that of Ferrara, which was taken in 1348, and about the same time the Paduans took possession of the town and territory of Este by conquest, and annexed it to their community. It afterwards, in 1495, passed into the hands of the Veneti, (Alessi, Ricerche Istorico-Critiche delle Antichità di Este.)

Nicholas, called the 'Lame,' one of the successors of Obizzo, was vicar of Ferrara from 1377 to 1389: he fought for the pope against Barnaba Visconti, duke of Milan. He was succeeded in 1389 by his brother Albert, and Albert by another Nicholas, in 1413, who bequeathed his dominions. Lionel proved a good prince: he restored the university of Ferrara, and after nine years of a masterful and liberal administration he died in 1450, leaving the government of the state to his brother Borso, who was illegitimate like himself. Borso was one of the most distinguished princes of his age. He was a patron of arts and letters, and was generous, enlightened, and just. He recalled his two legitimate brothers, Ercole and Sigismondo, from Naples, treated them with brotherly affection, and in order to secure the succession to them after his death, he abstained from marrying. In 1452 Borso received from the emperor Frederick III. the title of Duke of Ferrara and Reggio, and Count of Rovigo; and in 1471 pope Paul II. gave him the title of Duke of Ferrara, upon which the Roman see claimed a right of patronage. Borso died soon after, leaving a large and prosperous state to his brother Ercole. 'More fortunate in his days of life,' says Litta, 'than in his age. Borso had not to encounter the violence of parties and opinions; he ruled over a contented and submissive population, and while the conspiracies against Lorenzo were looked upon as acts of patriotism, those against Borso were not always considered as private plots, the result of personal envy and malice; so that when he died occasion 1451, 1459, and 1469, to punish several conspirators with all the severity of the laws, he did not lose on that account the veneration of his subjects. He enjoyed a great reputation for uprightness, and his fame spread so far that he received presents from some Indian princes, who believed that he was king of India.' (Litta, Famiglie celebri Italiane.)

His successor Ercole I. was likewise a man of consider- able talents and literary attainments, and distinguished himself for his liberal expenditure, and his numerous works of charity. His maxims were the love of peace and the hatred of wars, and his policy was remarkable for that wary and cautious policy which has been stigmatized as peculiarly Italian, but which was in reality indispensable to the Italian princes in order to protect themselves from the overbearing violence of foreign intruders. A motto of his was, Habeas corpus; and he would have been a true Roman if he had not been so far averse to the suicidal act of calling the French into Italy. Ercole checked the fury of Louis XII., who, after he had driven the Sforzas from Milan, was bent on exterminating all the other Italian princes. Ercole was fond of traveling: he visited the various harvests, and encouraged tournaments, festivals, and hunting parties. He gave the first theatrical exhibitions exhibited at Ferrara, where the Menechmi of Plautus was performed in 1486. His court was frequented by Bojardo, Collenucco, Tibaldus, Guarino von Polignano, and many other famous poets. His liberality was such as to cause him to be called by many Greek MSS. to be translated, and had a Hebrew press established at Ferrara in 1476.

Alfonso I., son of Ercole, succeeded him in 1505. He married the daughter of Pope Alexander VI. (Borgia, Lucrezia.) Tasso was a long and troubled reign. He was attacked by Julius II. and the Venetians; he lost Modena and Reggio, and the Venetians also threatened Ferrara. The death of Julius afforded him some respite. Leo X. continued to withhold Reggio and Modena from him, and made also a claim to Milan, which was surrendered to the French, and the Este too were threatened with the loss of their dependencies and great perseverance. He and his brother, Cardinal Ippolito, the patron of Ariosto, often took the field in person: their artillery was the best served in Europe; and the victory of Pavia, which they defeated the Venetians. After the death of Leo X., Alfonso, who had till then been waging war against the French to secure peace with Charles V., who by an imperial decree dated 21st April, 1531, confirmed the rights of the house of Este over Modena, Reggio, and Rubiera, upon the duke paying him 150,000 sequins; and thus Alfonso was restored to the possession of Modena and Reggio. He was followed by his son Ercole II., who was succeeded by Ercole III., and the latter by Alfonso II., who was unfavourably known by the misfortunes of Tasso, which however the poet brought upon himself. Litta is of opinion that Tasso was partly guilty, with Elena, the duke's sister, and that her sister Lucrezia was in love with one of the house of St. Anna, from which he was liberated after seven years, by the intercession of Vincenzo Gonzaga, prince of Mantua, who came to Ferrara for that purpose. Tasso. Alfonso II. dying in October 1597, without issue, the Wittelsbachs of Bavaria were invited by Clement VIII. to come to Ferrara and take possession of the duchy. In 1598, Aldobrandino having offered her the title and revenues of Duchess of Berrino in the Romagna, she signed a hostile convention, by which she gave up, in the name of the house of Este, Ferrara, Comacchio, and their dependencies, to the see of Rome. Cesare d'Este, Alfonso's cousin and heir, entrusted Lucrezia, Alfonso's sister, with full power to negotiate the matter. Lucrezia, wife of Montecchio, son of Alfonso I. and father to Cesare, on account of the share he had taken in the transactions of 1775 relative to Tasso, disliked Cesare also. Cardinal Aldobrandino having offered her the title and revenues of Ferrara, she signed a treaty with his son Ercole, the infant Duke of Ferrara, which, under the house of Este, had a population of 60,000 inhabitants gradually became reduced to 20,000. Cesare, duke of Modena and Reggio, died in 1628. His son Alfonso III., who had remained as hostage at Ferrara, was sent as a prince of the house of Austria, in 1619 he caused Ercole Pepe to be assassinated at Ferrara. Stung by remorse, he abandoned the ducal crown soon after his father's death, and became a Franciscan monk. He distinguished himself as a zealous preacher, and founded several convents. But, says Litta, 'he was not a man of the world, and his nature. He was still a lion under the coarse tunic and hood. He was treated by the other monks with all the deference due to his rank, but was closely watched to prevent him doing mischief. He died in 1644, in a convent in the mountains of Garfagnana, which he had founded.' His
son Francis I. was not much better than his father. He affected a great zeal for religion, had his portrait engraved on the arch of the basilica, and he endeavored to form a relative of Marshal Gassion to be shot for want of proper respect while at church. He first separated the Jews from the rest of the population at Modena in 1630, and confined them to the Ghetto. He began the magnificence of his city, and his extensive residence and gardens at Sassuolo. His successor, Alfonso IV., received in 1660 of the emperor Leopold the investiture of the principality of Correggio, which he had previously purchased. Alfonso loved the fine arts, and was the founder of the Este gallery of paintings. He left at his death a son two years old, who was afterwards duke by the name of Francis II. During his minority his mother, Laura Martinuzzi, Cardinal Mazzini's niece, held the government. She collected together all the books and documents which had been delivered over to the Venetians who employed them in the war of Candia against the Turks. Francis II. founded the university of Modena as well as the splendid library called Estense, of which Zaccaria, Muratori, and Tintorelli were successively librarians. Francis II. dying in 1694 without issue, was succeeded by his uncle, Cardinal Rinaldo, who, after resigning his hat, married a daughter of the Duke of Brunswick Lunenburg, and sister-in-law to the emperor Joseph I. By this marriage the two branches of Este, which had been estranged since 1636, became again connected. During the war of the Spanish succession, the Duke Rinaldo, notwithstanding his proessed neutrality, was obliged by the French to quit Modena and to take shelter at Rome. The victorious Austrians, commanded by Zoppo of Sempione, invaded his dominions, where he resided quietly till 1733, when the war for the succession to the crown of Poland, in which Italy had no concern whatever, but for which Italy was as usual devastated by the belligerents, obliged Rinaldo again to leave his domains, which began to be in a state of war between the French and Piedmontese on one side, and the Austrians on the other. In 1736 Rinaldo returned to Modena. His repeated misfortunes affected and perhaps improved his disposition: he became more serious and economical, yet his magnificence to his court increased. He enlarged his dominions by the purchase of the duchy of Mirandola and the county of Bagnolo. Rinaldo was succeeded in 1757 by his son Francis III., who was serving in Hungary against the Turks at the time. During the war of the Austrian succession he took part for the house of Bourbon, and commanded the Spanish armies in Italy. The peace of Aix-la-Chapelle restored him to the quiet possession of his dominions. In 1754 Duke Francis was appointed by Maria Theresa governor of Lombardy during the absence of the Archduke Leopold, which begins to be in a state of war between the French and Piedmontese on one side, and the Austrians on the other. In 1780 Francis gave up his trust to the Archduke Ferdinand, but continued to reside in Lombardy, and died at Varese in 1785. His son Ercole Rinaldo, by Beatrice d'Este, his grand-daughter, was born in 1756. His administration was peaceable and economical. He was ever watchful against the temporal interference of the court of Rome in his dominions; and he was equally averse to the claims of Cadiz which still lingered in his states. When the French entered Italy in 1796, the duke made a convention with Bonaparte, paid a heavy contribution, gave up some valuable paintings, but not trusting to the faith of the conqueror, he withdrew to Venice with his treasures, leaving a council of regency except the Corsican soldiers in the French service afforded a pretext to Bonaparte to violate the convention, and to occupy the states of Modena, which were afterwards annexed to the Coalitio Sanctorum (Bibl. Storia d'Italia; Parodi, Lettere e Carta Bollo). When in the following year the French occupied Venice, the duke had escaped to Trieste, but a deposit of 200,000 sequins which he had left behind was seized. Ercole Rinaldo died in the Austrian States in 1803. His daughter Maria Beatrice, the last offspring of the house of Este, lost her husband, the Archduke Ferdinando of Austria, in the year 1800, and their eldest son Francis IV., was restored by the peace of Paris in 1814 to the dominions of his maternal ancestors, namely, the duchy of Modena and Reggio, and inter alia, the district of Garfagnana, on the borders of Lucca. By the death of his mother he also inherited the duchy of Massa and Carrara, of which his grandmother, of the house of Cisneros, was regent. [CARRARA; MODENA.]

ESTELLA. [NAVARRE]

ESTHER, The Book of, a canonical and historical book of the Old Testament, placed after that of Nehemiah, but coming chronologically between the 6th and 7th chapters of the Book of Ezra. The palace at which the queen of the Jews, Esthahashar, whose history it relates, was an orphan niece and adopted daughter of Mordecai; from a Benjamite family of the Babylonian captives of Nebuchadnezzar (ii. 5-7). The scene of the narration is in the city Shushan, or Susa nos Sus (not Shushur, as stated by Dr. Adam Clarke — see Trus. Grem. Soc., vol. iii.), which, throughout the book, is in English mistranslated Shushan the palace, though, in the Septuagint version, it is rightly εις ταυτα τη παλατινη, that is, 'in Susa the city.' Augustin, the apostate, bishop of Hippo, calls it Ερυθρα. Ezeclus assigns a later date. Some writers have attributed it to the high priest Joashim; others believe it to have been composed by the Jewish synagogue, to whom Esther and Mordecai wrote (ix. 28-29); but by the greater number Mordecai himself is thought to be the author, and Elias Levi, in his Mass. Hanum, asserts this to be a fact unquestionable. The original, according to Dr. Adam Clarke, was probably written in the language of ancient Persia. St. Hieronymus and several other fathers regarded this book as genuine and accepted since its composition. A book religion is not once mentioned or alluded to, and they have been followed by some modern writers, as Cajetan and De Lyra; but the Council of Trent pronounced it to be wholly canonical; and while the Protestant churches admit into their canon only the thirteen books of the Old Testament which are common to the Jews and Christians, Esther, as far as to the end of the third verse of chap. x., the Greek and Roman churches use as canonical the Greek version and Latin Vulgate, which contain each ten more verses of chap. x. and six additional chapters. By the Jews the book is written both in Hebrew and in the ancient language, their sacred scriptures, and as a perfectly authentic history of real events which took place about B.C. 519. They call it 7752 Megillah, that is, The Volume, and hold it in the highest estimation; believing that whatever destruction they have endured, and are about to endure in future, their touch will always be preserved by a particular Providence. Copies exist in the Hebrew, Syriac, Chaldaic, Greek, and Latin; each of which widely differs from the others, and all, especially the Greek and Chaldaic, are greatly different from the Hebrew. The Chaldaic, gave a great feast in his palace garden to all the men of Susa, great and small, while the women were separately feasted by the queen in the royal house. To the men royal wine was supplied in abundance, and the drinking was according to every man's pleasure; but the women dressed in black, and by order of the queen, sent her seven chamberlains with orders to bring the queen to exhibit herself (the Talmud says naked) before his guests; but Vashti (which in Persian means the beautifully fair) refusing to come, he was very wrathful, and his anger burned within him. Ahasuerus however punished her by degradation and banishment, and by his royal mandate letters were despatched to the people of each province, decreeing that every man bear rule in his own house. To furnish the royal banquets with the greatest means of cheer there was made a magnificent banquet, in imitation of the ancient banquets of the Greeks and Romans, and in the midst of the banquet the queen Vashti. The twelve months' eschatological parallelism of the madness previous to their admission to the king (ver. 12) was required, says Dr. Clarke,
to show if they were with child, that the monarch might not be imposed on by fathering a spurious offspring, and because many having been brought up in low life, and fed on coarse, strong, and indigestible food, they had a copious and strongly colostrum, which, from proper diet, the king's father, Mordecai the Jew (chap. iii.), having refused to do reverence to Haman, the chief minister and favourite of Ahasuerus, he, with all the other Jews from Babylon, then dispersed throughout the Persian empire, went by Haman's order to do the manner in which had formerly issued to 'destroy, to kill, and to cause to perish all Jews, young and old, little children and women, in one day, and to take the spoils of them for a prey' (ver. 13), the king and Haman sat down to drink;' but the sickly tyrant died in the next year, in that the contrary treaties of Esther, and by the reclamation that Mordecai had discovered a conspiracy against his life, was induced to hang his favourite Haman on a gallows thirty yards high, which that minister had prepared for Mordecai. He then pronounced Mordecai to the highest honours in the empire, still yielding to the influence of the fair Jewesses and of Mordecai, he hastily issued orders empowering all the Jews 'to destroy, to slay, and to cause to perish all the people that would assault them, both little ones and women, in one day, throughout all the provinces of King Ahasuerus, and to seize the spoil of them for a prey' (vii. 11, 12), so that 'the Jews smote all their enemies with the sword, with slaughter and destruction, and did what they would unto those that hated them' (ch. ix. 5). By the special request of Esther, the king gave the royal name of Mordecai to Haman's alleged sons, and in the city of Susa the Jews massacred eight hundred of the king's Persian subjects, and in the provinces seventy-five thousand (ix. 12, 13, 15, 16). This signal revenge of Haman's intended destruction of the Jews in Persia has ever been commemorated (21 Feb.) on the 14th and 15th days of the month Adar, in the Jewish 'Feast of Purim,' that is, in Persian, the 'lots;' with reference to those which, on this occasion, were cast before Haman (ch. iii. 7; ix. 26); and the lower class of Jews, like the sinners thus dealt with, on the 4th of Nisan, Patron's Day, consider that on these 'Days of Purim' to be a pious duty. It is here worthy of remark, that the word which in the authorized version is repeatedly translated gallows, should properly be cross or tree. Hence it was that, in the first ages of Christianity, the Jews, when celebrating the Feast of Purim, were accused of deriding the Christian crucifixion, in abusing and setting fire to an effigy of a Haman affixed to a lofty wooden cross; a custom which, on this account, was abolished in the Roman empire by the edict of the emperor. It is now observed that apparently the only good motive sentiment derivable from the statements of this book, the inspired authority of which was doubted by several early fathers, is a detestation of the sensuality and cruelty of such royal devotees, like the Persians, and their metaphysicalucks of the Old and New Test.; Horne's Introduction to the Bible; Commentaries by Dr. A. Clarke and others; Lectures on the Book of Esther, by Dr. Lawson, 1809; Exeget. Revue, vol. iii.; Calmet's Dict. of the Bible; Dr. A. Clarke's Succession of the Nature.

ESTHONIA, or REVAL, a Russian government or province constituting one of the five provinces included in the grand subdivision of Russia in Europe, which is called the ' Baltic (East Sea) Provinces.' It is not known by this name originally; it was called the border-land, or Meie Ma, our land. The boundaries of Estonia are, on the north, the gulf of Finland; on the east, the government of St. Petersburg; on the south, lake Peipus and the government of Livonia; and on the west, the Baltic. It was subdued by the Swedes in 1220, and in 1346 sold by them to the Teutonic knights, whose grand master, the first duke of Livonia and Estonia, acknowledged the king of Poland as lord paramount in 1561. After being an object of continued contest between the Russian and Swedish governments, it was ceded by the Swedes to Russia in 1665, and became finally to Russia under the treaty of Nystad in 1721. Including the islands of Dago, Worms, Wrangel, Nargen, the two Reeks, Ojdari, and other islands, the total area of this government is 6504 square miles, of which one thirty-fifth part belongs to the seventy islands. The extent of coast is about 260 P. C., No. 600.

versta, or 173 miles; and the population, which was 106,285
in 1783, 227,001 in 1819, and 229,398 in 1826, is now estimated
at about 240,000. The general character of the surface is level, occasionally varied by isolated hills and mounds, which the people of the country denominate mountains. The main streams are the Narva, the interior districts of Estonia, which are the most fertile, the mixture of clay, sand, and clay; and, in all parts are large swamps, many of which are impassable, except when hardened by the frosts of winter. The proportion of the cultivated to the uncultivated and wooded land is estimated by Bienemann at one part only in three.

Estonia contains 228 small lakes, besides the northern end of lake Peipus, and the left bank of the Narova, which flows out of the Peipus into the Baltic and divides the government from the St. Petersburg. This province has no streams, but rivulets and brooks, which flow under ground, and occasionally contain pearl muscles. There are sulphurous and saline springs.

Though the temperature is moderate when compared with that of the adjacent provinces, the winter is of long duration, and winds and fogs prevail throughout the year.

The soil, though deficient in fertility, yields more than sufficient for the maintenance of the population. Agricult-urists of Estonia, the principal branch of industry, and about one-fifth of the whole surface is under the plough. The produce of the province is rye, barley, oats; some wheat. Indian corn, hemp, flax, hops, and tobacco are also raised. The whole produce of grain is estimated at 560,000 quarters, which is more than the consumption of the province, above 500,000, is applied to making brandy. The Wesenberg districts, on the west, produce much hemp and flax. As the harvest season is attended by heavy rains, the farmers have subterranean kilns in most parts, into which the moist grain is carried, and the produce being dried. Estonia has large meadows, and productive abundance of hawthorns, and likewise good grazing grounds. Vegetables are of universal growth, but little attention is given to fruits. The woods and forests, composed of the fir, pine, elm, birch, larch, and beech, occasionally intermixed, furnish the timber for ship, linen, crab-apple, &c., spread over an area of about 330 square miles; they are densest in the eastern districts of Wesenberg and Weissenstein.

Next to agriculture the rearing of cattle is the most important branch of industry. The native horse is short in stature but strong and enduring, and the breeds called the Reval Klepper and Doppelklepper are in much esteem. The horned cattle are small, but afford much milk, and large droves of oxen from the Ukraine are fattened for the Wesenberg districts. Estonia is famous for the breed of sheep, which are of the German white or blackish species. Goats, swine, and poultry are reared in great numbers. The wild animals are the bear, wolf, fox, badger, marten, and squirrel; a few elk are to be met with in the Wesenberg forests. The fisheries along the coast and in lake Peipus are very productive. The mireal products are stone for building, potter's clay, and gypsum; there is abundance of peat.

The majority of the inhabitants are Estonians; they are of Finnish origin, of diminutive stature, with a fair hair, light-coloured hair, in general blue eyes, a small flat nose, and flattened countenance. They were sunk until late years in abject slavery. The landholders are universally of German or Danish extraction, and constitute the aristocracy of the country; and there are some Swedes and Finns who mixed with them. In 1819, when the population amounted to 227,001, it comprised 210,240 Estonians, and 8836 Germans. In 1830, when it amounted to 228,000, the number of births was 22,881, and deaths 17,924. The towns contained 24,063, and the rural districts 204,335; in that year also the number of males was 108,363, and females 104,972.

Estonia contains 565 estates, which, with the exception of a few Spicks and Eestomaa, the property of the crown, and 43 belonging to the clergy, are in the hands of the nobility. The peasants' families are estimated at 30,000. The Lutheran is the predominant religion of the province; even the Russos-Greeks

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have not more than eight or ten churches in it. The super-
intendence of all ecclesiastical affairs in the Lutheran
church is vested in the provincial consistory at Reval, and
the number of parishes is 134. The department of educa-
tion, which includes a gymnasia at Reval, and about fifty
other schools, with about 1,500 pupils, is under the direc-
tion of the university of Dorpat. In 1833 the proportion of
pupils to the whole population was not more than one in
every 148 individuals.

The manufactures of Estonia are extremely limited; the
pessaries are clothed not only with linen but with coarse
woven yarns, and there are no factories. The only estab-
lishments of any importance are in Reval, where hats,
leather, powder and starch, vinegar, and some iron ware
are made. In 1830 indeed, there were but three large manu-
factories in the whole province, and to these, two in particular, the manufactory of
brandy in the capital and in the
islands; and brandy is made on many estates as well as in
the towns, and even by the farmers themselves; the distil-
leries of this spirit amount to nearly 400.

Reval is the emporium of trade, but for want of water
commerce, it is of any great extent. The exports consist
of grain, brandy, salt fish, skins and hides, butter,
tallow, smoked herrings and salmon, and salt.

Though public affairs are administered on the same foot-
ing as in the other Russian governments, the country
remains to a great extent governed by its ancient constitu-
tion, amongst, which are a provincial college or council, an inferior tri-

bunal of justice, a constabulary, and the right of making
brandy without a license from the government.

The estates are divided into four counties, of which the
North-west, Reval or Revel, formerly Harria, chief town Reval
(13,000 inh.), with the islands of Nargen (250), Wrangel
(600), Roichen, Malus, Ramosara, the Roogs, and Oelend-
ob; South-west, Hapal, formerly Wick, chief town Hap-
sal (140), with the islands of Dage (10,000), Worms (1100)
and Nucke (450); South-east, Weissenstein, formerly
Yevren, chief town Weissenstein (600); North-east, We-
issenberg, chief town Wessenberg (400), with the islands of
Eckholn, Hef; and Kranholm: besides the districts of
Kunda, chief town Kunda (400), and of Laal (324 inhabit-
ants).

ESTIENNE. [Stephens]

ESTOPEL, an impediment or bar to a right of action,
arising from a man's own act, or the act of some person
through whom he claims, of any great extent. The exports
consist of grain, brandy, salt fish, skins

1. By matter of record, as letters patent, pleading,
&c. Thus in an action against a patentee by his assignee,
the patentee is estopped from pleading that the patent is
invalid.

2. By matter of writing, as by deed, &c. parties and
privies are estopped from alleging any thing contrary to the
deed. It is frequently laid down that an indenture is more
effectual in working an estoppel than a deed poll [Dexza];
but from the statement in the book from whence this
position is derived, judgment is to be formed, that if the

Vescos are estopped by their own writing, it is
inasmuch as it is there admitted that if both
parties sign and seal a deed poll, they are equally
estopped as if the deed had been indented.

3. By matter in pais (in the country), i.e., transactions
between the parties not evidenced by record or writing, as
livery, entry, acceptance of rent, &c. Thus after accept-
ance of rent a landlord cannot treat his lessee as a tres-
passer. The rules which govern the application of this
decree are laid down 1 Inst. 592 b.

1. In his Law Glossary, says that this word is derived from the French étouffé, and that from étouffer, which is to supply with necessaries, and is of the same signification as the Saxon word bote. In legal phrase-
ology it is the liberty which the owner of an estate for life as well as a tenant for years (in the absence of any stipulation to
the contrary) possesses of taking a reasonable and neces-
sary supply of wood from the estate for the use or furniture of
his house or farm, and this, according to the use to which it
was applied, was either called house bote, plough bote,
cattle bote, &c. At common law the allowance of wood to build or repair the house, or to burn in it,
which latter is also sometimes called fire bote; plough bote or cart bote is the wood employed in the making or repair-
ing all instruments of husbandry, as carts and ploughs,

such as hedge bote or hay bote for repairing

Estrella. Portugal

Estrela, a province of Spain, bounded on the
north by the province of Salamanca, on the east by New
Castile, on the south by Andalusia, and on the west by
Portugal. Its length from north to south is about 190 English miles, and its average breadth is about 90 miles from east to west. Its area is reckoned at about 14,800 English square miles. Two large rivers, the Tagus and the Guadiana, both coming from Castile, cross the province from east to west, and it is on the banks of these rivers that the main divisions of the province, that of the Tagus being Northern Estremadura, called also Alta or Upper Estremadura, and that of the Guadiana forming the southern part, which is called Baja, or Lower Estremadura. A range of mountains, which is on the left bank of the Guadiana, in New Castile, and which, under the various names of Sierra de Guadalupe (3000 feet), Sierra Marchal, and Sierra de San Pedro crosses Estremadura in a south-west and west direction, and then joins itself to the Sierra del Portalegre, on the right bank of the Guadiana, both of which mountains keep up a stream of waters which flow into the Guadiana and those which run into the Tagus. To the north the basin of the Tagus is bounded by another and still loftier ridge, the Sierra de Gredos, a continuation of the mountains of Avila, in Old Castile, which runs westward under the names of Sierra de Francia and Sierra da Gata, along the boundaries between Estremadura and Salamanca, and afterwards entering Portugal joins the Sierra d'Estrela in the neighbourhood of Almejares and Penamacor. From this northern ridge several torrents flow into the Guadiana, of others of which the principal one is the Salor, which rises in the Sierra de San Pedro, and enters the Tagus below Alcantara. The principal towns of the northern division of Estremadura are: Plasencia, a bishop's see, with 6700 inhabitants, and a fine cathedral church; Mérida, on the ancient road of the province; Alcanfor on the Tagus, with 3360; its handsome bridge built by Trajan was partly destroyed during the Peninsular war; Valencia de Alcantara, near the frontiers of Portugal and at the foot of the Sierra Fira, with 4700 inhabitants; Trujillo, near the borders of Castile, the birth-place of the Pizarros, with 4600 inhabitants; Coria, north of the Tagus and west of Plasencia, with 2500.

The basin of the Guadiana, or southern division of Estremadura, is bounded to the south by a continuation of the Sierra Morena, which, under the name of Sierra de Guadalcanal and Sierra de Monasterio, divides the waters of the Guadiana from those of the Guadalupe, running westwards along the borders of the provinces of Estremadura and Sevilla. Throughout this plain, which is to the north of the Guadiana, this branch of the Sierra Morena is comparatively low, few if any summits reaching 2000 feet above the sea. The banks of the Guadiana, especially below Badajoz, are low, flat, and unhealthy. The finest districts of this part of Estremadura are those of Llerena, near the foot of the Sierra Morena, of Xerec, and la Serena. Badajoz is the capital of all Estremadura, and the residence of the captain-general. [BADAJOZ.] The other towns of this southern division are: Merida, the ancient Emerita Augusta, the capital of the province; Caceres, on the banks of the Guadiana, which is the principal town of the Guadiana, running westwards under the name of the province of Badajoz, with 8300 inhabitants; Truchilla, near the borders of Castile, the birth-place of the Pizarros, with 4600 inhabitants; Coria, north of the Tagus and west of Plasencia, with 2500.

The whole population of Estremadura is vaguely reckoned at 55,000,000 inhabitants, divided among seven towns, 212 villages or borregos, and 121 aldeas or villages, mostly thinly inhabited. The ecclesiastical division consists of three bishoprics, namely, Badajoz, Plasencia, and Coria, and 412 parishes. There were also 172 convents previous to the late suppression. Estremadura is one of the least populous provinces of Spain; its depopulation dates from the expulsion of the Moors, and the subsequent establishment of the Moors, or administration of the flocks of migrating sheep and cattle which took place, and the lands were subsequently abandoned. About four millions of sheep come to graze, during winter, from the other provinces on the open spontaneous pastures of Estremadura. Other tracts are covered with underwood and wild oriferous herbs. There are also forests of oak, beech, elenest, and pine trees, whose numerous herds of swine feed; the flesh of these animals forms a considerable article of commerce with other provinces of Spain. Game of every sort is plentiful. The cultivated parts produce some wheat, oats, Indian corn, flax, and hemp. The climate is healthy, though the winter is cold. Excellent honey and wax are also gathered. Many ruined and deserted villages are met with over the country, with traces of former cultivation and of a population which has disappeared.

The extremeños, or inhabitants of Estremadura, are reckoned the most grave and taciturn of all the people of Spain. Living in a remote inland province, with few means of communication with the rest of the world, they have, generally speaking, no notion of the luxuries or even comforts which are unknown to them, and it is only by their own efforts that they are able to acquire them. They are not however, as in the rest of Spain, a hardy and industrious people. They live in their villages and towns, and depend for their living on agriculture, which is the chief occupation of the inhabitants. The most fertile lands are the plains of the Guadiana and the Tagus, and the most fertile villages are those which are situated near the banks of these rivers. The province of Estremadura is one of the best cultivated in Spain, and the produce of the lands is very abundant. The principal towns of the northern division of Estremadura are: Plasencia, a bishop's see, with 6700 inhabitants, and a fine cathedral church; Mérida, on the ancient road of the province; Alcanfor on the Tagus, with 3360; its handsome bridge built by Trajan was partly destroyed during the Peninsular war; Valencia de Alcantara, near the frontiers of Portugal and at the foot of the Sierra Fira, with 4700 inhabitants; Trujillo, near the borders of Castile, the birth-place of the Pizarros, with 4600 inhabitants; Coria, north of the Tagus and west of Plasencia, with 2500.

The high post-road from Madrid to Lisbon crosses Estremadura, and is kept in good repair. Other roads are bad, and impassable for carriages in the rainy season. The posadas or inns on the roads are among the worst in Spain; provisions are scarce, and the markets few and ill supplied. On the side of Portugal, the frontier town of the Tagus between Estremadura and Beira is a little town of village size, at the mouth of the Tagus, an offset of the Sierra de Gata, which extends from Penamacor, a town within the Portuguese frontier, southwards to the Tagus, a few miles west of the bridge of Alcantara. A road leads from Plasencia across these hills by Zaraqa and Kachmir, and thence by the fertile valley of the Guadiana to Badajoz. Along the Tagus, the western boundary of Estremadura is much further advanced towards the west; beginning near Montalvo, about 35 miles west of Alcantara, it continues southwards, passing a little to the east of Castello de Vide and Aula, and the town of Pinto, within 10 miles of the Tagus. From thence, for about 25 miles southwards, the Guadiana serves as a boundary, after which the line of the boundary of Portuguese, about 25 miles more, first south and then south-east, marks the limits between Estremadura and Beira. The western boundary of Andalusia, which forms the north boundary of Estremadura, is much further advanced towards the west; beginning near Montalvo, about 35 miles west of Alcantara, it continues southwards, passing a little to the east of Castello de Vide and Aula, and the town of Pinto, within 10 miles of the Tagus. From thence, for about 25 miles southwards, the Guadiana serves as a boundary, after which the line of the boundary of Portuguese, about 25 miles more, first south and then south-east, marks the limits between Estremadura and Beira. The western boundary of Andalusia, which forms the north boundary of Estremadura, is much further advanced towards the west; beginning near Montalvo.
The southernmost part of Extremadura, which lies on the left or southern bank of the Tagus, is not so fine as that on the right bank, being mostly low and flat, and unhealthy in several places. A range of hills which is a continuation of the Sierra de la Demanda, and joins to the mountains of Spanish Extremadura, runs from east to west at some distance south of the Tagus, enters Portuguese Extremadura north of Setúbal, and terminates on the peninsula in Almada opposite to Lisbon. But the limits between Extremadura and Alentejo are not marked by this range, the line of demarcation being a tortuous and capricious one, beginning from the sea north of Cape Sines, then taking a semicircular sweep to the eastward, crossing the river Sado and the range above mentioned east of Alcácer, and approaching the course of the river Coa to the Tagus. The country inclosed within this line, the sea and the Tagus, forms the comarca or district of Setúbal which is included in the province of Extremadura. But farther to the east Extremadura again disappears upon Alentejo along the left bank of the Tagus from Salavaterra up to Perales, which lies nearly opposite Abrantes and the hills called Cime de Ourem: the limits between Extremadura and Alentejo are marked on this side by the course of the rivers Sora and Alentejo which flow across the Tagus at this point. Extremadura contains the territories of Chamusca, Alcémirim, and Salavaterra, which are included in the administrative districts of Santarem and Alenquer beyond the Tagus. According to a new territorial division planned by the Cortes of 1822, the territory of Extremadura includes the comarca of Setúbal, the whole left bank being considered as belonging to Alentejo. But the political convulsions that followed prevented the new plan from being put into execution.

The province of Extremadura is divided into the following comarcas or districts:—1. Lisbon, which includes the capital and its suburbs: Belém, with its splendid monastery; Bemfica, near the fine aqueduct of Aquos Livres, which carries the water to Lisbon; Campo Grande, with an important manufactury of wood. 2. Torres Vedras, with the town of that name, 3,400 inhabitants; and Alto, with 2,000, and its splendid palace, church, and convent, called the Escolas of Portugal, and a vast royal park; Ereira, near Mafra, a small fishing harbour: and the port of Cacais, near the entrance of the Tagus. 3. Vila Franca, with the pretty town of that name on the Tagus above Lisbon, with 2,000 inhabitants, and the manufacturies of wood, oil, lime, and brick kilns, which supply Lisbon with bricks. 4. Alenquer, with the town of that name, 2,500 inhabitants, and a paper manufactury: and the town of Chamusca beyond the Tagus, with 3,000. 5. Santarem: the town of that name stands on a steep hill rising above the Tagus, and has several spacious convents and other extensive buildings, and an old castle, and 7,300 inhabitants. The other towns of this district are: Torres Novas, a lively place in a fine country, with about 4,000 inhabitants; Golegão on the Tagus, where one of the principal fairs of Portugal is held; Salavaterra de Magos, on the left bank of the river, with a royal villa and hunting park, which contains wild bears. 6. Tomar, containing the town of Tomar, east of Santarem, with 4,000 inhabitants, a large manufactury of oil and soap, and a paper manufactury. 7. Colares, with the town of that name, which has about 5,000 inhabitants. 8. Leiria, containing the town of the same name, with 2,000 inhabitants, with a bishop's see and a castle, on a steep rock. Near it is the village of Marinha Grande, with a glass manufactury, established by an English spectator. The other towns of this district are: Pombal, near the bor-

To west, ends off a branch to the north-west, which enters the coast of Spain, and roughly extends the length of the province under the various names of Serra de Lezúa, Serra de Alberdos, Monte Junto, and Serra de Baragüela. The Sierra de Baragüela stretches to near Torres Vedras, and there meets at an oblique angle the ridge which runs from the Foz de Alentejo, and crosses the sea on the peninsula in which Lisbon is situated. This latter ridge, which is separated from the former by a narrow but deep ravine extending from Torres Vedras towards Sobral, furnished Lord Wellburn in 1810 with a valuable position of defence against the French and British army under Marshal Massena. The line of hills extends from the mouth of the Zêzere, west of Torres Vedras, to the town of Almathra on the Tagus, a distance of about thirty miles. The village of Sobral lies in front of the centre of the line. The continuation of the Zêzere chain already mentioned divides the waters which flow into the Tagus from those streams which run direct into the ocean. Among the tributaries to the Tagus, the most considerable are—1. The Zêzere, a rapid stream which has its source in the mountains of Guaria in Upper Beira, enters Extremadura near Pedrogão, and running southwards receives the Nareão from Thomar, and then enters the Tagus at Punbate below Abrantes. 2. The Azambuja, called also Rio Mayor, which rises north of the town of Rio Mayor, and flows northwards to the Tagus, the Nareão, and at the foot of the hill of Santarem, and enters the Tagus above Villa Franca. The streams which flow from the north-west slope of the ridge into the ocean are—1. The Lis, which rises near Alemade, flows by Batalla, receives the Lona near the left bank of the Tagus, and the Pêra do Brado. The Alen, which rises south of the Lis, is joined by the Ber (the two together giving the name to the town of Alcobaça), and after a short course enters the sea. 3. The Arnoa, a small stream which rises in the group of Monte Janu, and runs southwards, where the first engagement between the English and the French in the Peninsular took place on the 17th of August, 1808, and then enters the lake or lagoon of Odivos which communicates with the sea. 4. Further south towards Torres Vedras is the river Eira, which rises in the monastery of Eira, and as a short course enters the sea south of Pinhão Point. The stream Zêzere rises below Sobral, flows through the ravine above mentioned between the Serra de Baragüela and the ridge of Torres Vedras, and enters the sea at the west extremity of the lines. That part of Extremadura which lies north-west of the central ridge and between it and the sea is mostly flat and sandy towards the coast, and either barren or covered with forests of pines. Leiria lies in a fine valley on the Lis, at the foot of a rocky mountain, which, detached one from the country which lies to the south-east of the ridge sloping towards the Tagus is finer and better cultivated, especially the plains about Thomar and Santarem, which are very fertile, and abound with olive and other fruit-trees, and fine pasture grounds. The country about Coimbra produces much wine. But the finest part of the whole province is that which lies to the south of the lines of Torres Vedras towards Lisbon. A second range of hills rises behind the first, extending from Mafra and Ereira on the sea, to near Povoa on the Tagus, which summit called Cabeça do Montachique standing in the centre: and south of these are the hills of Cintra, Queluz, Bellas, &c., which command the city of Lisbon, and the towns of the Tagus down to Fort St. Julian. Between these various ranges are delightful valleys, covered with villages, convents, and gardens, and with gardens, orchards, and vineyards, remarkably well cultivated. This pleasing exception to the generally slovenly state of agriculture over the greater part of Portugal was attributed, in the last century, and by authority, to the peculiar circumstances of the English residents at Lisbon, who being partial to rural life, took pains to embellish their country-houses and gardens according to the fashion of their native country, and thus inspired the Portuguese with a taste for imitation that spread throughout the country, and formed a new source which a fine soil, a favourite site, and a genial climate afford. (Du Chatellet and Bourgoing, Voyage en Portugal.) The vineyards of Bucelas, Carrazuelas, and Colares, produce excellent wine. The neighbourhoods of Mafra, Colares, Queluz, Queija, Cacais, are justly celebrated for their romantic position. A pleasing sketch of these delightful spots is given in Beckford's Recollections of Portugal, 1835.
ders of Beira, with 4800 inhabitants. Batalha, near Leiria, with its splendid convent and church, one of the finest in Portugal. A convent was built by King John I. after the victory which he gained over the Spaniards at Aljubarrota, in the neighbourhood. The church contains the tombs of the kings of Portugal.

9. Alcobaca, containing the town of Alcobaca, south-west of the sea-side, with 15,000 inhabitants and a magnificent convent. The harbour of San Martinho is near Alcobaca, and farther south is the strong castle of Peniche, on a promontory facing the Berengias Islands.

10. The district of Setubal. The town of that name, often called Oporto, is at the mouth of the river Sado, has a good harbour and 15,000 inhabitants, and exports large quantities of salt, which is made from sea-water in the neighbourhood, and also wine and fruits, especially oranges. It is, next to Lisbon and Oporto, the most important town in Portugal. The Sado rises in the Serra de Monchique, on the borders of Algarves, and is navigable for about 30 miles above Setubal. The other towns of this district are: Almada, opposite to Lisbon, with 4000 inhabitants. Aldeia Galenga, higher up the river, which is the common landing-place from Lisbon to the southern provinces; it has about 4000 inhabitants, chiefly boatmen and fishermen. Cazimbra, west of Setubal, near Cape Espichel, with a small harbour and 4000 inhabitants, chiefly fishermen. Alcacer do Sal and Setubal, are an ancient town.

The whole population of Estremadura is reckoned by Miiano at 800,000 inhabitants. Its area has been variously stated; according to Antillon and Miiano it is 750 square Spanish leagues of 20 to a linear degree of latitude. The climate is very free from disease or epidemic. The inhabitants of Alentejo and from the cold winters of Beira. The western winds, which find an opening along the wide valley of the Tagus, refresh the air. The rivers, as well as the sea-coast, abound with fish. The principal products of the country are wine, oil, raisins, fruit, maize, and the only article of commerce that is not sent out is salt, for the purposes of the vast30. Estremadura, one of the strongest fortresses in Portugal, is not far away from Lisbon, and is called standing on an eminence, the latter in the valley below. Population 6500. Here Schomberg gained a victory over the Spaniards in 1663; 38° 46' N. lat., 7° 23' W. long.

ESTUYAR. [ESTUYARTY]

ETX’RIO is a kind of fruit consisting of achenes, or small closed up seed-like seed-veossels, placed upon a suc- cerent receptacle. The strawberry and the raspberry are of this nature, and are very incorrectly called berries, in the botany of the geranium. ETAPMIES, a town in France, in the department of Seine et Oise, on the road from Paris to Orleans, 38 miles in a direct line south-west of Paris, or 31 miles by the road. Etampes is on the bank of two little streams, that unite just below the town with the river Julies (or, as it is sometimes called, the river Etampes), which flows into the Essonne, a feeder of the Seine.

In the year 911 Etampes was burnt by the Northmen or Normans under Rollo. In the latter part of the same cen-
tury, or the beginning of the next, Constance, wife of Ro-
bert, King of France, built here a castle, and Robert him-
self converted the Oratory of the castle into a collegiate church. The castle was held for the king in the eleventh
twelfth centuries by officers who had the titles of Prie-
tre, Bailiff, or Vicomte. There was a Jewish community in Etampes, which, on the expulsion of that people from France by Philippe Auguste, A.D. 1182, was converted into a church, that of Notre Dame, yet standing. In the fourteenth cen-
tury Etampes, which had previously been a royal domain, was assigned by King Charles VII. for some years after some of the great and pious families of Etvyres. It afterwards came successively into the hands of the Dukes of Berri, Bourgogne, Bretagne, and again of Bourgogne. In the sixteenth century Etampes, with its territory or county was erected into a duchy in favour of Jean, Duke of Bourbon. In the religious wars of France, A.D. 1562, the town was taken by the Germans brought into France by the Prince of Condé. In A.D. 1587 it was taken by assault by the Huguenots; in A.D. 1589 it was the rendezvous of the troops of the League, from whom it was taken by Henri III. In A.D. 1390 it was taken from the party of the League, into whose hands it had again fallen, by Henri IV., who chased the French out of the town; after which it suffered much from the exactions of the contending parties in the civil war of the Frondo.

The town is in a tolerably fertile valley, and consists principally of one street. The tower of Guinette is the only remnant of the castle of the Counts of Etampes. There are some ancient churches. That of Notre Dame has a lofty tower and spire; the semicircular arch may be observed in it. The church of St. Giles is also very ancient; it has the semicircular arch, with zig-zag mouldings. There are in the town several houses of the Order of the Knights of St. John, which was originally founded in 1099, but is more generally called 'the tower of Brunebat.' A modern castle has been erected upon these ruins.

The population of Etampes in 1832 was 8109. They manufacture soap, leather, woollen yarn, cotton counter-
panes, and hosiery; and trade in wool, corn, flour, and honey. There are more than forty mills of different kinds on the two brooks which water Etampes: sandstone is quarried in the neighbourhood, and much garden-stuff raised for the supply of Paris. Etampes is the capital of a canton of 20,000 souls.

The town of Etampes forms part of the Doab, and was acquired by the English from the king of France in 1801. Etampes and the adjacent towns, Etuves, Etawe, the ancient capital, and Minpoom, the modern cap-
pital; Kanoje, Belah, and Shekoobad. The town of Etaweh stands on the east bank of the Jumna, in 25° 47' N. lat. and 78° 53' E. long., about 70 miles south-east from Agra. Near the town are the remains of the banks of the Jumna in 27° 14' N. lat. and 75° 54' E. long., about 62 miles east from Agra. It stands in a fertile country, and is a populous place. Kanoje stands on the west side of the Ganges, in 27° 4' N. lat. and 79° 47' E. long., about 63 miles west-north-west from Lucknow. This is a very ancient place; it was formerly of considerable extent, and at the period of the Mohammadian invasion was the capital of a powerful empire, but at present consists of only one street. It is two miles distant from the Ganges, but is connected with that river by means of a causeway. Shekoobad, on the south-west from Kanoje, in 26° 49' N. lat. and 79° 27' E. long. Shekoobad is situated in 27° 6' N. lat. and 78° 27' E. long., about 37 miles east-south-east from the city of Agra. The soil, productions, and climate of this district have already been described. [AGRA; DOAB.]

ETCHING. [ENGRAVING.]

ETFU. [EIDU]

ETHAL, a substantia separated from spermactei by Chevreul. It is a solid, fusible at nearly the same point as tallow, but is more soluble in water; but in alcohol at 150° Fahl, is much more soluble than spermactei. It is susceptible of union with various bases, with which it forms salts or soaps.

ETHELBALD, king of Wessex, was the eldest surviving son of Ethelwulf, who designed him the throne of that state in 855 or 856. [ETHWULF.]

On the death of Ethelwulf in 857 or 858, Ethelbald married his young step-mother, Judith of France; but the vehement remon-
strances of Swithin, bishop of Winchester, prevailed upon Ethelbald to hand the crown to his younger brother. Judith afterwards became the wife of Baldwin, count of Flanders, and the ancestress of Matilda, the wife of William the Conqueror, and, through her, of all the succeeding kings of England. The chroniclers speak in very con-
tentious terms of Ethelbald's brother Ethelbert; but although he had greatly distinguished himself in the wars with the Danes in his father's time, his own reign is not marked by any military events. He died in 860, and was succeeded by his next brother, Ethelbert.

ETHELBERI, or, as the name is written by Bede,
AELDILBERT, was the fourth king of Kent in lineal descent from Hengist, through Ere or Ace, Odo or Othina, and Ermanric, whom he succeeded while yet a child in the year 569. As the representative of the first leader of the Anglo-Saxons and founder of the eldest dynasty of the Heptarchy, Ethelbert, as soon as he attained manhood, took a firm footing, and was acknowledged with Caewlin, king of Wessex, who claimed that supreme dignity as the grandson of Cadwall. [ENGLAND.] He invaded Wessex in 569; but the war was speedily ended by his defeat in a great battle fought at Walhambone, near Wimborne, in Sussex, to him also the first instance of one of the states of the Heptarchy drawing the sword against another. Ethelbert, however, according to Bede, came to be acknowledged as bretwalds about the year 580, after the decline of the fortunes of Caewlin, who was deposed about that time from the helme, and only ruled for some days and years after. Ethelbert retained the supremacy during all the remainder of his reign, though it would seem that his title never was acknowledged by the kings of Northumbria.

The most memorable event in the reign of Ethelbert was his conversion to Christianity and the establishment of that religion in his dominions by the minister of St. Augustine. [Augustine, St.] Ethelbert professed himself a Christian, and was baptized on the feast of Pentecost A.D. 597. The Christian worship, however, must have been far from being acknowledged by all the people, for he had married to a Christian wife, Bertha, the daughter of Chilbert, king of Paris, in the year 576, and she and her attendants had ever since practised their own religion under the guidance of Liuthard, a bishop who had accompanied her on her marriage. Ethelbert seemed to be reconciled himself with zeal in the diffusion of his new faith. He founded the bishopric of Rochester about the year 600 in his own dominions, in addition to the archbishopric of Canterbury, the establishment of which is dated from the reign of St. Augustine. He had also established the foundation, about the same time with that of Rochester, of the bishopric of London, in the state of Essex, which was at this time governed in subordination to Kent by Sebert, Sebert, Sactford, or Saba, a nephew of the Dane, and the see of London was dedicated, like the others that have since been built on the same site, to St. Paul, was created at the joint expense of Ethelbert and Sebert. The conversion of the king and people of Essex had previously been effected through the influence of the king of Kent. It was also through his daughter Eudelberga, who married Edwin, king of Northumbria, that Christianity was introduced into that state. [Eniwax.]

Ethelbert deerves special remembrance in English history, for he is the author of the earlier of our written laws, the collection of 'Dooms,' as Bede calls them, which he established with the consent of his witan in the days of St. Augustine. They are written in Saxon, or English, as it is termed by Bede, although all the laws are not in direct epitome of the laws in their codes; and they are the earliest laws that exist in any barbarous or modern tongue. There is no reason however to suppose that the regulations which they established were in general new. They relate, to quote the words of St. Augustine, 'from the days of the ancient Angles,' even from p. 414. From the pecuniary fines payable for various transgressions, the offences against the church being first enumerated. These were of new introduction; but every other mullet was known before; and it is probable that the principal benefit of the Dooms was merely to make a fairer appearance of punishment to the crime than could be obtained according to the older customs. The collection consists altogether of eighty-nine enactments or clauses; at least as it has come down to modern times. But the only copy of which we possess is that contained in the volume called the 'Tec- tus Rotelffron,' which was compiled by Ernulfus, bishop of Rochester, in the early part of the twelfth century; and it is difficult to believe, as Sir F. Palgrave has observed, that the text of an Anglo-Norman manuscript of the twelfth century could be an improvement upon that of the Anglo-Saxon of the reign of Ethelbert. The language has evidently been modernized and corrupted by successive transcriptions. Some passages are quite unintelligible. Neither is there any proof whatever of the integrity of the text. It cannot be asserted with any degree of confidence that we have the whole of the law. Destitute of any statute clause or enactment, it is from the title or rubric alone that we learn the name of the legiferator. The next oldest Anglo-Saxon laws that have been preserved relieve of Hithberne and Ealing, also kings of Kent are more than a century and a half later than Ethelbert.

Ethelbert died in 616. It happens in his old age to have married a lady of noble birth, a daughter of Broc, king of Essex. All that we know of her is, that after the death of Ethelbert, her youth and beauty were sufficient to tempt his son and successor, Eadbald, to take her to his bed, and of course to renounce at the same time the profession of Christianity. After a short time of married life Ethelbert, his stepmother, and returned to the faith he had abandoned, of which he ever after continued a firm supporter. The dignity of Bretwald was on the death of Ethelbert, passed to Redwald, king of the East Angles.

ETHELRED I. called also Ethelred and Ethelred, king of Wessex and head of the Heptarchy, was the third surviving son of King Ethelbald, who in his will testified by the authority of the bishops, and received the crown of Wessex, as the supreme crown of Wessex, he was preferred by the Witen to his younger brother Ethelred, who claimed under the will. The chronicles celebrate the courage and military talents of Ethelred; but no events of his short reign are described, and we are left to conjecture how he was enabled to make occasional descents both on the coasts of Wessex, and on those of other parts of the island. All that we are told of Ethelred is, that he died in 656 or 656. He appears to have left a son, Ethelred, and other children; but he was succeeded on the throne of Wessex by his younger brother Ethelred.

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ETHELRED II. called also Ethelred and Ethelred, king of Wessex and head of the Heptarchy, was the third surviving son of King Ethelbald, who in his will testified by the authority of the bishops, and received the crown of Wessex, as the supreme crown of Wessex, he was preferred by the Witen to his younger brother Ethelred, who claimed under the will. The chronicles celebrate the courage and military talents of Ethelred; but no events of his short reign are described, and we are left to conjecture how he was enabled to make occasional descents both on the coasts of Wessex, and on those of other parts of the island. All that we are told of Ethelred is, that he died in 656 or 656. He appears to have left a son, Ethelred, and other children; but he was succeeded on the throne of Wessex by his younger brother Ethelred.
unheard-of ferocity. At a village called Hoxton, in Norfolk, they seized Edmund, the East Anglian king, and put him to death: he sustained the torments they inflicted upon him with such constancy that he was afterwards revered as a martyr, and the 26th November, the day on which he was murdered, was made a day of mourning in England. His death made the Danes masters of East Anglia, over which they placed Godror, one of their chiefs, as king. They now resolved to invade Wessex, the only state which they had not either conquered or rendered tributary to them. They entered Berkshire, unto the neighbourhood of Halden and Basing, and took the town of Reading without encountering resistance; but they were soon after attacked by Earl Ethelwulf at the neighbouring village of Inglefield, and driven from their ground with the loss of Solnor, one of their leaders, and Harwine. The Saxons were defeated and taken upon at Reading by King Ethelred and his brother Alfred; but on this occasion the Saxons were repulsed with great loss, the brave Earl Ethelwulf being among the slain. The battle of Reading, however, was followed in four days more by another more important encounter at a place which the old writers call Ascensus, or the Ash-tree Hill, and which has been supposed by some to be Ashbury in the v., by others Asilton in the east, of Berkshire. The Danes were forced to attack with great impetuosity and valour by Alfred. For what relief the Saxons afterwards received, after a struggle of some length, completely defeated the Danes and put to flight. It is said that the English chased them for the whole of the night and next day over the country till they reached the town of Reading, in which they again surprised the Danes, who were again placed in flight. The Ash-tree Hill they again met the two kings of Wessex at Basing, in the north of Hampshire, and this time the English were worsted. A similar result attended the next battle, fought, about two months after, at a place called Merton, where Earl Ethelred, Earl Haeflin, Merton in Oxfordshire, Merdon in Wils, and Merton in Berkshire. In this engagement, which must have taken place early in 871, Ethelred received a wound, of which he died soon after Easter, leaving the now almost shadowy in- habited conquest resident for a time. This period has been called the suzerainty of England, to his younger brother Alfred.

ETHELRED II, surnamed the Unready, king of the Anglo-Saxons, was the youngest son of King Edgar, by his second wife, the infamous Editha. On the murder by Ethelred of his elder brother, Edward the Martyr, in 978, he was reluctantly acknowledged as king by the Witan, in the absence of any other individual having pretensions to the crown; even Dunstan, who had steadily opposed the party of his uncles, by then more boughs than he, was obliged to acquiesce in the accession of his son. He was crowned by Dunstan, at Kingston on the Thames, on the 11th of April, being at this time only a boy of ten years old. The reign of Ethelred the Unready is on the whole the most calamitous in the annals of England. Feudal and distracted government that arose out of his misfortune and the circumstances of his accession immediately overtook him, on the attention of the northern practical powers, who had now remitted their attacks for a century. A successful invasion of Denmark at Southam in 898; and scarcely a year passed afterwards in which one part or other of the coast was not in like manner assailed and ravaged, usually with impunity. At length, in 911, a much larger force than had before arrived invaded the coast of East Anglia. The nobles of Dunstan and Guthrinc, and after leaving the town of Ipswich, proceeded to Maldon, and there encountered the English army commanded by the alderman Brithalfred, obtained a complete victory, Brithalfred himself being slain. On this was resolved by the English Witan, on the advice, it is said, of Sirin, who had succeeded Dunstan as the king's chief councillor, to buy off the invaders with a sum of money. They agreed to accept 10,000 pounds of silver, which was accordingly paid to them, being raised by an impost upon all the landed property in the kingdom. The population of England was then only about a million and a half, or 40 persons to the square mile. This sum was paid to the Danes, and was perhaps the first direct payment of money in England. It was felt however that this was a very precocious expedient to trust to; and, as soon as the taxes were gone, the government proceeded to fit out a formidable fleet, which might perhaps have been of service, if it had been ready to meet them when they arrived. As it was, it was no sooner affixed than it was rendered useless by treachery and mismanagement. A squadron of Danes having again appeared on the coast in 992, Alfric, the commander of the English fleet, when sent to surprise them, secretly gave them information of the intended attack, and then went over and joined them. The next year, when the Northmen made another descent upon the south, they set fire to the land, and took by storm the castle of Bambourgh, the leaders of the force sent against them in like manner deserted to the enemy. In 994 a much more powerful armament than had yet appeared sailed up the Thames under the command of Sweyn or Swine, king of Denmark, and Olave, king of Norway; it consisted of ninety-four ships, and directed its first efforts against London, which however defended itself successfully against the assault. The invaders then overran and laid waste a great part of Essex, Kent, and Sussex. In the end they exacted a great part of the money from the English by the payment of a sum of money, their demand this time rising to 16,000 pounds of silver. Olave now consented to embrace Christianity; and he faithfully kept his promise of never again molesting England. Not so the king of Denmark; his forces continued their attacks year after year; and at last, in 1001, Ethelred found himself once more compelled to rid himself of the moment by his old expedient. He was now obliged to pay them 24,000 pounds of silver.

For what relief the English obtained of the Danes is said to be due to a chance which it thus purchased might have lasted it is impossible to say. Ethelred now resorted to another mode of dealing with the evil, which was of a very different character from that to which he had hitherto adhered, but combined the qualities of being more cheap and more efficacious. On the 13th November, the festival of St. Brice, in the year 1002, the English inhabitants, in obedience, it is said, to secret instructions received in every city from the government the evening before, suddenly rose upon the Danes, whom they found assembled in various places and at all points. It is certain that the majority of the inhabitants were of this description; but there can be no doubt that a very large number of persons perished. This atrocious and in every way unwise proceeding did not long remain without its fit punishment. The next year Swyn, the king of Denmark, having been elected to an English earl, had been among the butchers, again appeared on the south coast; and from this time it may be said the kingdom had no rest. After the devastations of the invaders had been continued for four years, they were finally forced by the pay of 62,000 pounds of silver. The next year, by extraordinary efforts, a numerous fleet was built, and assembled at Sandwich; but a dispute arising among the captains, one of them deserted with twenty vessels, and turned pirate, and nearly all the others deserted but five, which were the only craft left. The battle was fought on the 14th of September, 1014, and all the other forms of public calamity combined to afflict the nation. The king was an object of general hatred or contempt; the nobility were divided into hostile factions; and famines and contagious diseases vied with the swords of the invaders in destroying the miserable people. In 1019 a new Danish force arrived, under a leader named Torkel, who for the seven following years spread devastation throughout the only part of the country that had hitherto affored an asylum from the foreigners, the fens of Lincolnshire. Torkel was ultimately expelled from the city of Canterbury, Thurkill was bought off in 1012 by a payment of 48,000 pounds of silver, and he and his followers agreed, in being allowed to settle in the country, to become the subjects of the English king. But the next year Swyn himself again made his appearance, now showing his determination not to depart till he had effected the conquest of the country. Entering the Humber, he received the submission both of the Northumbrians and of the parts of Lincoln that were in like manner chiefly inhabited by the Danes, and crossed the country to London, putting all the males to the sword as he advanced; but the capital, which was defended by Ethelred and Thurusil, resisting his assault, he turned to the west, and, compelling the nobles to make their submission to him wherever he passed, he proceeded to Bath, and there caused himself to be proclaimed king of England. Soon after this London submitted to his authority; and in
the middle of January, 1014, Ethelred fled to the court of Richard duke of Normandy, whose sister Emma he had married some years before. He had previously sent the child Emma and her two children.

On the 2nd of February however Sweyn died. His son Canute was immediately proclaimed king by the army; but the queen mother and Ethelred were invincible. He was afterwards back accordingly, after entering into a solemn agreement with the Witan, that he would be a good lord to them, and amend all they had wished to amend, and that all things should be forgiven which had been done or said against him, they on their part promising that they would all submit to him without fraud, and would never again permit the Danes to have dominion in England. Canute deemed it prudent to take flight before the national enthusiasm of the moment: and it is said that another general massacre of the English was going to be committed on this so-called rotation, in the restoration of a national government. But Canute returned the following year with a powerful fleet: he was immediately joined by Thurkill, who, till now, had remained faithful to his English allegiance; other chiefs followed Thurkill's example; and a great part of the country appears to have again quickly submitted to the Danes. Ethelred was confined to his bed by illness when Canute arrived, and he died in London on the 23rd of April, 1016, at the moment when the enemy was preparing to attack. The news of his death succeede by a general mourning, surmounted by Ironside, his eldest son by a lady named Elieca, who is said to have borne him six sons and four daughters, but to whom it is supposed he was yet more devoted. Edward, one of his two sons by Emma of Normandy, whom he married in the first instance, succeeded to the throne. [EDMUND I. [EDWARD THE CONFESSOR.]

**ETHELWULF** was the son of Egbert the Great, whom he succeeded in the throne of Wessex and the supremacy over the other states of the Heptarchy, in 836. The province of the Mercian, and Saxon, and East Anglian, and the conquest of his dominions, and also that of Surrey, which had hitherto been included in Wessex, were at the same time formed into a separate but subordinate kingdom, and put under the government of Athelstan, whose sons, or rather successors in the kingdom, were sons of other brothers of Ethelwulf. There is no older authority than that of Malmesbury (whose account is indisputably incorrect in several particulars and improbable in others) for the story that Ethelwulf was a monk at the time of his father's death. His early education is recorded to have been conducted first by Helmsian, bishop of Winchester, and afterwards by Swithin, whom, on coming to the throne, he advanced to the same see: and he had also served him as a companion in the field in the lifetime of his father. When he succeeded to the throne on the retention of his chief counsellor the able Alstan, bishop of Sherborne, whom he had in great favour with Egbert. What has been preserved of the history of the first fourteen or fifteen years of Ethelwulf contains the substance of the details of a series of contests with the Danes, who now continued with incessant perseverance those descents upon the English coasts which they had commenced in the preceding reign. In 837 three squadrons of them made attacks on different points nearly at the same time. The next year they landed again in great strength in Lincolnshire, and, after defeating the troops sent to oppose them, marched across and ravaged the country down to the Thames. In 839 three land battles are recorded to have been fought; one of which, on the 26th of August, in the county of Berkshire, was an action at sea, near Charnham, in which the English fleet, commanded by Ethelwulf in person, sustained a defeat. For some years after this however the Northmen, abandoning Britain, directed all their efforts against the eastern sea-board. It was not till the year following that body of them landed in the Isle of Thanet, when, so ill-prepared was Ethelwulf for the attack, that the foreigners were enabled for the first time to pass the winter in the country. In the spring of 841 they were joined by great numbers of their countrymen, and the whole multitude ascending the Thames in a fleet of 350 vessels, plundered Canterbury and London. They then penetrated into Surrey; but here they were met by Ethelwulf at Okeley, and after a long and obstinate battle, were defeated with immense loss. They were pursued and defeated in another battle at Wantsum, in the county of Kent, and also in a sea-fight near Sandwich by Athelstan, the king of Kent. The consequence was, that the Danes did not again make any attempt on England during the reign of Ethelwulf.

In 852, on the death of Athelstan, the kingdom of Kent was assigned by Ethelwulf to his second son, Ethelbert, he himself retaining the chief sovereignty as before. The following year, at the request of Beorhred, or Barbrid, the king's brother, who had succeeded to the Isle of Anglesey, compelling them to acknowledge themselves the subjects of him-self and Beorhred. On the termination of this expedition he gave his daughter Ethelwulfina in marriage to the king of the Isles, who was recently converted to the Christian religion. He fell in love with Judith, daughter of Charles the Bold, king of that country, and married her, although she had not yet reached her twelfth year. Meanwhile however his eldest son Ethelbald, taking advantage of his father's absence (whom perhaps he represented as being in his dotage), had entered into a scheme for seizing the throne. It is said that among his accomplices was the prime minister Alstan, and that he was also supported by the chief nobility, from which we may conjecture that the attempted seizure was not carried on without previous preparation. And although the return of Ethelwulf is said to have prevented the full success of the design, it was substantially carried into effect. It was agreed at a solemn meeting of the Witan that Ethelbald should become king of Wessex, and Ethelwulf should continue to rule under him, in Kent and the other eastern provinces. It may be supposed that in his new position Ethelwulf enjoyed little more than a nominal authority. He spent the remainder of his days mostly in exercises of devotion and in the practice of penance, and was confirmed by the Witan, he left the kingdom of Kent to his second son Ethelbert, and that of Wessex in succession to his other sons, Ethelbald, Ethelred, and Alfred.

One of the legislative acts of the reign of Ethelwulf has been marked as being the institution of a court of law, which was made in 854 or 855, with the consent of the Witan, in favour of the church, and which was wont to be considered as the original foundation of the right of the clergy to the tithes. The grant is received by Iwulfus, Malmesbury, and Matthew of Wessex, and is not in the same terms. Lingard observes that the copies are so different, and the language is so obscure, that it is difficult to ascertain its real object: whether it were to exempt from all secular services the tenth part of ecclesiastical property, or whether the grant was to the bishopric which had already been settled on the church. It cannot, Turner thinks, have been the original grant of the tithes of all England. The words, he observes, imply either such a thing as an ecclesiastical court, or that there was a grant of tithes, not in the same terms, but in a council of the tributary states, held at Winchester in 855, it was extended to all the nations of the Saxons.

**ETHER.** [AETHER.]

**ETHEREGE,** sometimes written **ETHERIDGE,** SIR GEORGE, born about 1636, was a distinguished wit and dramatic writer of the reign of Charles II. According to the usual routine of a gentleman's education at that time, he studied law at an inn of court and travelled. In 1664 he made his first public appearance as author of the comedy 'A Man and a Match' at Woolwich, in 1668, and 'The Man of Mode, or Sir Fopling Flutter,' in 1676. All these were received with much favour by the
public, but 'Sir Foping Flutter' has been the most esteemed. They placed him, with Buckingham, Rochester, Sedley, &c., in the first rank of the wits of the day. Ease and brilliancy of dialogue are their characteristic excellence; but they have an ingrained taint of licentiousness running through the concoction, as well as the language, which has long excluded them from general favor. The characters are supposed (which is the author's best excuse) to be highly coloured copies of the fine gentlemen and ladies of the day, we shall marvel that the name and representation of gentlemen should ever have been sullied by such a total want of truth and honesty.

The Etherege's verses are not numerous, and consist of occasional pieces, lampoons, songs, and short amatory poems, some of which are of a very licentious character. Their style is often. The appellation given by Etherege and gentle George. Rochester, in his 'Session of the Poets,' gives high praise to our author, in saying that

Of all men that write,

There none had more fancy, taste, judgment, and wit.

Fancy and it may be allowed him: the taste and judgment suited Rochester's own. Etherege's private life may be guessed from his writings: play injured his fortune, debauchery his constitution. He repaired the former by marrying a rich widow, whose pride was a title; and to win her he purchased his knighthood. He was in James II. his favor, and is said to have been one of the regicides. He was minister to Ratisbon, where, by some accounts, he died from a fall down stairs after a convivial entertainment; but this appears uncertain. The time of his death seems to have been about 1701.

There is an edition of his Plays and Poems in 8vo., London, 1704, and one in 12mo., London, 1715.

Etherege, a theoretic carburetted hydrogen, consisting of 4 equivalents of carbon = 34, and 5 equivalents of hydrogen = 8; its equivalent is therefore 29. Among the various theories which have been proposed respecting the constitution of ethereums, which that supposes it to contain etherium (as it is termed by Dr. Kane, and ethule by Berzelius), as a base combined with oxygen, is perhaps to be referred to all others. It is indeed true that etherium has never been converted into ethereal substance, but allowing its existence, either may be regarded as an oxide of etherium, alcoh., a hydrated oxide of etherium or a hydrate of ether, and sulphuric acid may be viewed either as a hydrated bisulphate of oxide of etherium, or a hydrated bisulphate of ether.

Etherea, Lamark's name for a genus of Conchifera, placed by many authors among the Chamalea, but separated by Deshayes observes, it is a great singularity in an animal that lives attached to foreign substances, it is provided with a very large foot, which may be compared in regard to the form and position with that of Unio.

The shell is thick, nacreous, very irregular, inequal, inequal, umbones short, thick, indistinct, hinge toothless, irregular, undulated, callous, ligament longitudinal, tortuous, external, penetrating pointedly into the interior of the shell; musculature oval, irregular, one anterior and posterior, the other inferior and anterior; papillae impression narrow and small.

Obs.—M. Deshayes observes that on examining the shells of this genus, in which the ligament is not ruptured, it appears that the ligament is not entirely internal or sub-internal, but that it has completely the structure of external ligaments. It is when the shells are young that the structure of the ligament is most easily recognized. There are two muscular impressions, always very distinct in old individuals; but, in the young ones, it sometimes happens that one only can be distinguished, and it was upon an individual in this state of growth that M. de Féruassac established his genus Mulleria, which, in the P. C. No. 601.

opinion of M. Deshayes, cannot be retained. With regard to the ejection of the hinge advertised to by M. de Féruassac, M. Deshayes states that it is only one individual which M. de Féruassac had in his hands some small fractures resulting, as it appeared to M. Deshayes, from this cause, namely, that the shell having been taken by force from the animal, the hinge had been separated by attacking the ligament with a sharp instrument.

Geographical Distribution, Habits, &c.—Lamark considered the genus Etheria to be marine, and accounted for its having escaped the notice of zoologists because it was attached to rocks near the surface of the sea. Mr. G. B. Sowerby, after noticing the locality mentioned by Lamark, remarks that two circumstances observable in the Etheria (E. semifusina), figured in his plate, would have induced him to suspect that this was a fresh-water species; or at least he has observed that it is usually at the mouths of rivers; 1st, its having an epidermis, which had been seen on the ven those parts least exposed to the action of the water, the greater part especially of the upper valve being eroded in a very irregular manner; and 2ndly, its being partly covered with specimens of the same species, supposed to be the eggs of some mollusque animals often seen on fresh-water shells. M. Cailliaud was the first to make known the fact that the genus is an inhabitant of the fresh waters, and M. de Féruassac (Mémoire de la Société Méthodique, vol. 1) publishes a notice of a collection of Etheria, and a description of E. aucta, from a sample of the species, from M. Cailliaud's materials, in which the former also made a revision of the species. M. Deshayes, in his treatise on the genus (Encyclopédie Méthodique), states that indiduals of the same species adhere to the one or the other valve in an indifferent attitude, but the two valves usually adhere to the oysters or the Chamae. That Etheria may be attached indirectly by either valve there is no reason to doubt after the assertion of M. Deshayes; but Mr. Broderip (Trans. Linn. Soc., vol. i) observes that the same species of Chama is sometimes attached by the left valve. (Chamacea, viscosity, p. 470.) M. Rang, during a voyage to Sonegal, made some interesting observations on Etheria, which live 200 leagues from the mouth of the river in the Senegal, and, together with M. Cailliaud, who received the species from Mlle. de Rébeata, beyond the peninsula of Murie. The inhabitants collect them on the banks of the river, to ornament their tombs with them, and the same Probability of the Nile produce them. M. Cailliaud could not obtain any living specimens, the river being then always too high. They are said to be very common in the Jabbousi, a river which runs into the Blue River, and in all appearance the numerous confluent streams of this great arm of the Nile produce Etheria. The author adds that Ethiopia is so great that it is astonishing that Bruce and Buckhurd should not have mentioned them. (Zool. Journ., vol. i.) Lamark recorded four species of Etheria, which he divided into two sections, each containing two species. The first of these consists of species which have an oblong callosity in the base of the shell; the second, of those which have no encroached callosity at the base of the shell. These four species M. de Féruassac (with justice in the opinion of M. Deshayes) reduces to two; so that three species are left. In the way by Lamark, would each, in that case, consist of four of one species, viz., the first of Etheria elliptica, and the second of Etheria semifusina. M. Deshayes remarks that Lamark saw but a very small number of individual species, and endeavored to distinguish species from the form of the shell; and it is certain, he adds, that if we were to follow the same indication at the present day, we

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might establish a species for each individual. He notices M. Rang's judicious observation, that in the same species there are individuals armed with spines, and others devoid of those appendages, and that the shades of this character are so gradual that it is impossible to regard it as of the smallest importance. In following out this principle, M. Rang considers Ethenia tubifera of Sowerby and Ethenia Catillaudi of Férussac as identical, and E. Cortoroni of Michelin to be the same as E. plumbea of Férussac. It is to the last-named species that M. Deshayes thinks the genus Mulleria should be referred.

Ethenia, or, as some write it, Eithera, has not yet been discovered in a fossil state. It should be remembered that Rafinesque uses the term for a genus of Macrourous Cuscusceans belonging to the Paleomendes.

ETHEREE, a peculiar carburetted hydrogen, which has also been regarded as the basis of ether. It is supposed to consist of 4 equivalents each of hydrogen and carbon.

ETHERO-SULPHURIC ACID—ETHIONIC ACID. This acid is prepared by passing the vapour of anhydrous sulphuric acid slowly into absolute alcohol kept cold; by their mutual action an oleaginous fluid is formed, without the evolution of any gaseous matter. This fluid is to be mixed with water and saturated with barytes, by which a portion of sulphate is separated, and ethero-sulphate of barytes is obtained by evaporation in vacuo.

The acid in this salt is stated to consist of—

| Equiv. of sulphuric acid | 80 |
| One equiv. of etherine | 28 |
| One equiv. of water | 9 |

Eqquiv. of ethero-sulphuric or ethionic acid 117

It may be considered either as a hydrated bisulphate of etherine, or as an anhydrous bisulphate of ether, or of oxide of etherum.

ETHICS is the science which relates to our mental affections, not simply as phenomena, but as they are virtuous or vicious, right or wrong. (Dr. Thomas Brown's Lectures, p. 486, Edinb., 1830.) The term is derived from the Greek ἔθικς, which, in signification, is equivalent with the Latin mos, mores, whence the adjective moralis, and the English word morals. Aristotle, in the second book of his Ethics, addressed to his son Nicomachus, says that moral science received the name of ethics from the word ἔθικα (ἔθικα), 'habit, use, or custom,' (ἔθικαν, ἀρσὸν ὑμῖν, or ἔθικαν ὑμῖν, since it is from habitual experience, and the routine of customary conduct that moral dispositions and principles are gradually formed and changed. Cicero, in his work on moral ends (De Finibus, l. i. and 2) briefly traces the lines of ethics, of morale, or of virtue, of the recte vivendi, that is, the art of living wisely. The scholastic treatises on ethics divide the practical part of the science into three departments: ética (éthike), which shows by appropriate precepts what is the duty of a good man; moralis (morale), which shows what is the duty of a good father of a family; and politike (politeia), which exhibits the duty of a good citizen, and of a good magistrate. [MORALS.]

ETHICUS, or ETHICUS, is conjectured to have lived about the fourth century of our era, and is the reputed author of a Cosmography or short description of the world, being an enumeration of the seas, islands, provinces, mountains, rivers, and towns of the then known world, with a short account of the sources and courses of the principal rivers. In speaking of the Tiber's course through Rome, he mentions the gate of St. Peter, that of St. Paul, and the Via Portuensis, or of 'the martyr St. Felix.' He also speaks of Rome as the mistress of the world, of the games held by the Romans, of the prefects urbzs, &c. These circumstances may serve to fix the time of the compilation of the work towards the end of the fourth century, when Rome had become completely Christian, but yet before Alaric's invasion. Ethicus and his Cosmography are mentioned by several writers of the following ages, and among others by Livy, who relates of Seville, who lived in the early part of the seventh century. Rabanus Maurus (de Inventione Linguarum), a writer of the ninth century, calls Ethicus 'a Scythian,' and Floredardus, a writer of the following century, calls him 'Steri' from 'Istria.' (Vossius, de Histor. Lat. h. iii.) At the beginning of his Cosmography Ethicus states that Julius Caesar, during his consulsip with M. Antony, by virtue of a senator's consultation, ordered a survey of the Roman world to be taken, and that the work was entrusted to three geometers, Zenobius for the eastern part, Polybius for the south, and Theodorus for the north, who completed their work under Augustus. This survey was probably the source from which the Antonine Itinerary was derived, which Itinerary in its present shape has also been attributed by some to Ethicus. [ANTONINUS, ITINERARY OF.] The Cosmography in most publications is followed by another and somewhat fuller description of the various parts and provinces of the world, apparently of the same period, entitled 'Alia totius Orbis Descriptio,' and generally attributed to Ethicus also, though there are doubts as to the authorship. This second part also found almost literally in Orosius, forming the second chapter of his work. It has been suggested that Orosius may have copied it from Ethicus, and the text of Orosius has certainly the appearance of a copy, as he has shortened and altered it in the beginning or introductory part, and also left out the concluding sentence, in which the author of the description, as we have it separately, promises to give a continuation of his work, or an ampler description of the towns, &c., beginning from Rome, which he styles Caput Mundi et Romana Senator.' (Simpser's edition of Orosius, Basil., 1575.) This last sentence promising a fuller account, which the author did not fulfil or which has been lost, would not have fitted Orosius's historical narrative, and therefore he left it out. But it is also worthy of remark that in two MSS. of this work in the national library at Paris, No. 237, and 4882, the second chapter ends with these words, which are not found in the other MSS. and printed editions of Orosius: 'Pereced rim breviter ut potius provincias et insulas Orbis Universi, quaes Solitae ita descripsit.' This would seem to attribute the work to Solinus.

To the two Cosmographies attributed to Ethicus is added, in some editions, another extract, which is styled 'Juli Honorii Oratoris Excerpta quae ad Cosmographiam pertinunt.' It is in its plan similar to the first Cosmography, only much abbreviated and more incorrect. The three have been published, together with Pomponius Mela, by Gronovius, Leyden, 1635.

ETHIOPIA (Althoria) was the name given by the ancient geographers to the countries south of Egypt. In a general sense, it designates the region lying between the inhabitants of the south part of Africa, from the Red Sea to the Atlantic. Herodotus (iv. 197) speaks of the Ethiopians as inhabiting the whole of South Libya (Libya is with
him synonymous with our Africa), as distinguished from the Libyans who inhabited the Mediterranean coast and the interior adjoining it. He also speaks of the Ethiopian Trogodites (iv. 11), who are mentioned in some of the Greek historians, and tells strange stories of them; but these particular Ethiopians must be considered included under the general name. Strabo places the Hesperian Ethiopians near the Atlantic Sea, and south of the Pharussi and Negres, who went themselves south of the Mazari. In fact, the Ethiopians corresponded with the inhabitants of the countries south of the great desert, of which the ancients knew very little. Herodotus (vii. 70) also speaks of Asiatic Ethiopians, who formed part of the great army of Xerxes; but their locality and number are not determined. The Ionians assert that the Asiatic Ethiopians were black, like those of Libya, but differed from them in language, and had straight hair; whereas those of Libya had very curly hair, by which term some modern writers have perhaps too hastily concluded that the woolly hair of the题 is extended. But Eastern Ethiopia, properly called Ethiopia above Egypt (Herod., vii. 69), and also Ethiopia Orientalis, was a distinct and better-defined country. It included those regions which we now call by the name of Aethiopia, as having no heads, but eyes and a mouth fixed in the breast. Ethiopia was a country early reduced to a fixed social state, and was held traditionally to have been the parent of Egyptian civilization and religion. Its government was monarchical, but the monarch was subordinated to the Deity, who held sway over all things, a point of view that was not notably different from that of Egypt. Diodorus (iii. 6) says, 'in Ethiopia, when the priests think proper, they send a person to the king with orders for him to die, the gods having so communicated their pleasure, which no mortal should dispute.'

In the northern borders of Ethiopia, a subject of discussion of investigators of antiquity whether the arts of civilized life descended from Ethiopia to Egypt, or ascended from Egypt into Ethiopia. Here, as in many other contested historical points, much discrimination is required. It would appear, from the evidence of the time of Moses, that the more note-period religious colonies came down from Meroe into Egypt. Herodotus (ii. 29) says, 'at Meroe, the great city of the Ethiopians, the people worship only Zeus and Dionysus (Ammon and Osiris), and they honour greatly. They have an image of Zeus, and they make their expeditions whenever and wherever the Deity, by his oracular answers, orders them.' This shows that the priests of Meroe sent colonies into other countries, and Egypt was naturally one of the first lands to which they would resort. The same is true of the other countries (called the peoples of Romans), which was carried by them down the Nile, was a simpler and purer form of worship than the absurd assemblage of deities which afterwards gained ground in Egypt. The procession of the Holy Ship, with the shrine of the ram-headed Ammon, which took place annually at Thebes, and which was carried across the Nile to the Libyan side and brought back after a few days, was in commemoration of the first advent of the god from Ethiopia by the river. This ceremony is sculptured on several Egyptian monuments, being well represented in the temple of Karnak. Homer probably alludes to it when he speaks of Jupiter's visit to the Ethiopians and his twelve days' absence. It appears also that the worship of Isis descended the Nile from the farthest regions of Ethiopia, Diodorus iii. 11. It is therefore evident that the worship of Isis, Pan, and besides them Hercules and Zeus, considering these deities as the chief benefactors of the human race, is a heady been found by Caulliun at Naga, near Shefedy, (about 17° N. lat.) in Upper Nubia, the sculptures bearing all the marks of an original style, though of a coarser art than that displayed in the same figures in the Egyptian temples. The head of Isis is placed above that of Typhon, which no doubt indicates his greater antiquity. The temple of Naga however may be supposed, from its copious sculptured statues, to be of a later date than those at El Mecouarh, which are also in the district of Shendi, in a valley in the desert, at some distance from the Nile, and about twelve or fifteen miles north of Naga; they consist of eight temples, of small dimensions, the largest being only thirty-four feet long, connected by galleries and terraces, with a great number of small chambers, the whole being surrounded by a double enclosure. There are no tombs within, and no private habitations in the neighbourhood. Traces of a large city also been, perhaps of the same period, in mounds of earth all round it, the water of which served probably for religious and other purposes. The materials of the buildings are on a small scale, as well as the buildings themselves, the stones seldom exceeding one foot in length and half that in height. The sculptures, which are coarse, the walls; only on the six pillars which form the portico of the larger temple are there hieroglyphics and figures in the Egyptian style. This temple seems to be of a much later date than the rest. (Caulliun, Voyage a Meroe, and plate, an account of the same temple, as published in the Quarterly Review, No. 4, June, 1828.) It is supposed that this secluded enclosure may have been the sacred city of Meroe, the college of its priests, and the original seat of the oracular worship of Isis, on which the ancient colony which carried religion and civilization from Ethiopia far as the Delta and the Oasis of the Libyan desert. According to the tradition of the country, the name of El Mecouarh was that of the antient fakirs or recluses who inhabited this place edifices.
hakham, mentioned in the Scriptures as having fought against Sennacherib. The commentator on the book of "Kings" (ii. 19) has considered Tirhakah to be an Arab chieftain; an error disproved, as it is considered, by the existence of his name on one of the buildings of the Thebes. This period of renewed intercourse between Egypt and Ethiopia, under circumstances highly favourable to the propagation of the arts of the Nile, was probably the period when the improved arts of Egypt were introduced into Ethiopia, and it was probably then that the splendid structures of Mount Barkal were executed; a supposition which would be confirmed, if it be true that the name of Tirhakah is found on the hieroglyphic cartouches in the Temple of Barkal, according to Champollion's system.

Again, under the Ptolemies there is evidence to show that Greek-Egyptian colonies found their way into the regions of the Upper Nile, and along the shores of the Red Sea, and even into the upper pools of the Atrax [i.e. the Axum]: these colonies or adventurers probably spread the Egyptian arts as improved by the Greeks into Ethiopia.

All these vicissitudes may account for the various styles of building and sculpture found along the banks of the Upper Nile. The monuments of Assou and el Masouraha are probably older than those of Naga, and these much older than those of Barkal, which are probably anterior to the temple of Soleb. We know from a passage of Diodorus that after the Ptolemies came to reign in Egypt a great exodus of the Medes took place. The historian refers to the second Ptolemy the Ethiopians had a king Ergamenes who had a knowledge of Greek manners and philosophy. Being weary of the yoke of the hierarchy, he went with a band of soldiers to the inaccessible place (Barkal?) which contained the holy temple of the king of Ethiopia, and there he established himself as a priest. (Heeren's work on Egypt, and the Egyptian Antiquities in the British Museum in the Library of Entertaining Knowledge.)

Of the manners of the Ethiopians we know little, except what we learn from their monuments and the scanty records we have of their religion and institutions, as above stated. Their sacred language appears to have been the same as that of the Egyptian priests. From some sculptures at Barkal, it would seem that human sacrifices were offered to the god Ammon. It is also possible that the Ethiopian institutions is, that their women sometimes went to battle, and were not excluded from the throne. Strabo (Casaub., p. 820) speaks of the Ethiopian warrior queen named Candace. (See also Apul. de apoth. vii. 27.) On the propyla of one of the temples of Naga, besides the hero or king, is a female figure likewise of regal dignity, with a large knife in each hand, going to cut off the heads of a number of captives; the vulture is hovering over her head. The Ethiopians are remarkable for the magnificence of their dress, and though they have many characteristics of Egyptian style, they are much thicker than the Egyptian form, especially the female, which is remarkably large from the neck upwards. (See Casaub., i. 14. 16.)

After the Roman empire possessed of Egypt, we read of several expeditions into Ethiopia, but of no permanent impression made by them upon that region. Caius Petronius, prefect of Egypt under Augustus, is said to have advanced as far as Napata, called by Dion, the first town of Ethiopia after Meroe. He defeated Queen Candace, who was obliged to sue for peace. But the Romans ultimately kept none of their conquests in that quarter. In subsequent times it appears that they conquered again, and retained power along the length of the Nile, from seven days' march above the first cataract, but this was given up by Diocletian to the Nubian or Nabatae, on condition that they should prevent the Ethiopians and the Blemmyes from attacking Egypt. Of the vicissitudes and ultimate fall of the ancient kingdom of Meroe we have no information.

The early Christian historians seem to restrict the name of Ethiopians to a people occupying part of the country now called Abyssinia. Propontus and Cedrenus call the Acoma (or Axumites) Ethiopians. (See the articles Axum and Axum.) From those times the name of Ethiopia has been given more particularly to Abyssinia, and the Geez or sacred language of that country has been called Ethiopian. (Abyssin.)

The origin of the name 'Ethiopia' is uncertain. Salt says that Ippopawan was the favourite term by which the Abyssinians designate themselves; but this name was probably introduced among the Abyssinians by the half Greeks of the kingdom of Axum. The word in Greek has the appearance of being significant, and is sometimes interpreted 'dark-coloured,' but like many other Greek names of nations, it is probably a native Asiatic or African term corrupted into the semblance of a genuine Greek word.

Under the general designation of the Ethiopian languages, three different dialects are usually comprised, viz. the antient Ethiopian, or Geez, the Tigré, and the Amharic. The antient language properly called the Ethiopic is now extinct, or at least survives only as the language of books and of learned men (whence it is also called lastana mar-khaus, or book-language); and its place is now supplied by the two other dialects, of which the Tigré approaches nearest to the Ethiopic, whilst the Amharic has more widely departed from it. (Amharic Language.)

The Ethiopian language belongs to the family of languages usually called the Semitic, and among them it shows the closest affinity to the Arabic. It is written from the left to the right, in a peculiar alphabet, which however appears to be of Semitic origin. (Compare the Ethiopian letters bet, nahor, ain, and geml, with the corresponding Phoenician and Punic characters in Pl. v. and vi. of Gequenius' Palæographische Studien, Leipzig, 1835, 4to., and Pl. i. of the same author's Scriptura Linguaque Phanaiacae Monum., 1836. 8vo.) The alphabet contains twenty-six consonants and seven vowel sounds; but the latter are not expressed by distinct characters, nor by points or accents, but by slight changes in the shape of the consonants, so that each character represents an entire tone or quality, which is afterwards added to the vowel of the Sanskrit and the early Syriac alphabet of the Hindus, and the system of orthography of many of the modern languages of India, are modelled on a similar principle. Several of the Ethiopian letters are now no longer distinguished in pronunciation; there are, for instance, three p's, two s's, two t's, and dalm, and ain, which are sounded alike, though still kept distinct in writing.

Gequenius calculates that about one-third of the roots and primitive words of the Ethiopian language exists also in Arabic; a statement which is entirely corroborated by the fact that the Gez language is found in Hebrew, or in the Chaldee and Syriac dialects. In the inflection of the Ethiopian verb ten conjugations are distinguished, consisting, like those of the Hebrew, Syriac, and Arabic, of certain modifications of the original import of the simple root, expressed in the strict analogy by modifications of the form of that root. We subjoin a paradigm showing the third person of the pretensive in each of the ten conjugations with the corresponding inflections of the simple root. The Ethiopic verb gaberu is used in those conjugations only to which we have added a Latin interpretation.

From any of these conjugations a passive voice may be derived by prefixing fa-. Each conjugation has, as in the other Semitic dialects, a pretensive and a future tense, with a distinct subjunctive or optative form, similar to the apocopate future (aerite conditionel de De Scy) in Arabic; an imperfective and an infinitive, that their number of stems or roots being distributed in the following manner: the gender of substantives is twofold, masculine and feminine; yet the distinction of the two is but little attended to in Ethiopian writings. The plural is expressed as in Arabic, either by terminations (-ds in masculines, -ds in feminines), or by the addition of modifications of the vowels within the limits of the word.

The literature extant in the Ethiopian language is almost
ETI.

it has only five: the two first rings are directed backwards and on the same plane with the carapace.

Example, Ethusa Mascarone (Roux), Cancer Mascarone, Herbst.

ETIENNE. [STEPHEN.] ETIENNE, ST., a town in France, in the department of Loire. It is on the left or south-west bank of the Furand, a tributary of the Loire, 255 miles south-south-east of Paris in a straight line, or 317 miles by the road through Fontainebleau, Nemours, Montargis, Briare, Nevers, Moulins, Roanne, and Montbrison; or 318 miles by the road through Melun, Sens, Joigny, Auxerre, Avallon, Autun, Châlons sur Saône, Macon, and Lyon; from which last town it is 39½ miles by land.

St. Etienne is of comparatively modern origin.

The site of troubled reign of Charles VII. the townpeople obtained permission to inclose their town with walls: this was granted a.d. 1444, but the space inclosed is said to be only a tenth of what it now contains. The town is called Furana: it takes its modern name from St. Etienne, a bishop of Lyon, at the beginning of the sixteenth century. The particulars which follow are chiefly from the 'Histoire Descriptif' of Vasse de Villiers, Paris, a.d. 1816, corrected by them.

The town is of considerable distance at a distance by a dense cloud of coal-smoke. It is situated in the midst of a coal-field, and coal is the only fuel employed in the various manufactories and workshops. The town is, especially the outskirts, very dirty; in summer the streets are dusty, in winter muddy, and when it rains the black dust, washed by the rain from the roofs, converts the streams that fall from the gutters into little better than ink. The houses, both in the centre and outskirts of the town are built of a coarse brick, called gris à gros grains, sometimes squared, at other times unshaped, the colour of which adds to the sombre character of the place, and deprives the town of that handsome appearance which its wide and tolerably straight streets and well-built houses would otherwise give to it. The centre of the town is occupied by a large and handsome though irregularly-shaped open space or 'place,' in the middle of which is a fountain adorned with a small obelisk. From this 'place' opens a new street running about half a mile in a straight line in the direction of Roanne, and terminating in the only promenade which the town possesses: the road continues in the same line for two or three miles to the village of St. Priest, where the ruins of a Gothic church, a castle, and a market-town; the last building is handsome.

The population of St. Etienne, in 1832, was 33,064; including the neighbourhood it may be calculated at more than 50,000. Its increase of late years has been very great. The town was, in prosperity, during the last century, not much of our people, and was in short, that it is a small town.

Whole families devote themselves to each kind of manufacture: the women work in the same factory with the men, and sometimes share with them the most laborious parts of their task. There were, a very few years since, a royal
manufactory of fire-arms, forty manufactories of arms of all kinds, ten of cutlery, forty-five of hardware, and one hundred and fifty of ribands and velvet. The waters of the Furaud, which is but a small brook, are well calculated for tempering iron and steel, and also for dyeing. A railroad, more than 34 miles long, connects St. Etienne with Lyon: this work has been carried on in spite of great difficulties; hard rocks have been cut through and hollows filled up: there is a tunnel through a mountain near St. Etienne. As many as 1800 carriages are said to pass daily between the towns: stone is quarried near St. Etienne.

St. Etienne has a high school, a school for miners, a deaf and dumb school, a course of instruction in geometry and mechanics, applied to the arts, a society of agriculture and trade, and a public library.

It is the capital of an arrondissement, containing in 1832 a population of 149,189: the arrondissement is small, but there are in it several towns which are engaged in various branches of trade, similar to those carried on at St. Etienne; Chamoun and Firminy, where nails and ribands are made; St. Chambon, where ribands are manufactured; and Rive de Gier, where coal is dug and iron cast. A late return assigned to the arrondissement 47,750 workmen of all kinds; of whom 3000 were colliers, 2400 engaged in iron and steel works, 2800 in manufacturing cutlery and hardware, 2800 in making fire-arms or weapons for war or the sports of the field, 3000 in making nails, 1800 in glass works, 2900 in preparing silk, and 27,500 in the manufacture of ribands. The value of the raw materials on which these workmen were employed was estimated at 36,885,000 francs, or about 1,500,000l.; and it was considered that this value was doubled by the various processes of manufacture.

Before the Revolution, St. Etienne had several religious houses.

ETIUSUS, a genus of brachyurous crustaceans (Cancerians of M. Milne Edwards).

Carapace less oval and wide than in most of the Arched Cancereans (Cancerinae arqueus). The front is large, lamellate and divided on the mesial line by a fissure, as in the Xanthii; but the two large and truncated lobes which form the principal part are separated by a deep notch of the anterior and superior angle of the orbit, which is rounded and projecting; the lateral-anterior borders of the carapace are strongly toothed. The Internal Antennae are bent back nearly longitudinally, and the basillary joint of the External Antennae, which is very large, unites with the front, and presents on the external side a prolongation which fills the hiatus of the internal orbital angle; finally, the movable stem of these antennae, which is at first inserted completely out of this hiatus, below the front and nearer to the antennary fossa than to the orbit. The external joint feet present nothing remarkable; the feet of the first pair are rather large, and the chela, which are much enlarged and rounded at the end, are deeply hollowed into a spoon-shape.

M. Milne Edwards, who gives the above description, divides this small group, which he considers as forming the passage between the Xanthii and Palacarcini, into the two following sections.

Carapace scarcely knobbed above.

Example, Etiusus dentatus. Length three or four inches; colour reddish. Locality, the Indian Archipelago.

\[\text{Etiusus dentatus}\]
Campania, and the number of towns which they built or colonized there, is a matter of much doubt. (Niebuhr, vol. 1. On the Opuntiae and Aaranata). And, for a conflicting opinion of this matter, in the preceding pages, a great deal of the power of the Aetna Oracles, we have seen in the supposition of the existence of such towns, called Etruscan, in the country we call Tuscany. They had twelve prin-
cipal cities or states, all situated between the Arno and the Tiber, for the country between the Arno and the Maera was
annexed at a later period by conquest over the Ligurians. Each state formed an independent people, and the whole, being bound together by a sort of loose confederacy: at times indeed very loose, for we find repeatedly one state going to war without the assistance or interference of the rest. Of these twelve towns, eight are mentioned by Livy (xvi, 43) on the occasion of his enumerating the allies who volunteered to assist in equipping Scipio's armament against Carthage: they are Carro, Tarquinii, Populonium, Vol
teramum, Arretium, Perusia, Clusium, and Russellae. To these must be added Veii and Vulci, which had been previously conquered by the Romans. The two remaining may be selected from among Cortona, Cosa, Capena, and Fesole. It must be observed that long before that time some of the old
cities of Etruria had dwindled away, such as Vetulonia, which had disappeared before the historical age of Rome, and of which there is no mention. Veii is the least interesting of the twelve, which was originally a colony from Volteramum, pro-
bably took the place of Vetulonia among the twelve.

Antiquities.—We may here point out those towns in which Etruscan antiquities are still found, and thus convey some idea of the social economy and art during those times. Of the Gabinetto Archeologico, with about 250 inscriptions, one of which consists of 45 lines, the fragments of an Etruscan quadrigae, described by Inghirami (vol. vi, p. 360), and some landscape painted vases, bronzes, &c. (Vermiglioni, Saggio dei Bronzi Etruschi trovati nell'Agro Perugino, 1890, 15). A collection of such antiquities is found in the original circuit of its Etruscan walls, though required in several places. (Pianta Topografica di Cortona in Micali's Altei, annexed to his Storia dei Popoli Italiani). The walls are built of enormous polygonal stones, well fitted together, without cement. There are other remains of Etruscan con-
struction, among others the substructure of the palace Lapa
eri. An Etruscan tomb, called by the natives Grotta di Pit
toglia, is seen in one of the suburbs of the town. (Cortona.) Other hypogees have been discovered in the country around, from two to forty feet below the surface, and all of them vary in style. In the town museum, but they belong mostly to the Roman period. (Reperti, Dizionario Geografico Storico della To
cana, 1835.) The Accademia Etrusca, established in 1765, whose president is called Lucumo, has published 10 vols. of the works on the subject of Etruscan antiquities in Etruscan cities, though perhaps not one of the twelve mo
tropolitan ones. Its massive walls are its only Etruscan structure now existing; the theatre and other remains are of the Roman time, probably of the date of Sulla's colony, (See plan and views of Fiesole, plates 2, 11, and 72 of Micali's work, and also Bandini, Lettere Fiesolane and Itinerario di una Giornata d'Istruzione a Fiesole, 1814.) 5. Clusium, the most important of the three Etruscan towns on the hill of Porsenna, built on a hill above the valley of the Chiana, was one of the most distinguished Etruscan cities. Of its old walls there remains nothing but a fragment built of large polygonal stones behind the choir of the cathedral. 6. Volterra, on a hill about twenty miles north-west of Siena, is now a thriving town. It contains several collections of antiquities, urns, vases of old Etruscan manufacture, single coloured, and later ones, or Campano Etrus-
ca as they have been styled, with figures of one or two
colours different from the ground, gold ornaments, engraved stones, &c. (Paulzoli, Silvius, and Casuccini.) The last mentioned is the richest, and a description of it by Valeriani, with above 200 plates, has been published under the title of Museo Etrusco Chiusiensis, 2 vols. 4to, 1833. 6. Volteramum, Volteramum, on a hill about twenty miles north-west of Siena, is now a flourishing town. It contains several collections of antiquities, urns, vases of old Etrusca manufacture, single coloured, and later ones, or Campano Etrus-
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ness. In the thermes which were discovered by Guarneri, one of the most important chambers was four feet high, with a ceiling of two feet, and was furnished with numerous sepulchral monuments, statues, bassi relievi, both in alabaster and sandstone, vases, pateras, &c. On these monuments of the ancient Etruscans we may, in some measure, read the history of their civilization and art. All of those objects forming the property of the town, in default of written records. Guar
neci published a Museum Antiquorum Monumentorum Etruscorum et Volteramorum Hypogei Erudorum, cum Ob
servationibus, A. F. Gori, ed., 1744; see also Giorgi, Disper
tazione Academica sopra il Museo Etrusco trovato negli Antichi Suburbani di Volteramum, l'anno 1746, 4to, Firenze, 1752. But one of the most extensive and satisfactory works on Etruscan antiquities is the recent one of Inghirami already mentioned, Monumenti Etruschi e di Etrusco Nome, 3 vols. 4to. of text, with 6 vols. of plates, and 1 vol. index. Inghirami's collections represent chiefly objects found in the territory of Volteramum, in the numerous hypogeii discovered there; and they are intended to illustrate the state of the three fine arts among the Etruscans, for which they have been divided: architecture, painting, and sculpture, and are divided into six classes, with six columns of tabular detail, and cinerary vases in alabaster or sandstone, with sculptur
es. II. Paterae, which Inghirami calls 'asperci mistici,' or mystical mirrors, with specimens of Etruscan linear drawing. III. Bronzes of cippi, and ash urns. IV. Works of sculpture, and cinerary vases in alabaster or sandstone, with sculptures. V. Vases, some such as those of Arceo, all of one colour, either red or black, and some black red. VI. Works of sculpture of different colour from the ground. VI. A collection of monuments, most of them not Etruscan, but which serve to compare with, and form a contrast to, those of Etruscan art. Inghirami has not included in his collection the inscriptions, cameos, gems, coins, lamps, &c., which may be found in the original circuit of Etruscan walls, though required in several places. (Pianta Topografica di Fiesole in Micali's Altei, annexed to his Storia dei Popoli Italiani.) The walls are built of enormous polygonal stones, well fitted together, without cement. There are other remains of Etruscan con-
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the mountain of Santa Fiora, and on the borders of the Papal States, shows some fragments of its walls built of polygonal stones. 5. Tarquinii, the site of which is on the left bank of the Marta, near Corneto, exhibits no remains above ground, but the great number of hypogei, forming a vast necropolis in the neighbourhood, give an idea of its former importance. They are excavated in the rock, which is of volcanic formation; some of the chambers are square, fifty feet on each side, and about six feet high; the ceilings are supported by square pillars of the rock itself; the sides are adorned with stuccoes and paintings, some of them allegorical of the state of the soul after death, others representing funerary processions, games, banquets, &c. A number of urns, vases, and other ceramic remains have been found, which are within these sepultures, which may be said almost to rival, for the interest they excite, those discovered in Egypt by Belzoni. The first Tarquinian hypogei were discovered about 1745 by G. Garampi, and representations of them are given in Agnone's work, vol. ii., plates 10 and 11. But the greatest discoveries have been made of late years, engravings of which are given in Inghirami's works.

To the island, about ten miles north of Tarquinii, near the village of Canino, Lucien Bonaparte has discovered a vast quantity of similar remains of Etruscan art, of which he has formed a valuable museum at Canino, and of which he has published a description. (Museum Etrusque de Lucien Bonaparte, a la Canino, in parte primitiva.) These discoveries have revived the question between the partizans of an original Etruscan civilization, and those who derive it from the Greeks. Probably the question might be solved by admitting various epochs of Etruscan art, one anterior and independent of the other, the latter connected to the intermediate period between the Etruscans and the Greeks about the second or third century of Rome. Even in the monuments of Tarquinii and Canino style are discernible. Other professors in the same district have made further discoveries. On the right bank of the river Fiora, in the district of Noceto, extensive remains seem to mark the site of the Etruscan Vulci, which was conquered by the Romans at the same time as Vulsinii, about the year 473 of Rome. Here also a vast necropolis has been found, with a quantity of vases, paintings, and other remains. A little to the east of la Cucumella, a group of buildings of large rectangular stones, consisting of cells and two towers, one square and the other circular, above thirty feet high, have been found buried under the artificial mound or barrow. At the top of the towers were vases, vases, axes in lines, and griffins. Micioli, plate 62, gives the plan and views of these monuments, which are one of the most curious Etruscan discoveries hitherto made. In 1832 only one-third of this mound had been dug up, so that further structures may still be found.

The site of Cere or Acyilla lay near the village of Cerete or Certreti, between Rome and Civitavecchia. Its port, Fyrus, was near where the coast-tower of Santa Se-rena now is. No remains of either have ever been discovered. The ancient Vulsinii has been likewise completely destroyed [Bolonna]. The site of Veii has been long a subject of dispute, but it seems now ascertained to be on a steep hill, at the foot of which two streams unite, and form the Cre-mera which falls into the latter at the point between the district of Falerii, which still exist in a desert spot near Civita Castellana, are not always numbered among the Etruscan remains, that this town is said to have been built before the Etruscan conquest. The amphitheatre cut in the rock at Sutri is attributed to this town.

History and Social State.—Varro mentions the Etruscan annals existing in his time as having been written in the eighth age of Etruria, which is supposed to correspond to the fourth century of Rome. Two Latin writers, Valerius Flaccus and Cincius, are the only ancient authors who mention the histories of Etruria, and the emperor Claudius wrote in Greek his Tyrrhenian History of Etruria, in twenty books; but all these are lost, as well as the books of Dionysius of Halicarnassus, in which he treated more particularly of the Etruscans. The little we know therefore of the national history of Etruria previous to their wars with Rome, is gathered from fragments and incidental notices in Greek and Roman writers. The Etruscan power appears to have been at its height in the third century of Rome, about the fifth century before Christ. Their dominion extended over the country of the Umbrians to the Adriatic on one side, and to the Gulf of Luni on the other. After Por-ssenna had dictated a humiliating peace to Rome, the Tuscan Overseas, Volatere, Lati, conquered Cappadocia by force of arms, and by sudden attacks on the Etruscan cities, with whom they at first allied themselves against the Romans, who had settled at Alaria in Corsica, but afterwards the allies quarrelled together for the possession of the same island. They fought against the Romans on the soil of Latium, which they had occupied, and at the battle of Areii, about the year 389 of Rome, and were defeated. Half a century later they lost Campania to the Samnites, after which the Romans began to enroach on that part of Etruria which lay between Mount Ciminus and the Tiber. Veii was the first Etruscan city that fell by the Roman arms; Falerii and Pessina next; Tutrum submitted; Cere and Tarquinii became the allies of Rome; and the Ciminius ridge with its haunted forests formed the boundary between Rome and Etruria. The Roman army halted nearly a century longer before they passed that boundary. The total defeat of the con- federated Etruscan forces at the lake Vadimonis, in the year 444 of Rome, opened to the Romans the access into the Etruria Transcimena. Vulsinii and Vulciea fell before the slow but sure progress of their arms; the other cities, such as Assisi and Arezzo, and their adherents, resistance that existed between the Etruscans and the Greeks about the second or third century of Rome. Even in the monuments of Tarquinii and Canino style are discernible. Other professors in the same district have made further discoveries. On the right bank of the river Fiora, in the district of Noceto, extensive remains seem to mark the site of the Etruscan Vulci, which was conquered by the Romans at the same time as Vulsinii, about the year 473 of Rome. Here also a vast necropolis has been found, with a quantity of vases, paintings, and other remains. A little to the east of la Cucumella, there is a group of large buildings of large rectangular stones, consisting of cells and two towers, one square and the other circular, above thirty feet high, have been found buried under the artificial mound or barrow. At the top of the towers were vases, axes in lines, and griffins. Micioli, plate 62, gives the plan and views of these monuments, which are one of the most curious Etruscan discoveries hitherto made. In 1832 only one-third of this mound had been dug up, so that further structures may still be found.

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and they are acknowledged to have been the civilizers of a great part of Italy. Rome derived its earlier civilization from Etruria. The art of fortifying towns with walls and towers is attributed to them. They wrought the iron which they drew from the island of Elba, they cast bronze, and their sculpture: the invention of the oval gold medallion, and the use of stone, and sculptures of primitive art are found on their oldest monuments. They are supposed by many to have been the inventors of the arch at a very remote period; Tuscan masons employed it in constructing the Cloaca Maxima of Rome. They undertook hydraulics, especially the art of filling up marshes by diverting into them the course of muddy streams, which is still practised with great success in Tuscany under the name of 'colmate.' The invention of the termini, or stones fixing the limits of property, is generally ascribed to them; the first instance of the exercise of paternal authority, of testamentary will, of cannibalism or marriages, were all fixed by law and consecrated by religious rites. Their laws concerning debtors appear to have been more humane than those of Rome, if we are to trust to a passage of Heracleides in which he speaks of the Tyrrhenians.

The Etruscans were fond of good living and of sumptuous banquets, and they are called gluttons, fat, and carpenfants, by the Roman satirists. Virgili (xi. 733) accuses them of all these vices, and says the citizens were in danger of being transformed into porcine animals. Their women seem to have had no great reputation for chastity (Plautus, Cistell. 2. 3. 20, and Horace, iii. Ode x. 41); yet we find the female sex in higher honour among them than among most nations of antiquity. The women received the education of the rest of Italy about the 6th century of Rome. From some sculptures found on their monuments it would appear as if human sacrifices were at one time in practice among them unless these representations are symbolical, as some suppose. The mythology of the Etruscan Tyrrhenians is of Oriental derivation. They are believed in two principles, a good and an evil one, each having its respective agouti or genii, and their paintings and sculptures are often representative of the perpetual struggle between the two. Twelve gods, six male and six female, at the head of which was Jupiter, formed the upper hierarchy; other inferior divinities presided over the various elements and phenomena of this earth, as well as over the occupations and domestic comforts of man. Ciceron speaks very favourably of Etruscan theosophy, saying that they refused to tamper with the Greeks the notion that the heavens were spherical. The principal buildings were studiously calculated for the prosperity and security of the state. For further particulars on these subjects, see Micali, ch. 22 and 23, Bossi, Storia d'Italia, lib. i. chap. 6, and Müller, die Bruchser; Dempster, De Etrusc. Religion, cap. ii. The great work of much information, apart from the system and favourite hypothesis of the writers. These, with the other works already mentioned, form the best Etruscan library that can be collected.

ETRUSCAN ARCHITECTURE. We have no remains of Etruscan temples or other buildings, but we can form some idea of their style from their hypogeoi or sepulchral monuments, and also from some of their cinerary urns which represent a temple. (Micali, plate 72.) But the monuments on which we can rely without suspicion in this subject are those discovered at Castel d'Asso, the Aixia of Ciceron (Pro Carchia., 7), five miles south-west of Viterbo, where the rock forming one side of the valley facing the old castle, which is several feet for most of its height, has the shape of so many fronts or facades of sepulchral monuments, the vaults themselves being excavated underneath. Similar sculptures on the rock are found at Norchia, about 15 miles south-west of Viterbo. (See Inghirami's plates.) The most famous of these is the Etruscan building, strike by its resemblance to the Egyptian style in its rude and simpler form. Plate 62 of Micali represents a monument between Monte Romano and Corneto, with projecting architrave and lateral pillars. Various of these, though high, being built on the theory that they had undergone considerable alteration, characterize their buildings as 'barocci.' In them, low, wide, with heavy top ornaments. And this seems to be in keeping with the character of the people, grave, and more fond of internal comfort than of external show. What is now called the Tuscan or Tuscanian order appears to have been a sort of rude Doric, which they probably adopted from the Greeks. (CIVIL ARCHITECTURE. The Etruscans (w. 7) gives a description of the ornaments of their buildings, but appear to have been neither large nor splendid: the ornaments, bronzes, and plastic figures appear to have been more elaborate than the structures themselves. In the time of Vitruvius the houses of the wealthy Etruscans had external porticoes or vestibules, in which the crowd of servants and clients remained in waiting. The atrium is also supposed by some to be of Etruscan invention. [ATHRUM.] If not the inventors of the arch, the Etruscans were certainly acquainted with it at a very early period: it is found in their sepulchral urns, in their, the, and this used it in constructing the Roman cloaca. Another cloaca of similar construction has been discovered near Tarquinii. Their skill in fortifying towns with walls and towers and ditches, and leaving an open space around called Pomum, is attested by the Roman writers from the inspection of the remains of their walls. The use of large polygonal stones in the construction of walls was common to other Italian people as well as the Etruscans and primitive Greeks; and the name of Pelasgia, which has been given to this method of construction in particular to any particular class of these walls or the walls of any particular locality from other walls of the same kind. If by this term Pelasgia it is meant to assert that all such walls are really of Pelasgic origin, this is more than can be proved or is, in fact, assumed. It is also often said that the Etruscans appear to have used rectangular stones, ranged in horizontal layers, and uniformly without any cement. For more complete information of what is known of Etruscan architecture, we must refer to Micali, ch. xxv., Inghirami's and Bossi's plates, and Candel, Dei Sepolcriati Edifici della Etruria Media, also quoted by Inghirami.

ETRUSCIANS. [ETRURIA.]

ETRUSCAN. [ADJECT.] ETMYLOGOCUM MAGNUM (πρό μεγά λόγον), an important vocabulary of the Greek language, of which the author is unknown. Some suppose it was written by a grammatician of the name of Magnus. The idea that it was compiled by Marcus Musurus, the first editor, or the Calliurgi, is disproved by the fact that this dictionary is referred to by Eustathius. Sylllburg considers it as old as the tenth century: much older it certainly was not; for Theognus, a writer of the ninth century, is quoted in it. The derivations in this work, like most of those from the Greeks the compilers were men of no principle, and though in some instances accidentally right, they are generally full of the wildest absurdities, as one might expect from the author being confined to mere guess-work. It is valuable however for containing a great many traditions which are only to be found in common words, and it often enables the scholar to correct the errors of the corrupt but inestimable lexicon of Heay- chius. The edition of Syllburg (1594) is very useful, and has an admirable index; the edition of Erythymocucum Magnam, by Schier, Lips., 1816, is a reprint of Syllburg's edition. The edition by Sturz, Lips., 1818, 4to., intitled Etymologicum Griecum Linguum Gudianum, &c., is founded on the Codex Gudianus, which is more complete than that on which the edition of Musurus and the others already enumerated are founded.

EU, a town in France, in the department of Seine Inférieure, on the south-west bank of the little river Bresle, near its mouth. Eu is 91 miles in a direct line N.N.W. of Paris.

In the middle ages Eu became a strong and flourishing place: but on the threat of a descent by the English it was burnt, in 1475, by order of Louis XI, and has never recovered the blow: Dieppe and other neighbouring towns profited by its downfall. It was in the 13th century that Eu became a free town, and in 1361 was one of the few towns that were overlooked escaped the general destruction. The massive ruins of the walls and towers yet remain. Eu has several churches; the finest, that of Notre Dame, is large and of beautiful Gothic architecture. A crypt contains the monuments of the counts of Eu; these were much damaged in the Revolution. A small church adjoining the High School, formerly the Jesuits' College, contains the monument of the duke of Guise, murdered at

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Bliss in 1588. There are two châteaux. Of one of these, built by a daughter of the duke of Penthièvre, afterwards-ducness of Orléans, only half remains, the rest having been destroyed in the Revolution. The situation of the château is charming; the park has an avenue of fine beech trees. The other, more modern, is called the Château de la Motte d'Orléans. The market-place is good. La Chantrière d'Or is a suburb of Orléans, on the opposite bank of the Loire. Troyes, at the mouth of the river, is the port of Orléans; it has a church singularly situated on the extreme verge of a lofty and almost perpendicular cliff, and a projecting doorway of beautiful Gothic architecture.

The population of Orléans in 1832 was 33,598; that of Troyes in 1826, 41,417; the population of the respective communes was 35,431 and 22,977, together with 3,101. The population of the whole department of Nièvre is not stated.

The manufactures of Orléans are lace, silk, cotton, and wool. The manufactures of Troyes are lace, silk, cotton, and wool. The manufacture of Orléans is lace, silk, cotton, and wool. The manufacture of Troyes is lace, silk, cotton, and wool.

The island is not populous; it is conjectured to contain between 60,000 and 70,000 inhabitants, nearly all Greeks. The villages are few, and, as is the case everywhere in the Archipelago, built at some distance from the beach, generally on an elevation difficult of access. This precaution has been taken on account of the numerous depredations of the pirates, who were accustomed to land, sack a village, and embark before morning, so that unless the place were tolerably large and populous, there was no safety for life or property.

The passage between Thessal-y and Euboea, called the Trikini Channel, from the town of that name at the eastern entrance to the Gulf of Volo, is about 2 miles in average width; the narrowest part, which is towards the western extreme, is about 1 mile wide. South of the Gulf of Volo is a steep from both shores, and decreasing gradually from about 50 fathoms at the entrance to 30 towards the western end of the Negropont, off which lie some small rocky islands called Lathia Islands. Passing these islands, and rounding the promontory called Paliouri, there is an open space between the island from the town of that name on the left and the island to the right, called the Gulf of Athos. The remarkable feature in this part of the channel is the great depth of water under Mount Telethrius, where, for about 12 miles, there is no bottom with 40 fathoms within half a mile, and it is about 100 fathoms under Mount Telethrius, which is about 1 mile wide. At Cape Thessal-y, the eastern point of the bay, there is a very deep bed of sand, which extends for about a mile. At the southern point of the bay, there is a very deep bed of sand, which extends for about a mile. At the southern point of the bay, there is a very deep bed of sand, which extends for about a mile. At the southern point of the bay, there is a very deep bed of sand, which extends for about a mile.

The southern part of the channel there are many islands along the Euboean shore, which offer good anchorage, or more especially among the Petalon Islands, which abound in rabbits, but possess only one spring of fresh water. From Euboea to Karystos there are only two villages, Alonion and Stara, in the bays called respectively from their names. The bed of this part of the channel is level, but compared with the northern part it is shallow; the general depth is from 35 to 40 fathoms. At Cape Euboea there is a continuation of rocky coast, the high land descending precipitously to the shore with few interruptions of level ground, and this, as already mentioned, towards the northern part of the island.

In the height between Cape Doro and Octonio, it is an uninterrupted stretch of precipitous shore, in which it is scarcely possible to find a situation sufficiently wide to haul a boat up. Fragments of wreck are found at the height of eighty feet perpendicular, washed up by the heavy sea which a north-east wind throws into this bay. These winds, which always blow very fresh, to be allowed for on all maps of this part of the coast. In addition to this, the Dardanelles current, preserving the course communicated to it by the direction of that strait, sets strong to the south-west into this bay, and renders it a most dangerous coast; and the current being deflected to the southward sweeps round Cape Doro, frequently at the rate of three miles an hour.
Port Petris is the only refuge which this coast offers, and so little has hitherto been known of this shore that even this shelter has only recently been discovered. The village of Kourmi, in the bay of that name, is populous, and being celebrated for its wine, attracts many of the small caniquest, which however are always obliged to be hauled up on the beach for safety. Along the whole extent of this coast, which is upwards of 100 miles, there are only five or six villages near the shore.

The small number of Turks resident in Europa left the island on its being surrendered for the purpose of forming an integral part of the Greek kingdom, of which it will not be the least valuable portion. The mountains are said to contain copper, and the marble quarries near Karyostos have long been famous. (Strabo, p. 446). The soil, favoured by the diversities of climate which such a variety of elevation affords, is capable of yielding the productions of tropical as well as of more northern regions, and of supporting an infinitely larger population than now occupies the island. The island abounds in sheep of an excellent breed; but inaks are scarce, and bred principally for agricultural purposes. In the mountains are abundance of wild boar and deer, and the plains are overrun with hares and rabbits. Among the trees are the olive, oak, fir, chestnut, walnut, mulberry, and orange tree. In the whole island there is not a stream deserving the name of a river into which the smallest boat could enter, and the inhabitants generally supply themselves with water from wells.

On the summit of Mount Elias (the Oche of Strabo) are the ruins of a Venetian castle, consisting of rude unornamented blocks of limestone, and columns of the same material.

The town of Egripos, the ancient Chalcis, the chief town in the island, is in 36° 56' N. lat., and 23° 37' E. long. It is situated on the west coast of the island, by a narrow channel of only forty yards. It is a walled town, and further defended, where the walls are not washed by the Euripus, by a deep and wide dry ditch. The walls are turreted, slight, and built with the stones of numerous antiquities. Mark leave no doubt of their Venetian origin. The area enclosed is about 800 yards in length by about 500 in width, which was formerly inhabited exclusively by the Turks; the streets are very narrow, but the houses capacious. The town has several gates constructed with great intricacy; that leading over the Euripus is particularly tortuous, and well defended; the drawbridges have been replaced by frail fixed bridges of logs, to the great peril of passengers.

Another defence is the fort Karababa, on the main, which stands on an eminence about 130 feet high, commanding its rise immediately from the bridge; this may be deemed the citadel of the place, as it overlooks and commands the town. It is a very misshapen structure, of an oblong form, about 350 yards long, and 150 broad. The walls are in some places so low, that an active man might vault on them; they are similar to and coeval with the walls of the town.

Beyond the town to the north is a suburb appropriated to trade, and inhabited (when the writer of this article visited the place) by the Greeks and Jews. It consists of one main street about 300 yards in length, from which minor streets branch off. The houses are very small, and the shops are chiefly coffee-houses, or contain general stores and grainers. This street is enclosed by low walls. There is no commerce except in supplies of fruit and vegetables, principally from Volo, distant about ninety miles to the north, which is all carried on in small boats. The surrounding country is flat and rich, but poorly cultivated. A subsoil of stiff clay offers materials for brick-making and pottery, which are already commenced on a small scale. The market is well supplied, especially with fish; beef is difficult to be procured, but mutton very plentiful; water is scarce, and procured chiefly from wells. There are facilities for building vessels of large size, as the shore goes off suddenly into deep water; but the inhabitants have advanced no farther yet than the repairs, clumsily executed, of their small boats, which are built generally at so-called Greek docks, built fore and aft on keel, covered with fir and oak (the latter of an inferior quality) would supply wood, which might with facility be brought to the town.

Immediately opposite Egripos the land rises suddenly to hills of considerable height, beyond which lie the plains of Thebes, which town is distant about 4 hours, or 12 miles.

The breadth of the Euripus is diminished by a rock in mid-channel, on which a fort is built, dividing it into two channels: that towards the main, though rather the broader, is only practicable for small boats, as there is not more than three feet water at any time. Between the rock and the walls of Egripos is a distance of 55 feet, and the least depth at the highest water is 7 feet. It is here that the extraordinary tides take place for which the Euripus was formerly so noted: at times the water runs as much as eight miles an hour, with a fall under the bridge of about 14 feet; but what is most singular, is the fact that vessels lying 150 yards from the bridge are not in the least affected by this wind. It remains but a short time in a quiescent state, changing its direction in a few minutes, and almost immediately resuming its velocity, which is generally from four to five miles an hour either way, its greatest rapidity being however always to the southward. The resumption of this extreme variation, in which the above phenomena were noted, afforded no sufficient data for reducing them to any regularity.

The port to the northward of the bridge, though not capacious, is secure: four or five frigates might moor in it, and it would contain many sail of merchandize. It is about three-fourths of a mile in depth, decreasing in width from half a mile to a bridge, towards which the water shoals gradually from ten to twelve fathoms, with a muddy bottom: outside is a good roadstead with a sand-bottom of about ten fathoms. The entrance is clear and free from danger, and although open to the Gulf of Tarsida, there is never any sea of consequence; but the guns which come down off Mount Khandar are often heard by the inhabitants.

To the southward of the bridge there are two ports; the inner is supposed to be the Port Aulis, where the Grecian fleet assembled previous to the Trojan war. It is about a mile across each way, with six fathoms generally all over it, but a bank of 14 feet in the strait which communicates with the outer port confines its access to vessels of that draught of water. The outer port, which is two and a half miles long and one broad, is joined to Port Aulis by a channel nearly half a mile in length and 400 yards broad, but its outlet to the southward is narrow and intricate. Opposite Egripos Island water may be procured for shipping, though it is not always good or plentiful: the quantity of vegetable substance in the pools which are formed previous to its flowing into the sea renders it frequently unwholesome. A round tower on the eastern point of the island is a good mark for the entrance of this port from the southward.

In and about Egripos fragments of antiquity may be seen forming parts of the walls of houses, in common with the grosser materials, like diamonds set in lead. They are generally of well-shaped stones, beautiful in form, but not in size; the sea can any building be traced, or vestiges of walls. The pieces of columns are generally of the Corinthian order, fluted. On Egripos Island there is the appearance of a rude wall traversing the island; and on the mainland, at the southern shore of the channel, the land rises to about 400 feet, are the remains of Cyclopean walls of very high antiquity. The blocks of stone, which are very massive, rude, and irregular, but fitting closely, are of limestone, and in construction the walls resemble those of Erymanth. This is most probably the ancient Aulis; though there may have been houses at a less elevation and nearer the shore more convenient for commerce, the ascent to these ruins being steep and difficult. The site of Eretis in Eubona has not been exactly discovered, but it must have been near the west coast and south of Chalcis.
...its way to within half a mile of the town, forms a very picturesque object. Though it no longer conveys water, it is by no means in a ruined condition. It appears to be of Venetian construction, and there are several ruins of vestige in the neighbourhood: one especially, called Kastron, situated on the apex of an insular rise, and presenting towards the sea a steep cliff, resembles the baronial castles on the west end of the Rhinopont. Eggropolis is capable of vast improvements, and of being of great commercial importance. Little expense would render the passage of the bridge practicable for vessels of 500 tons burden, if it be required, thereby avoiding the passage along the outer coast of the Negropont, which is the worst in the Archipelago, as the Dardanelles current sets on its iron-bound coast, which offers no port whatever, and is a lee-shore in the strong and prevailing north-east wind.

From Eggropolis there is a carriage road to Karystos, at the southern extremity of the island. History of Euboea.—The first inhabitants of this island were probably a Pelasgic race, which is said to have occupied, before the historical times, most of the islands of the Euxine Sea. The Dryopes from Mount Eta were said to have founded Carystus and Styra (Herodotus, vi. 46; Thucyd., vi. 57); and the Athenians founded Chalceis and Eretria, before the siege of Troy. Homer (Iliad, ii. 536) calls them "the Easterns," and the Passians, and assigns them as having taken a distinguished part in the expedition against Troy. The Histiaeots were said to be a colony of the Periboeae, a Pelasgic tribe: but the Athenians appear to have been from a very remote epoch the principal colonizers of Euboea. In the latter half of the fifth century B.C., we find Chalceis and Eretria, two independent but allied towns, which had advanced to a high state of prosperity, holding dominion over the islands of Andros, Tenos, and Ceos, and raising colonies to the coasts of Macedonia and Thrace, as well as on the southern coast of Italy and the first Greek settlement in Sicily, and Cumae, one of the oldest in Italy, were colonies of Chalceis. Eretria and Chalceis however quarrelled, and the Euboeans (t. 135) mentions the war between the two states as one of the oldest wars on record among the Greeks. This war however was not one of ex-termination; and we find in the sixth century B.C. the two communities still flourishing, under the government of their Hippobates, or wealthier citizens. Unfortunately for them, they co-operated with Clasionnes in his invasion of Attica, which followed the expulsion of the Persians, in consequence of which, after the Athenians had repulsed Clasionnes, they invaded Euboea, about 506 B.C., and defeated the Euboeans, who had come to the assistance of Chalceis; and by a sudden attack on the city, they put to death many of the citizens in fetters, until they ran away themselves, confounded all the property of the Hippobates, and gave their lands to Athenian colonists, whom they sent over to the island to the number of 4000 (Herodotus, vi. 96). In 415 B.C., Athens, in case of an attack of Athens. Afterwards, the Euboeans, together with the Athenians, sent assistance to the Ionians of Asia in their war against Darius Hystaspes; and their troops were among those which burnt Sardis (499 B.C.). The first invasion of Greece was the consequence of this expedition. The Satraps, Datis and Artaphernes, landed in Euboea with an immense force, completely destroyed Eretria, and sent its inhabitants as slaves into Asia. The Persians then crossed over into Attica, where they were defeated at the battle of Marathon, after having occupied the city of Chalceis and other towns of Euboea manned ships, which, uniting with the rest of the Greek fleet, fought with the Persians at Marathon. The Histiaeots alone favored the Persians. After the end of the Persian war we find the Athenians under Cimon, and the Macedonians, in conflict with the war in Euboea against the Carystians, who had revolted, and reducing them to submission. A general revolt of Euboea against Athens broke out in 423 B.C., but Pericles, with the regular troops marched into the interior, and, after a few months of possession of it: the towns of Euboea were reduced to the condition of tributaries to Athens, and an Athenian colony was settled at Oreus in the territory of the Histiaeots, which was the fertile plain on the north coast of the island. This island was of great importance to the Athenians; it was united with them in corn, supplied them with horses, and was considered of more value to them than all their other colonies put together. During the Peloponnesian war, after the defeat of the Athenians in Sicily, another general revolt of Euboea took place, and the island placed itself under the protection of Lacedaemon, but afterwards returned to the Athenian allegiance, when Athens had recovered its independence; and from that time its four principal towns, Chalceis, Eretria which had been rebuilt near the site of the old town destroyed by the Persians, Oropus, possessed a kind of municipal independence under the supremacy of Athens, which supremacy was at times disputed by the Thessalians, who were at last obliged to leave the island. The Euboeans however joined the Thessalian league against the Spars the Arcad against Eumenes. In the general prostration into which the principal states of Greece fell after the death of Eumenes, Euboea seems to have been left in great measure to itself. Its principal towns came under the rule of chiefs, or tyrants, whom we have called, without any interference on the part of the Athenians. About 340 B.C. Callias and Tauronneses, sons of the late tyrant Mesarchus, who were ruling in Chalceis, made overtures to Philip of Macedon, in order to have his assistance in subduing the rest of the island, an opportunity which was eagerly seized by Philip. Philipp, who was at the same time tyrant of Macedonia, applied to the Athenians to check Philip's interference. The Athenians sent an expedition under Phocion, who defeated the Chalcidians after hard fighting; but this led to no favour. The Euboeans were, however, at the end of the Peloponnesian war, and the Macedonian influence was established over the island. While Alexander was absent in his Persian wars, the Chalcidian increased and improved their fortifications, which extended to the mainland over the bridge they had then made. By the middle of the fifth century the Chalcidians had their influence to Greece, Chalceis and the other towns of Euboea contracted alliance with Rome, and they remained steadfast to that alliance during the Attilian war. (Livy, xxxv. 37. 39.) Chalceis afterwards submitted to Antiochus. (Livy, xxxv. 39. 51.) In the Athenian expedition against Corinthis, Chalceis was taken and destroyed by the Romans, and the whole island fell under the dominion of Rome. It then gradually declined in population and importance; and Panants and Dion speak of its fallen state under the Romans.

In the dissension of the eastern empire by the Latins or Franks the Venetians obtained possession of Euboea, which they called Negropont, a barbarous name, probably derived from the town of Eggropolis, a corruption of Euphrus, a corruption of Eretria, which is the word 'pome,' meaning the bridge which united it to the main land. The Venetians lost the island in 1740, when the Turks took the capital, Negropont, and massacred all the inhabitants. The Venetian doge and general Morosini offered to sell it to the Turks, but after some negotiation, was obliged to re-embark with great loss. The people of Euboea took part in the last revolt of the Greeks against the Turks, and the island now forms part of the new kingdom of Greece.
Land and New Holland, while the mixture of other plants which this lordly tribe permits is, compared with its own great extent, but small and partial. Wherever you go, one species or other is constantly before you.

No trees in the world so constantly or rapidly arrive at gigantic dimensions: they often become hollow, and are the resorts of the traveller, with the Angophora, which, as Frater observed, 'is magnificent' and 'gigantic,' and which, in fact, are Eucalyptus calophylla. A height of 150 ft. and a girth of from 22 to 50 are not uncommon dimensions of these trees. This timber is represented as highly useful for domestic and ornamental purposes; it is said to yield the same qualities as is best sought at first as to render the feling, splitting, and sawing up of the tree when green a very easy process, and when thoroughly dry becoming as hard as oak. Their bark is often extremely hard, whereas some species, especially E. resinaria, are called iron-bark trees by the colonists. The blue gum-tree and some others have the singular property of throwing it off in white or grey longitudinal stripes or ribands, which, hanging down from the branches, have a singular effect in the woods.

In other species, Hardness is in their form and other characters at different ages of the tree, or in different situations, that it is a matter of difficulty to know how they are to be botanically distinguished from each other; and in fact the subject of the distinction of species has hitherto been but little attempted, and we do not anticipate to undertake the task without some personal acquaintance with the plants in a native state. The leaves, instead of presenting one of their surfaces to the sky and the other to the earth, as is the case with the trees of Europe, are often arranged with their faces vertical, so that each side is equally exposed to light.

Gum-tree is the universal name among the colonists for a Eucalyptus, and has arisen from the large quantity of an astrinquent gum-like juice, resembling gum Kino in its qualities, which is found all in eucalypts, and is the basis of that from which the resin is obtained. Mr. Backhouse says that `we often find large cavities between the annual concentric circles of the trunk, filled with a most beautiful red or rich vermilion-coloured liquid gum, which flows out as soon as the saw has afforded it an opening. The gum yielded by E. resinaria is considered by druggists as not in the least inferior to the Kino which the Pierocarpus or Red Saunders wood of India produces.'

(Companion to the Botan. Magazine, vol. i. p. 69.) At Moreton Bay and in Van Diemen's Land a kind of manna is yielded by certain species. It appears to be of a form of exudation, which coagulates and drops from the leaves to the ground in small white particles, often as large as an almond, and with a sweet agreeable taste.

Upon the whole this genus must be considered the most important produces. As far as I can learn, it occurs so far to the south as Van Diemen's Land, it is almost certain that it might be naturalized in Devonshire, Cornwall, and on the west of Ireland. Even in the neighbourhood of London certain kinds bear moderate winters without shelter, especially E. pulverulenta.

It is very much to be regretted that some settled nomenclature is not introduced, for the colonists apply the same names to different species in different parts of the country; this renders it difficult to tell of what they are speaking. As I can give no evidence, it appears that the following are, or should be, the botanical species to which the colonial names belong:

- Blue Gum of Port Jackson
- Dito of Hobart Town
- Stringy Bark
- Iron Bark
- Kino Gum
- Peppermint Tree
- Weeping Gum of Van Diemen's Land
- Mountain Blue Gum of ditto
- Black Gum of ditto
- Black-budded Gum of ditto
- Caled Tree of ditto
- Mannum Gum of ditto
- Dito of Moreton Bay
- Blood-wood of Port Jackson
- White Gum of Van Diemen's Land

investigation of bodies, not merely such as are naturally gaseous, but which become so by the changes to which they are subjected during chemical research.

The indications which the use of the eudiometer depends, so far as atmospheric air and oxygen gas are concerned, is that of exposing them to the action of some substance, whether solid, fluid, or gaseous, which, on account of its affinity for oxygen, combines with it and leaves the gas unaltered, except in a molar proportion.

The eudiometer invented by Dr. Priestley arose from and was connected with his great discovery of oxygen gas and the fact which he ascertained of its absorption by another gas, which he called nitrous air, since called by various other names, nitrogen, deoxide of azote, amoxide of carbonic nitrogen, and nitric oxide gas.

This gas may be considered as nitric acid deprived of a large portion of its oxygen, which is effected by dissolving a metal in it, as for example, copper, silver, or mercury, &c. and of the proportion of oxygen which the purest air in the greatest purity. The nitric oxide thus obtained being disposed to retain the oxygen which the metal has taken from it, absorbs it with great facility from all such gaseous mixtures as contain it; the evidences of its action are the consumption of volume, and the reproduction of nitric acid; and the quantity of oxygen absorbed is determined by the degree of condensation which is produced by its action.

Dr. Priestley's method was extremely simple: he took a cylinder of glass tubing about an ounce of water, filled it with water, and dispossessed it with atmospheric air, or with the gaseous mixture to be examined; the volume of this being noted, it was transferred over water, into an air jar about an inch and a half in diameter, and a small cylindrical volume of an inch in diameter, and graduated into tens and twenties. After noting the volume of the gas, the result was expressed in measures and decimal parts; thus, when equal volumes of common air and nitric oxide were mixed, and they afterwards occupied equal volumes of the volume and ten thousands, Dr. Priestley, in speaking of the air so tried, said that the measures of the test were 1 1/2, or the standard of the air was 1 2/3.

Although Dr. Priestley determined the volumes of oxygen and nitric oxide required for mutual saturation, he appears to have been unaware of the necessity, if not entirely, to confine his eudiometric operations to comparing the results of them with those on atmospheric air; consequently, although what he calls the standard was learnt by his process, the exact quantity of oxygen which the mixture contained was not determined by it, and the principles of the chemical philosophers of the greatest eminence to render the eudiometric application exact and certain, and if this could be effected, it would be rendered an extremely valuable method on account of the rapidity of its action. Omitting herefrom the modifications which have been proposed by Cavendish, Fontana, Ingenhousz, and others, we may observe, that while both Dalton and Gay-Lussac imagined that they had removed the uncertainty of the process, the late Dr. Hony admits that he placed little reliance upon it; and Dr. Theopomatis, abandoning it altogether, except as far as it serves to indicate the presence or absence of oxygen gas in a gaseous residue under examination.

A very different and certainly an improved method that can be put into practice of employing nitric oxide was adopted by Davy. Dr. Priestley discovered that a solution of sulphate of iron is capable of dissolving nitric oxide gas, and that in that state it retains its power of combining with and colouring oxygen gas. It is prepared by passing the gas over the nitric acid; as soon as the solution is absorbed the solution becomes a deep olive brown, and when the impregnation is completed it appears opaque and almost black.

The experiments necessary for ascertaining the composition of the atmosphere by means of this solution consists simply of a small graduated tube divided into 100 parts, and greater at the open end, and of a vessel for containing the fluid.

By the open end, after being filled with the gaseous mixture to be examined, is introduced into the solution, and that the action may be more rapid, gently moved from a perpendicircular to a horizontal position. Under these circumstances the gas is rapidly diminished; and in consequence the darkening of the fluid, the degree of absorption; in a few seconds the experiment is completed, and the whole of the oxygen is condensed.

The period of the greatest diminution is to be accurately noted; for shortly after this it begins gradually to increase. By separating the impregnated carbonate of iron (chloride) acts more rapidly than the sulphate.

It is to be observed that this process is not applicable merely to the analysis of the air. It was employed by Allen and Peps in their laborious and accurate experiments on expiration; and they added a small quantity of iron to the residual gas, evidently for the purpose of separating any nitric oxide gas which might have escaped from the solution after arriving at the point of greatest condensation.

The eudiometer next to be mentioned is that invented by Scheele, which was probably the first proposed after Dr. Priestley's. This was a graduated glass tube containing a certain volume of air, which was exposed to a mixture of sulphur and iron-dlings made into a paste with water. Although the oxygen was absorbed and the azote left by this operation, yet the process was not to be relied upon, for, by the formation of sulphuric acid, which occurred by the oxidation of the sulphur, the iron was acted upon, and water being decomposed, its hydrogen was evolved, and in the results of this mode of treatment.

This plan, however imperfect, had the merit of simplicity, for the quantity of oxygen absorbed was determined at once by deducting the volume of the residual gas from that of the whole quantity submitted to experiment.

The present eudiometer is employed for determining the volume, and carbonic nitrogen, also in his experiments, to expel the air from the solution of phosphorus prepared by dissolving phosphorus in a solution of potash. It is stated that this solution new prepared absorbs a small portion of azote gas; but the bulk arising from this source is readily obviated by the addition of a small quantity of metallic mercury, and atmospheric air previously to using it, by which it is saturated with azote. A tube divided into 100 parts and immersed in the solution is sufficient for the use of it.

Gayton employed sulphuric of potassium also in his experiments, to expel the air from the solution of phosphorus prepared by dissolving phosphorus in a solution of potash. A description of this eudiometer, which has been a little used, is given in Nicholson's Journal, vol. i.

The eudiometer of Secan is a glass tube, about an inch in diameter, eight inches long, and open at one end. It is to be filled with and inverted in mercury; a small piece of phosphorus is then put under the open end of the tube, and by its lightness it immediately rises to the top of it, where it is to be melted by the approach of a red-hot iron. A measured portion of gas to be examined is then to be passed into the tube; the phosphorus inflames on each addition of the gas, and the mercury rises, owing to the condensation of the oxygen.

When all the gas under examination has been thrown up into the eudiometer, the gas is allowed to expand a little, and the eudiometer is then tilted to the position of the gas is determined by transferring it into a graduated tube, and that difference between the quantity submitted to experiment and that left after it indicates that of the oxygen absorbed.

In this experiment, owing to the decomposition of the phosphorus and the oxygen, they combine and form phosphoric acid; it is however stated that the azote dissolves a small quantity of phosphorus, and that, owing to the expansion which this occasions, about 1/4 of the volume of the gas is thrown up; it is this quantity which is to be considered.

Bertollet also employed phosphorus in his eudiometer, but instead of heating it, as in the above described method, he allowed combination to take place between it and the oxygen, by what is termed slow combustion. He exposed a piece of phosphorus fastened on the bottom of a graduated glass vessel, filled with air, and standing over water: the phosphorus immediately begins to act on the oxygen of the air, as shown by the formation of the white gas or phosphorus or phosphoric acid; but this occurs without visible combustion; in six or eight hours the whole of the oxygen disappears, and its quantity is, of course,
immediately apparent, making the deduction above stated from the actual gas.

Dr. Hope's eudiometer is represented in the annexed figure. It is used with a solution either of sulphate of iron impregnated with nitric oxide or with solution of sulphuret of potassium. This eudiometer consists of a bottle, capable of holding about three ounces, for containing the eudiometric fluid, and it is perforated and furnished with a stopper at A. Into the neck of the bottle a hollow graduated tube, B, closed at the upper end, is accurately fitted and fastened with a screw; it holds precisely a cubic inch, and is divided into 100 equal parts. To use the apparatus, the bottle is first to be filled with the solution to be employed, and covered with a flat piece of glass; the glass being then removed, the open end of the tube containing the gas to be examined is to be inserted.

The instrument being removed from the water, is to be inverted. The gas ascending into the bottle, it is to be brought into thorough contact with the liquid by brisk agitation, by which absorption of gas occurs; to supply its place the stopper at B is removed under water, a quantity of which rushes into the bottle; the stopper is then replaced, and these operations are alternately renewed, till no further diminution of volume is observed. The rise of the neck of the bottle being in water, and it is held inverted for a short time, and the diminution is then measured by the graduated scale.

Dr. Henry has pointed out some difficulties attending the use of this eudiometer, to obviate which he has substituted a caoutchouc bottle for the glass one, as shown in the annexed figure at C. The tube a is accurately ground and a short piece of very strong tube of which air is removed, the face of which is made rough by grinding, and shaped as represented, that it may more effectually retain the neck of the elastic bottle when fixed by waxed thread. This instrument is more durable, and is always in readiness, as Dr. Hope's. The only difficulty is in returning the whole of the residual gas into the tube, but the art of doing this is readily acquired by practice.

Pepys has contrived a eudiometer, in which a caoutchouc bottle is employed as in Dr. Henry's. This instrument, from the inventor's statement, appears to be susceptible of greater accuracy; for he states that he is able to measure an absorption of only 1/100 of the gas employed. For an account of this apparatus, see his remarks on the subject, which is published, with it, see Phil. Trans., 1807. The parts are too numerous for us to insert figures of, and without them a description would be scarcely intelligible.

Having observed the use of nitric oxide, sulphuret of potassium, and phosphorus, as eudiometrical substances, and noticed the more important instruments in which they are employed, we shall notice the eudiometer of Volta, and the eudiometrical body which he made use of.

Volta's method of determining the composition of any mixture, or of the quantity of oxygen contained in gaseous mixtures, is by means of combustion with a known volume of hydrogen gas; for it has been ascertained that when a mixture of oxygen and hydrogen gases is fired, one-third of the oxygen is consumed. We owing to the condensation of oxygen, we have only to observe the measure of the contraction of volume to ascertain that of the oxygen which was present. Of Volta's eudiometer various modifications have been made; all, however, are founded on the same principle above mentioned. According to Berzelius, that invented by Mitscherlich is to be preferred, on account of the simplicity of its construction and the accuracy of its results. We shall therefore describe it at once, and it will at once occur to the chemical reader that it is a slight modification of Priestley's and Cavendish's detaching tubes.

This instrument, as represented by the annexed figure, consists of a very thick glass tube from 18 to 24 inches long, and about four lines internal diameter; it is graduated, open at one end, and closed at the other. Near the top A the tube is perforated and furnished with a glass cock, which is shut after filling the tube with gas to be examined: this, of course, to prevent the loss of gas by the expansion accompanying the destruction by the spark. When this is over, the cock is turned, and the gas passes through the passage of O, turns to the right, and the fluid rising the tube, the condensation is exactly noted by bringing the fluid within and without the tube to the same level.

Another variety of Volta's eudiometer is represented by the cut, and to be understood from it. It is more simple in its construction than the foregoing, and less certain in its results, on account of the escape of gas which occurs if it be not immersed sufficiently deep in water or mercury: it is a modification of an instrument invented by Dr. Priestley. The only additional explanation required is, that A is a moveable metallic wire with a knob at the end, which is raised near enough to the knob at the top of the instrument to allow of the passage of the electric spark.

Dr. Ure has also contrived a modification of Volta's eudiometer, which renders the experiment easy of performance by a single person. This instrument is shown by the figure. It consists of a glass tube, having at one end a valve, fitted with an interior diameter of from 2-10ths to 4-10ths of an inch; its legs are nearly of equal length, each being from six to nine inches long. The open extremity of the tube is shaped; the other is hermetically sealed, and has two platinum wires inserted; the legs are about one-fourth to one-half an inch asunder. The instrument being graduated as before, and the glass being then filled with water or mercury, and the gas transferred into it in the ordinary manner; then being upright, part of the fluid in the open leg is displaced by inserting a glass rod, or in some other manner. The open leg ought to contain at least two inches of air between the thumb and the mercury: this atmospheric column serves as a recoil-spring, enabling the operator to explode considerable quantities without inconvenience or danger. The open leg being grasped by the hand, the thumb is to be placed lightly to close it, and at the same time to touch one of the wires; a spark taken from the conductor to the other wire passes through the gas, inflaming it, and is conducted off by the thumb and hand. The gas is expanding depresses the fluid beneath it, whilst, as already pointed out, the tube being enclosed by the thumb acts as a spring to restrain the violence of the explosion. If a charge from a jar is to be passed, then the thumb must not be allowed to touch the wire whilst closing the aperture. When the jar is charged, the wire connected with the outer casing is first to be hooked upon the eudiometer wire nearest the thumb, and securely retained there, so as not to slip during the experiment; and then the knob of the jar is to be brought to the other wire and the gas inflamed.

After explosion, when the condensation of volume ensues, the thumb will feel pressed down to the orifice by the superincumbent atmosphere. On gradually sliding the finger to one side and admitting the air, the mercurial column in the sealed leg will rise, and rise to a point above that in the other; and then, as soon as to be poured in till the equilibrium is restored, and the resulting volume of gas is then read off.

Dr. Ure states that with the above instrument he has exploded half a cubic inch of hydrogen mixed with a quarter of a cubic inch of oxygen, as also a bulk nearly equal of an olefiant explosive mixture, without any unpleasant concussion or noise.

Dobereiner has suggested a eudiometrical process, founded on his curious discovery of the property which spongy platinum possesses of causing the combination of oxygen and hydrogen gases. In this eudiometer the com-
bination occurs without explosion, and yields results of
great accuracy. Dobereiner found that when the spongy
platinum was mixed with certain substances, so as to prevent
its immediate and explosive action, it caused the oxygen
and hydrogen to combine with moderate rapidity. The
late Dr. Henry, who has made a most important series of
experiments on this eudiometric process, recommended
a mixture of three parts of spongy platinum and
two of fine china clay made into a paste with water
and moulded into spherules about the size of a pea; these
were fastened to the platinum wire, that they might be re-
moved after the action was over. They should be heated
and suffered to cool a short time before use: they suffer no
loss of power, and possess the great advantage over the
electric spark, that they set upon gaseous mixtures which
contain so little oxygen and hydrogen that they cannot be
ignited. The late Dr. Turner ascertained that it was possible
to determine the proportion of 1/4 of hydrogen or oxygen in
a gaseous mixture; whereas, when these gases formed 1/2 of
a mixture, they could not be detected by electricity. The
effect takes place more rapidly in large than in small tubes.

There are various gases which impede the action of the
platinum balls. It appears from the experiments of Dr.
Henry, that when the compound combustible gases, mixed
with equal parts of hydrogen, are exposed to the balls of
platinum, the several gases are not acted upon with equal
effect; that next to hydrogen carbonic oxide is most disposed to unite with oxygen, then olefiant gas, and lastly, carburetted hydrogen.

It is likely that the proportions given in certain
gases of retarding the action of platinum, when they are
added to explosive mixtures of oxygen and hydrogen, is
most remarkable in those which possess the strongest at-
traction for oxygen. Heat occasions the platinum balls to
act in many cases in which no combination would occur
without it.

In concluding this historical sketch of eudiometers and
audiometry, we repeat an observation already made, viz.,
that whatever volume of the mixed gases may disappear
after a certain time, the action of the spongy platinum,
one-third of such portion is to be considered as oxygen and
two-thirds as hydrogen, the result of their combination
being water, formed of these proportions of its constituent
gases.

EUDOCIA, daughter of Leonitus, an Athenian sophist,
was called Athens before her baptism. She was carefully
instructed by her father in literature and the sciences.
After her father's death, being deprived by her brothers
of the inheritance, she repaired to Constantinople, and
was banished to Thrace in the reign of Theodosius II,
who was so pleased with her that she induced her brother
to marry her, A.D. 421. Eudocia surrounded herself with
learned men; but the emperor, through jealousy, dismissed
her from court, and sent her exiled to Palestine, where she
continued to reside after the death of her husband.

There embraced the opinions of Eutyches, and supported
by her liberality and influence the monk Theodosius, who
forced himself into the see of Jerusalem, after driving away
Julian the Apostate, and when he was himself driven away
by order of the Emperor Marcianus,

Euthymius, called the Saint, by his reasonings brought
back Eudocia to the orthodox faith, after which she spent
the remainder of her days at Jerusalem, where she died in
480, an old woman. In her will she bequeathed all her property
to the monastery which her husband had charged her.

Eudocia wrote several works of which Photius quotes a translation in verse of the first eight books of the Old Testament. There is also a work attributed to her, which was translated into Latin by Echard, and was published under the title of 'Homerica, Centonum Graecae et Latinae, interprete Echardo,' Paris, 1576.

It is a life of Jesus Christ, composed of pieces taken from
Homer. Most critics believe however that it is not the work
of Eudocia, though Ducange is of the contrary opinion.

EUGENUS, called the 'father of modern geology,' was the
predecessor of and Theodosius II., married Valentinianus III. After
the assassination of her husband by Petronius Maximus, she was obliged to marry the usurper. Eudocia, out of
indignation and revenge, called in Germanic, king of the
Visigoths, and had him killed, and Eudocia took with her
Eudocia to Africa with him. Some years afterwards she
was sent back to Constantinople, A.D. 462, where she died.

EUDOCIA, the widow of Constantinus Ducas, married
Romanus Diogenes, an officer of distinction, A.D. 1068, and
associated him with her on the throne. Three years after,
Michael, her son, by means of a revolt, was proclaimed
emperor, and caused his mother to be shut up in a convent,
where she lived the rest of her life. She left a treatise on
the genealogies of the gods and heroes, which displays an
extreme acquaintance with the subject. It was printed

EUDORA. [MOMUS.]

EUDOXUS, a native of Cnidus, a city of Caria, in Asia
Minor, and the son of Zachus, flourished about 370 B.C.
He studied geometry under Archytas, and afterwards
travelled into Egypt to study the sciences under the priests of
that country. Diogenes Laertius informs us that he and
Plato studied in these schools for about thirteen years; after
which Eudoxus came to Athens, and opened a school of his
own, which he supported with such reputation that it ex-
icted the envy even of Plato himself. Proclus informs us that
Eudoxus very liberally borrowed from the elements of
geometry composed by Eudoxus. Cicero calls Eudoxus
the greatest astronomer that had ever lived; and we learn
from Petronius that he retired to the top of a very high
mountain that he might observe the celestial phenomena
with more convenience than he could on a plain or in a
crowded city. Strabo (p. 119) says that the observatory
red, and the constellations, which he discovered, are still
the star Canopus. Vitruvius (ix. 9) describes a sundial
constructed by him; and Strabo (p. 390) quotes him as a
distinguished mathematician. Nothing of his works re-
 mains. He died in the fifty-third year of his age. [Astro-
nomy.]

EUDOXUS, of Cyzicus, was sent by Ptolemy VII.,
King of Egypt, on a voyage to India about B.C. 125. (Strabo,
p. 98, Casaub.) The passage of Strabo referred to contains
an account of his adventures. From this Eudoxus, or another
of the same name, who derived some materials for his great
work (379, 550, &c.).

EUDYLITE, a mineral which occurs both crystalized
and massive. The crystals are generally small. The
primary form is a rhomboid; the colour is red or brownish;
and it is found in Egypt, Asia Minor, China, and India.
Lustre vitreous, sometimes dull. Sp. gr. 2·9. Hardness
5½, 5½. Streak white. Fracture uneven. The massive
varieties are imbedded and amorphous.

It occurs at Kandarliuruk, in West Greenland.

Before the blow-pipe it fuses into a lead-green scoria.

According to Stromeyer it consists of-

<table>
<thead>
<tr>
<th>Substance</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica</td>
<td>52·47</td>
</tr>
<tr>
<td>Zirconia</td>
<td>10·89</td>
</tr>
<tr>
<td>Lime</td>
<td>10·14</td>
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<td>Soda</td>
<td>13·26</td>
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<tr>
<td>Oxide of Iron</td>
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<td>Oxide of Manganese</td>
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<td>Muriatic acid</td>
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<tr>
<td>Water</td>
<td>1·81</td>
</tr>
<tr>
<td>Total</td>
<td>100·67</td>
</tr>
</tbody>
</table>

EUDYMYNS. [CUCULIDE. CUCULINA, vol. viii., pp. 206 and 211.]

EUDEYES. [Divers, vol. ix., p. 37.]

EUGENUS, FRANCOIS DE SAVOIE, commonly
called Prince Eugen, was generously descended, in the third
degree, from the ducal house of Savoy, but was a French
subject by birth, being a younger son of the Comte de Sois-
ons, and born at Paris, October 18, 1663. He was designed
for the church, but having formed a decided preference
for the sword, he was rejected for the wrongs which he conceived to have been done to his family by Louis
XIV., and which he deeply resented, he entered the service
of the Emperor Leopold. From this time he renounced his
allegiance to France, and long after, when his reputation
was at its height, rejected the most brilliant offers made
by the French government to purchase his return to the service
of his native country. His first campaign was against the
Turks, at the celebrated siege of Vienna in 1683. Eminent
bravery and success, which was increased, joined to high birth, ensured him rapid promotion. In 1688-9, on the
conclusion of the war between France and the Empire, he
was employed on a diplomatic mission to the dukes of Savoy, and in 1691 was raised to the command of the imperial army in Piedmont. During
1692-3 he maintained a decided advantage over the
French: in 1693 he was less successful. The duke having
returned to the French alliance, we next find Prince Eugen commanding the army in Hungary, where he won a great
victory over the Turks at Zenta, on the river Thetae, Sep-
luted, contains nearly 200 species, though numbers have been removed to the genera Nellitris, Josenia, Myrcia, Szygium, Caryocarphyllum, and Jambosa, in which are contained the clove tree, the rose apple, and Jannoum of India, formerly included in Eugenia. This group is confined to the hot and tropical parts of the world, as Brazil, the West India Islands, and Sierra Leone, and extends from the Moluccas and Ceylon to the Siblet and the foot of the Himalayas in Asia.

Eugenia is characterized by having the tube of the calyx a roundish form; the calyx itself is four parted, and the petals equal in number, and inserted upon the calyx. The stamens are numerous. The ovary 2-3-celled, with several ovules in each. Seeds one or two, roundish and large, with the cotyledons and radicle united into one mass. In some species, the fruit is ovoid.

The most remarkable species of the genus, and one of the few it is necessary to notice, is the Allspice, Pimenta, or Bay-berry tree. This is the Eugenia Pimenta, of De Candolle; the Myrtus Pimenta of Linnaeus and of the London Pharmacopoeia, or the Star of the west Indies, and the West India Islands, especially Jamaica, and from being cultivated there is often called Jamaica Pepper. The tree is very handsome, often 30 feet high, and much admired for its beauty in form and appearance of its leaves as well as in habit. The trunk is smooth and branchless, which branches are round, the younger compressed, and the twigs as well as the flower-stalks pubescent; the leaves are petiolate, oblong or oval, smooth, and marked with pellicular dots, forming a dense evergreen foliage; the flower-stalks are bare and terminal, and are divided into three-forked panicles; the flowers are small, without show, and conformable in structure to the character of the genus. The berry is spherical and crowned with the persistent calyx when ripe, smooth, shining, and of a dark purple colour; usually one, occasionally two-celled, containing large roundish seeds.

The Pimenta is cultivated with great care in Jamaica, and is abundant especially on the hills on the north side of the island. The trees are formed into regular walks, and begin to bear when three years old, but are not in perfection until they have been planted seven years. They thrive best in rocky lands, or a rich soil having a gravelly bottom. Mr. Martin Edwards says, that a single tree yields 150 lbs. of the raw fruit, or 100 lbs. of the dried spice; but the crop is uncertain, and plenteous perhaps only once in five years. The tree has been introduced into and flourishes in the southern parts of India.

As a general, Prince Eugenio ranks among the first of his kind, but that kind was not of the highest order of excellence. His name is invariable for amusement in the art of war, neither was he famous for skill in manoeuvring or combining the operations of distinct masses upon one object. His characteristics were penetration, quickness of perception, decision, and what usually goes along with them, readiness. He gave his army orders which he never substantiated in battle, and the orders might be thought by some to indicate want of talent and spirit. He always gave his army orders which he never substantiated in battle, but he was also somewhat prodigal of his soldiers' lives. However, he threw a glory round the Austrian arms as has never dignified them either before or since.

The leaves and bark participate in the warm aromatic properties for which the berries are celebrated, and which have received their name of Allspice from their fragrant odour being thought to resemble that of a mixture of cinnamon and cloves. The leaves and bark being aromatic makes them useful as a spice in cookery, and a stimulant in medicine.

Eugenia Michaili is a Brazilian species, cultivated in Martinique, whence it is called Cerrisier de Cayenne, as it yields a small edible fruit.

EUGENIACRINITES. [ENCINITES, vol. ix., p. 393.] N.B. The Rev. Landowne Guiding, in his notice of a perfect recent Encrinitus, found in the Caribbean seas, and which, according to him, comes nearest to the Slag's Horn Encrinite of Parkinson, says that its capture was making a small edible fruit. V. X.-K
to settle the point (which way he does not in terms state) as to whether the animal is locomotive or fixed. He gives the description of the species and states that the spines on the back of the S. Valeriana is but speaks of the S. Valeriana or Crambe, and says that E. Milloen inhabits the Corinb area at sea at great depths in profounder, adhering to Gorgonae. He describes the abdomen of his species as being membraneous, and situated below the head. In terms, vol. i. p. 251, of the "E. Milloen."

EUGENIUS, a substance which deposits spontaneously from the distilled water of cloves; it crystallizes in small flakes, which are colourless, transparent, and pearly, and in that state become yellow; the taste of eugenol is but slight, and the smell much the stronger than that of the fresh clove. It is soluble in alcohol and ether in all proportions; by the action of nitric acid, like the oil of cloves, it becomes immediately, even when cold, of a blood-red colour. It is composed of oxygen, hydrogen, and carbon, in the same proportions as the oil of cloves, with one equivalent less of oxygen and hydrogen.

EUGENIUS I., a native of Rome, was elected by the Romans, a.d. 664, as successor to Martin I., who had been sent into banishment to the Thaestan Charters by an order of the schism of the Mandubes. Martin dying in the following year, Eugenius continued in dispute with the court of Constantinople till he died in 675, and was succeeded by Vitalianus.

EUGENIUS II., a native of Rome, succeeded Pachias I., a.d. 692, in the midst of great disorder which occurred at Rome owing to the corrupt state of society and mad-administration of that city. To reform these, the emperor, Louis the Good, sent to Rome on Easter, who, by the account of Egicrath and other chroniclers, had grown to an enormous extent. He confirmed the right of electing the pope to the clergy and people of Rome, but under the condition that the pontiff should swear fidelity to the emperor before the imperial insignia or representative. Eugenius held a council at Rome, in which, among other things, it was decreed that in every episcopal residence, as well as in every country possession, there should be a master for teaing the people and inquiring after the ecclesiastical records. Eugenius died in 697, and was succeeded by Vitalianus, who, dying also after a few weeks, was succeeded by Gregory IV.

EUGENIUS III., a native of Pisa, of the Cisternian order, and a disciple of St. Bernard, succeeded, a.d. 1145, Lucius II., who had died of a blow from a stone indited in a riot of the Roman people. Arnaldo da Brescia was then preaching his reform at Rome, the senate had declared itself independent of the pope, and Eugenius was obliged to take up his residence at Viterbo. After some fighting and many negotiations, the pope, in the person of the emperor, was reconciled, and the Romans, Eugenius returned to France in 1152, and the following year held a council at Rheims. He afterwards returned to Italy, and with the assistance of Roger, king of Sicily, defeated the Romans, and entered the city of Rome. The city was further disturbed on the accession of the emperor Alexius, who obliged him to take refuge in Campania, where he received of St. Bernard the book "De Consolacione," the subject of which was advice on his pontifical station and its duties. After having resided some time at Segu he made peace with the Romans, and returned to Rome in 1132. He died the following year, and was succeeded by Anastasius IV.

It was under his pontificate that Gratianus, a Benedictine monk at Bologna, compiled the code of canon law called "Decretum Gratiani," which greatly favored the extension of the "E. Milloen Law."

EUGENIUS IV., Gabriele Condulmero, a native of Venice, succeeded Martin V. in March, 1431. He was a most stormy pontificate. He drove away the powerful family of Colonna, including the nephews of the late pope, from Rome, charging them with having enriched themselves at the expense of the papal treasury. Two hundred of their adherents were put to death, and the palaces of the Colonna were plundered; but their party collected troops in the country and besieged Rome. Eugenius, through the means of Pope John II., of Florence, and obliged them to sue for peace and surrender several towns and castles they held in the Roman state. He afterwards made war against the various lords of Romagna, who were supported by the Venetians of Milan; and he negotiated as his general the patriarch Vitelleschi, a militant prelate, who showed considerable abilities and little scrupulousness in that protracted warfare, by which the pope ultimately recovered a considerable portion of territory. On the other hand, Eugenius mortally injured himself, the pope had him put to death. The famous condottiere Sforza figured in all these broils. But the greatest annoyance to Eugenius proceeded from the council of Basel, which had been convoked by his predecessor, and which was of the most serious nature. The council had been very unfavourable to papal supremacy. After solemnly asserting the superiority of the council over the pope, it forbade the creation of new cardinals, all appeals from the council to the pope, suppressed the annates, or payments of one year's income of any benefice, and declared that no source of revenue to the papal treasury, and made other important reforms. Eugenius, who had been obliged to escape from Rome in disguise on account of a popular revolt, and had taken at Basle a bull dissolving the council, resolved his nuncio who presided at it, and convoking another council at Ferrara. Most of the fathers assembled at Basel refused to sit, and summoned the pope himself to appear before them to answer the charges of schism, schismatics, and others; and after a time proceeded against him as contumacious, and deposed him. Eugenius meanwhile had opened in person his new council at Ferrara, in February, 1438, in which, after annulling all the obnoxious decrees of the council at Basel, he took occasion to make a solemn accusation against the bishops who remained in that assembly, which he characterized as a "satanic conclav," which was spreading the abomination of desolation into the bosom of the church. The Council world was divided between the "E. Milloen and the Ferrara."

The Emperor was in person a.d. 1439, in the person of Ananias VIII. of Savoy, who assumed the name of Felix V., and was solemnly crowned at Basel. The council of Ferrara in the meantime afforded a novel sight. The Emperor John Paleologus came with Joseph, Patriarch of Constantinople, and was received with a great reception. The bishops, attended by a numerous retinue, and took his seat in the assembly. The object was the reconciliation of the eastern and western churches, which Eugenius had greatly at heart, and to which Paleologus was also favourably inclined. The council of Ferrara was followed by the vacancy of the throne of Europe against the Turks. The plague having broken out at Ferrara, the council was removed to Florence. After many theological disputations on the subject of the Holy Ghost, of the primacy of the pope, of purgatory, and other controverted points, the decree of reunion of the two churches was passed, and signed by both parties in July, 1439. The emperor and patriarch returned to Constantinople highly pleased with Eugenius; but the Greeks took offence at the terms of the union, the schism broke out again. The separation of the two churches has continued ever since.

A grave charge against Eugenius is, that he encouraged the Hungarians and Poles to break the peace they had solemnly sworn with the Turks, under pretence that their independence was at stake. It was not, for he even sent Cardinal Julian as his nuncio to attend the Christian army. The result was the battle of Varna, 1444, in which the Christians were completely defeated, and King Ubradlaus of Poland and Cardinal Julian lost their lives.

Eugenius died at Rome a.d. 1447, after a reign of sixteen years, and in the sixty-fourth year of his age. He left the church in a state of schism between him and his competitor Felix, his own state a prey to war, and all Christendom in a state of consternation. The progress of events in the last days he is said to have expressed himself wearily of agitation, and to have regretted the loss of his former monastic tranquillity before his exaltation. He recommended peace and conciliation to the cardinals assembled around him. He was succeeded by Nicholas V., in favour of whom Felix V. soon after abdicated. The pontificate of Eugenius forms a most stirring and interesting period in the history of Italy and of the church, and has been the subject of several collections of the letters and Balbo's "Miscellaneous."
strong smell of selenium, and with charcoal fuses into a brittle metallic globule. It consists of—

Selenium 26
Silver 38·93
 Copper 23·05
English matter 8·50
Carbonic acid and loss 3·12

100°

EULABES. (Zoology.) [Rolle.
EULALIA (Zoology), a generic established by Savygium, and placed by Cuvier among his Dorsibranchiate Annellae. [Dorsibranchiata.]

EULEN-SPIEGEL. [English Drama, vol. ix., p. 423.]
EULER, LEONARD, a celebrated mathematician of the eighteenth century, born at Bülach, near Basle, in Switzerland; his father, Paul Euler, was the Calvinistic pastor of the neighbourhood village of Riehen. He was a man remarkable for unostentatious piety, and imbued with a considerable knowledge of mathematics, which he had acquired under the tuition of James Bernoulli.

After being instructed by his father in analytical science, young Euler was sent to the university of Basle, in which John Bernoulli was at that time professor, and by his rapid progress, and his genius, he soon gained the esteem of his teacher and of the sons, Nicholas and Daniel Bernoulli, that his father was easily dissuaded from his original intention of forming his son into a divine, and wisely allowed him to pursue unshackled the high distinctions then conferred upon a profound and scientific reputation.

A prize having been proposed by the French Academy of Sciences on the management of vessels at sea, the ambition of Euler, then only nineteen years of age, induced him to attempt an essay, which was received with considerable applause, though the prize was conferred on Bouguer, an old and experienced professor of hydrography.

The Academy of Sciences at St. Petersburg was then rising to a distinguished rank amongst similar institutions in Europe under the fostering patronage of Catherine I., who was entertained with Lefevre d'Hermy, a Frenchman, whom were the Bernouillis above mentioned. On the retirement of Daniel Bernouilli, Euler was appointed professor of mathematics under Peter I. in 1733; soon after which he married a Swiss lady named Gsell, by whom he had a numerous family.

His works previous to the date at which we have arrived were, with few exceptions, confined to those mathematical questions arising from the progressive march of the Integral Calculus, which, at that time, caused much emulation in different countries, and far more in his element in the abstruser parts of pure mathematics than in the applied; in many of the latter he was frequently conducted to paradoxical results.

In the memoirs of the Academy of Metropolitan Academy, 1729 and 1730, several of his memoirs on trajectories, tautochronous curves, the shortest line along a surface between two given points, and on differential equations; besides which he had published at Basel a physical dissertation on sound.

Euler found it convenient at this time to apply himself intensively to study, not more from his natural ardour for the sciences and the incentive of an increasing reputation than from the desire to avoid the political intriguers which, under a suspicious and tyrannical minister, then agitated Russia.

During this period of his life, he published and communicated to the Academy of Sciences in St. Petersburg, 1746, 2 vols., 400., a treatise on the theory of music, and one on arithmetic, together with numerous papers in the Petersburg Memoirs, chiefly on astronomical and purely mathematical subjects, among which was his famous essay on the solution of topographical problems, which embodied the profoundest researches on a matter of great analytical difficulty previous to the discovery of the Calculus of Variations by Lagrange. Upon the fall of Biron he gladly accepted an invitation from Frederick, the Elector of Prussia, and arrived at Berlin. When he was introduced to the queen-dowager in 1741, she was so much struck with the purity of his character that, on requiring an explanation, he replied that he had just returned from a country where those who spoke were hanged.

To avoid the journey to Russia, he was requested to profit by the presence of Euler in Berlin, requested to be favoured with instructions on the known facts in the physical sciences. To this wish he fully acceded on his return to Petersburg in 1766, by publishing his celebrated work, 'Letters to a German Princess' (3 vols., 8vo., 1768), in which he discusses with clearness the most important truths in mechanics, optics, sound, and physical astronomy, having published previously to this date several isolated treatises and some memoirs touching on every known branch of theoretical and practical science. After several years of residence in Prussia he was much employed by the enlightened monarch who then governed that kingdom in questions connected with the mint, with navigable canals, and the foundations of gunnery, and who, after having learned his father's death, he went in 1750 to Frankfort to receive his widowed mother, and brought her to Berlin, where she lived until 1761, enjoying with a nakedness of feeling and an open heart, as a sober son by his talents and indefatigable industry had arrived.

An incident which occurred in 1760 showed how highly Euler was in general esteemed. The Russians having entered Brandenburg, advanced to Charlottenburg, and plundered a farm which belonged to Euler. When admonished, Tottlen was informed who the proprietor was, he ordered immediate repARATION to be made to an amount far above the injury, and the Empress Elizabeth presented him with 400 florins.

In consequence of his unceasing application to study Euler had the misfortune to lose the sight of one eye in 1735, and in 1766 that of the other; he however continued his valuable researches, some of his family acting as amanuensis, and his powers of memory are said to have imparted a wonderful development in the field of electrical science. When he accepted the invitation of the empress Catherine II. of Russia to return to Petersburg in 1766, where he would have fallen a victim to an accidental fire which destroyed his house and property in 1771, but for the courageous efforts of a fellow countryman (M. Grimon), who bore the old man away in his arms. His manuscripts were saved by the exertions of Count Orloff.

On the 7th of September, 1783, after some calculations on the motions of the planets, then newly invented, Euler worked up calculations, and took his horse to call at planet Herschel. While playing with his grand-child, who was taking tea, he expired suddenly and without pain. Euler was twice married in the same family, and had many children and grand-children; his habit of life was strictly religious, the labours of each day being closed with a chapter from the Bible and family prayer. A catalogue of his published and unpublished writings is given at the end of the 2nd volume of his 'Institutiones Calculi Differentialis,' 1787; and to the first is prefixed an eloquent Elegy by Mendendorf.

Every useful subject of mathematical research engaged at some time the attention of Euler; and for relaxation he amused himself with questions of pure curiosity, such as the knight's move in chess to reach every square in the board. His various researches have gone far towards creating the geometry of situation, a subject still imperfectly known. The following is one of the questions which Euler has generalized:—At Königsburg, in Prussia, the river divides into two branches, with an island in the middle connected by seven bridges with the adjoining shores; it was proposed to determine how a man should travel so as to pass over each bridge once and only once.

The memoirs of Euler are principally contained in the following works: 'Mém. de l'Acad. des Sciences,' 1765, 1778; 'Recueil de l'Acad.,' 1775, 1776. Among his 'Mémoires' are:—'On the marine Testaceus Glasses, established by M. Risso."

Generic Character.—Shell turreted, acuminated, polished, with many whorls; aperture ovate, acuminated posteriorly; external lip thickened, generally forming numerous oval bases. Operculum lost. It is a plant of a dark brown, hard, firm, crustaceous texture. Mr. G. B. Sowerby, who gives this generic character, says (Zool. Proc. 1834) that this genus of marine shells appears to be most nearly related to Pyramidella and Rissuva. A species, he adds, which has been long known has had the appellation of Turbo politus, among the British Linnean writers; and a fossil species has been placed by Lamarck among the Bulini, under the specific name of B. terrebellus. Mr. Sowerby separates the genus into the two

K 2
divisions below stated, which are characterized by the two species above mentioned: one has a solid columnella, and the other is deeply umbilicated. All the species, he observes, are remarkable for a brilliant polish externally, and the shells are frequently slightly and somewhat irregularly twisted, apparently in consequence of the very obsolete variies following each other in an irregular line, principally on one side, from the apex towards the aperture. He describes sixteen species, chiefly from Mr. Cuming's collection.

Geographical Distribution.—Wide; principally found, as yet, in warm seas (South and Central America, and Pacific Ocean, Australia) but there are several British species.

Habits.—The species found by Mr. Cuming were dredged or otherwise collected in sandy mud, coarse sand, and coral sand, on mother-of-pearl shells, or on the reefs; at depths (not including the reefs) ranging from six to thirteen fathoms.

Perforated Eulima.

Example, Eulima splendida. Shell acuminate-pyramidal, brownish, articulated with white and chestnut near the sutures; umbilicus large; aperture angulated anteriorly. Length 1/4, breadth 6/16 inches. Locality, Saint Elena, South America. Mr. Cuming dredged a single specimen in sandy mud at from six to eight fathoms depth.

Imperforate Eulime.

Example, Eulina major. Shell acuminate-pyramidal, opaque, milk-white, external lip suberect. Length 1/4 inches, breadth 6/16 inches. Locality, the Island of Tahiti. The largest specimen was found in coral sand on the reefs.

Mr. G. B. Sowerby says that the fossil species are found in the calcareous strata near Paris.

EULIMENÉ. [BLANCHIOPHA, vol. v, p. 143.]

FULYMÈNE. [MEDUSA.]

EUMÉDONUS, a genus of brachyurus crustaceans, the first of the Parthenopneustes of M. Milne Edwards, and which, in his opinion, establish in some sense the passage between the Stenoplychni, Acnerus, on the one side, and Eutyrroclymen, Lamineus, and Parthenopneustes, on the other. The form of the carapace is nearly pentagonal as in the latter, but it is, at the same time, thrown forwards as it were, and securely overpasses the line of the feet of the hind pair of limbs, a disposition which recalls the construction of the former. The body is depressed: the rostrum, which is very large and projecting, is only divided towards its extremity; the eyes are very short, and their pedicle entirely fills the orbits, which are circular; a character which again approximates these crustaceans to the Stenoplychni: the internal antennae are folded back very obliquely outwards, and the external antennae are but little developed. The epistome is shorter than in the majority of the Oxyrhynchi. The external jaw-feet present nothing remarkable. In the male the thoracic feet of the first pair are large and much longer than the rest: all these are a little compressed, and their third joint is surmounted by a crest, which is not distinctly perceptible on the other joints; the feet of the second pair are rather shorter than those of the third and fifth pair, which are nearly as long as the fourth. The abdomen of the male is composed of seven articulations.

Example, Eumenedon niger. This small species, the only one known, is of a bronzed black colour, and inhabits the coasts of China. [PARTHENOPHE.]

EUMENES, of Cardia, a town in the Thracian Chersonese, was an important actor in the troubled times which followed the death of Alexander the Great. (ALEXANDER III.; ANTOPHÉ; EUMENES; PARÍNNES.) Being early taken into the service of Philip of Macedon, he served him for seven, and Alexander for thirteen years, in the confidential office of secretary. He also displayed great talent for military affairs through the Persian campaigns, and was one of Alexander's favourite and most esteemed officers. After Alexander's death, in the general division of his conquests, Cappadocia, Paphlagonia, and the coast of the Euxine as far east as Trasyrus, fell to Eumenes' share. This was an expectancy rather than a provision, for the Macedonian army had passed south of these countries in the march to Persia, and as yet they were unsubdued. Perdiccas, however, took arms to establish Eumenes in his new government, and did so, at the expense of a single battle. To Perdiccas as regent, and after his death to the royal family of Datis. In his opinion, establishment in some sense was a faithful means of warding evil; indeed he is the only one of Alexander's officers in whose conduct any appearance of gratitude or disinterestedness can be traced. When war broke out between Perdiccas and Perdicis, n.c. 321, he was appointed by the latter to the command of the troops in Asia Minor and Mount Taurus and the Hellespont (Cor. Nep, c. 3), to resist the expected invasion of Antipater and Craterus. The latter he defeated; but the death of Perdiccas in Egypt threw the balance of power into Antipater's hands, who made a new attempt on the provinces, in which Eumenes was invested, and Cappadocia given to another. The task of reducing him was assigned to Antigonus, n.c. about 320. The rest of his life was spent in open hostility or doubtful alliance with Antigonus, by whom he was put to death, n.c. 315, as is related in that article, vol. i. p. 116. Eumenes was an admirable partisan soldier, brave, full of resources, of unbroken spirits. Those parts of Diod. Sic., book xviii, which relate to him, and Plutarch's Life, will be read with pleasure by those who are fond of military adventure. Plutarch (Life of Eumenes, c. 13) speaks of some of his letters. The reader may consult also Droysen, Geschichte der Nachfolger Alexanders, Hamburg, 1836.
The Athenians acceded to the Eumenides, among other victims, black sheep: no wine was mixed up with the libations offered to them, but in the recent edition, in the separate libations, out of different vases. (Soph. _Ed. Col._, 469, &c.) Of the number of these goddesses we have contradictory accounts: in the play of _Aeschylus it is pretty certain that there were fifteen in the chorus. (_Müller's Eumenides, § 11._) In all ability of the ancient writers the three separate divinities are accurately and satisfactorily discussed by Müller in the second essay at the end of his edition of the _Eumenides_, § 77–93.

**EUROPSILUS, EUMOLPIDAE.** [ELEUSIS.]

**EUMORPHOS,** a genus of coleopterous insects belonging to the section _Trimeris_ of Latreille, and being the typical genus of the family _Fungicole._ These insects are characterized by having the antennae longer than the head and thorax, the body oval, and the thorax irregularly square; the fulcral palpi are bilobed, and not terminated by a large process as in some genera: the last joint of the tarsus is always deeply divided into two lobes.

Latreille ( _Regne Animal_ ) divides the genus Eumorphus into several sub-genera. Some of the species have the third joint of the antennae much longer than any of the other joints: these form the genus _Eumorphus_ (proper), in which the antennae are club-shaped. All the species are natives of America or the East Indies. Ex.: _Eumorphus immarginatus_ Baly, _E. inornatus_ Baly, and _E. subcylindricus_ Baly, 2nd Sub-genus, _Dapno_ (Zieg.). Some of the species have the antennae club-shaped, as in _Eumorphus_ proper, but straighter and more elongated, and with the joints bent laterally: among these, _Eumorphus Kirbyanus_ (Latr.) is not only one of the third joint of the antennae is not longer than any of the others. Many of the species of _Dapno_ are indigenous in Europe, living in different fungi, whence the name of the family (_Fungicole_). Some of these insects are also found under the bark of the birch and other trees with which they feed. In the _Dapno_ sub-genus, the last three joints of the antennae are bent laterally, which makes the triangular club-shaped mass. 4th Sub-genus, _Lycoperdinia_ (Latr.) has the maxillary palpi bifid and the last joints of the labiae are enlarged. ( _Trimal._)

**EUNAPIUS,** one of those writers known by the name of Byzantine historians, was born at Sardes, in Lydia, A.D. 347. He began his studies under the care of Chrysanthus the philosopher, whose advice he is said to have composed the lives of some of the ancients. In his twelfth year he left Asia for Athens to attend the lectures of Proclusius, by whom he appears to have been subsequently treated with the utmost kindness. On his voyage he was detained at sea for some time the military of the king, who yielded only to treatment of a pecuniary nature. After attending Proclusius for five years he made a journey to Egypt, in imitation, as Hadrian Junius says, of Plato and Eudoxus; this intention however was prevented from being executed by the Philipic war, which banished him from his episcopal see; first, by Constantius to Phrygia; then by Valens to Mauritania; and lastly, by Theodosius to the Island of Naxos: however, he died in peace, at a very advanced age, in the year 394. Most of his works are lost, including a copious commentary on the Epistle to the Romans, in 7 volumes, and numerous letters. Two of his principal treatises are printed in the _Bibliotheca Graeca_ of Fabricius, in Greek and Latin (tom. 8, pp. 235–306). "A Confession of Faith," presented in 383 to the Roman Emperor Theodosius; and an "Apostolic Discourse" in 28 chapters. (Cave's _Prim. Christianity_, part 2, c. 11; Pluquet's _Dict. de Histoire_; Broughton's _Historical Dict._; Dr. A. Clarke's _Succession of Sac. Lit._, vol. I. p. 318; Basilius's _Commentaries_.)

**EUNUCH** ( _ευνούχος, eunuchus_, literally, 'one who has the care of a bed'). The Greek word may be considered as descriptive of the functions of those who were made eunuchs, it being usual among the Persians to entrust the care of their wives to the eunuchs of such persons. It does not appear that eunuchs were made by the Greeks, except as we shall presently mention. This peculiar species of barbarity was a Persian practice (Herod. vi. 32). It appears however that the Greeks sometimes carried on the trade of making eunuchs, whom they sold at Ephesus and Sardes to the Persians for high prices; the Persians considering that eunuchs generally were more trustworthy than other men. (Herod. viii. 103.) Taverne tells us that in the kingdom of Butoon twenty thousand eunuchs were annually made in his time to sell to other nations; and the seragios of the East are principally served and guarded by them to the present day.

The Christian emperors of Rome forbade the practice of making eunuchs, particularly Constantine; and Justinian imposed a law of a similar nature upon all Christians. The profession of eunuch was considered a violation of the laws of humanity. In Italy however the process of castration is still practised upon children intended to supply the operas and theatres of Europe as singers. The Council of Nice condemned those who from excess of zeal made eunuchs of themselves. Persons so mutilated were to be turned out of holy orders. The reader who would know more on this subject may consult the "Traité des Eunuques," 12mo, 1707, by M. d'Arricellin.

Certain heretics of the third century bore the name of Eunuchus who had the folly or madness, after the example
of Origen, not only to castrate those of their own persuasion, but all whom they could lay hands on. They were also called Valesians, from Valesus, an Arab, who was their chief. (See Epiphanius and Baronius' Annu, under the years 249 and 260.)

EUROMPHALUS. [Trochide.] EUPATORIA. [Chenea.] EUPATORIACE.A.E., one of the tribe of composite plants, admitted by De Candolle, who defines it thus:— 'Style of the hermaphrodite flowers cylindrical; the arms long, somewhat ciliate, covered externally with downy papillae in the upper end. The stigmatic series but little prominent, and usually disappearing before they reach the middle of the arms of the style.' Under this character are arranged 38 genera, the most extensive of which is the genus Eupatorium, including no fewer than 294 species.

EUPEN, a circle in the Prussian administrative circle of Aschken, or Aix-la-Chapelle, and in the western part of the province of the Lower Rhine, is, though wooded and mountainous, full of fine pastures. It contains about 76 square miles. It produces timber, grain, vegetables, flax, &c., and large quantities of cheese are made. There are considerable manufactures. Iron, calamine, and potter's clay, are among its mineral products. The population in 1816 was 17,419; in 1831, 19,058; and is now about 19,900.

EUPEN, the chief town (the Neue of the former department of the Ourthe), is situated in a fertile valley on the banks of the Weeze, in 50° 39' N. lat. and 6° 1' E. long. It is well built, and with its gardens and meadows covers a considerable surface. It has four churches and chapels, an orphan asylum, and a good school, and contains nearly 1200 houses. The number of inhabitants was 1895 in 1815; 10,534 in 1831; and is at present about 11,300. There are large manufactures of kerseymere and fine woollens. The other productions are woollen yarn, soap, cheney, powder, deals, blotting paper, &c. It is a place of extensive trade, and has several manufacturing villages in the neighbourhood.

EUPHEUS. [Soepona.] EUPHOR'RIA, a genus of exogenous plants, giving its name to an extensive and important natural order. It has very small monocious naked male flowers, crowded round an equally naked female one, in the inside of an involucre looking like a calyx, and formerly mistaken for that organ. The species have either a common leafy appearance, with the involucres proceeding from among large foliaceous bracts, or they are nearly leafless, with their stein excessively succulent, so as to resemble Cacti. Those with the former character are natives of most parts of the world, and are the only kinds found in Europe: the succulent species chiefly appear in the hot and arid countries. Barren uncultivated places in the plains of Hindostan and the arid regions of Asia and the north of Africa are their favourite stations; in the Canaries, on volcanic soil, E. Canariensis and laphylla form great bushes with arms like candelabra. From Cauca in the tropics some plants much resembling, they are readily known by their spines when they have any, not growing in clusters, and by their emitting, when punctured, an abundant discharge of milky juice. This, in a concrete state, forms what is called the gum-resin, or rather resin, called Euphorium, an acrid, corrosive, most dangerous drug, principally furnished by E. officinarum, antiquorum, and E. Canariensis. The same properties exist in the herbaceous leafy species, diffused in some, concentrated in others.

E. Lathyra, a common weed in cottage gardens, where it is called 'raper,' yields from its seeds an oil of the most violent purgative nature. If it were less dangerous it might be substituted for Tiglium oil. Fée states that with as much of this oil as could be sold for a franc ninety adults might be purged.

A few species, having the involucre of some showy colour, are cultivated as objects of ornament; otherwise they are looked upon as mere weeds.

EUPHORBIACEAE, a natural order of exogenous plants, with unsexual flowers and treasurers. Their real affinity is a matter of great uncertainty. Jussieu placed them among his Dichotomos Dicotyledons, and probably he was right in so doing; nevertheless there are many strong marks of resemblance between them and Malvaceae, Celastraceae, and even Elagxiaceae plants. The number of Euphorbiaceae is unknown, but certainly very considerable. They vary from trees of the largest size to minute herbs, of only a few weeks' duration, and from having both calyx and corolla highly developed to the total absence of those organs. In fact they are variable in scarcely anything except the short character we at first assigned them, and in their sensible properties. Aerial, a viscid corrosive property, which sometimes is so concentrated as to render them most dangerous poisons, and sometimes so diffused as to be of little importance, with all imaginable intermediate qualities, exists throughout the order. Hence some are fatal, others drastic or purgative, and some simply laxative. They also occasionally secrete a farmaceous substance which, being separated from the poison, is valuable for the food of man, as in the Cas-cava.

Among the more dangerous species of this order are the Manchineel, whose very shade is asserted to be dangerous, the Eucereana, which derives its ominous name from its juice producing blindness; and the Euphorias, that yield Euphorium, Casor oil, and oil of Tiglium, well known valuable purgative medicines. Among other products may be named Cassarilla, the bark of a Croton, Turnsole, afforded by a Crozophora, Cauchose, the produce of Siphona elastica, Hura crepitans, and others, and a kind of bird-lime yielded by Sapum auriparium.

EUPHORBIUM, improperly called a gum, or gum-resin, since it is entirely destitute of any gum in its composition, is the concrete juice of several species of euphorbia, either exuding naturally or from incisions made in the bark. Much of the article found in British commerce is obtained from the Euphorbia Canariensis, while that which occurs on the continent is obtained from Euphorbia officinarum (Linn.) and E. antiquorum (Linn.), and other African species, particularly from an undescribed species, called by the Arabs d-rorhute. The branches of this plant are used in tanning, and to it, according to Mr. Jackson (Edinburgh
Medical and Surgical Journal, vi. p. 457), the morocco-weather owes its peculiarities. By the most recent chemical analyses, euphorbia seems to consist of resin, wax, and several matters (mostly melanites). The resin is the active principle, and differs in some respects from most other resins.

Euphorbia is a powerful acid substance, causing irritation and inflammation of the parts with which it comes in contact, and for this reason afflicting the nervous system. The dust received into the mouth irritates the mucous membrane, occasioning sneezing and lachrymation, or even more severe affections of the eyes, so that it is necessary for those who grind this drug to protect the face by masks. Delirium and stupor appear to be the effect of the inhalation of the dust. When swallowed, it causes, in small doses, vomiting and purging; in larger doses it produces inflammation of the stomach, and sometimes proves fatal. It is now little used, even as an external application to produce vesication or ulceration, except by veterinary surgeons. It is sometimes used as an erthrine, largely diluted with starch, and enters into the composition of some cephalic and eye-snuff; but it is apt to be violent in its effects. In case of poisoning by it, demulcent or oily fluids should be given, and venesection employed if much inflammation ensues.

EUPHRATES. [Tigris.] As new information may be expected on the subject of the Euphrates, we have determined to treat of this double river system under the head of Tigris.

The department of Seine et Maine, and its liquid obtained by Reschenbach, from animal tar, especially that of bones or horns. The process for procuring it is opepose and complicated. Its properties are— that it is very limpid, colourless, inodorous, and tasteless; it boils at about 34° Fahr., and distills unchanged, it is destitute of alcoholic effects, and may be used in alcohol, oil of almonds and of olive, oil of turpentine, naphtha, &c.; it dissolves chlorine and bromine, which are cooled when it is heated, and it also takes up camphor, stearn, and naphthain, at common temperatures, but when heated, in large quantity. With it is formed a solution: it dissolves phosphorous, sulphur, and selenium, when heated, but the greater portion is deposited on cooling; caustic souce wets in it, and when heated dissolved. It is not altered either by exposure to air, or by acids or alkalies. It has not been analysed.

EUPOLIS, a writer of the old comedy, was born at Athens about the year 446 B.C. (Clinton's Pasti Hellenici, n. p. 63), and was therefore a contemporary of Aristophanes, who was in all probability born a year or two after. The place in which he lived was 850 feet above the sea, and he possessed a house on the slope of Mount Hymettus. Another account states that he fell in a sea-fight in the Hellespont, and that he was buried in Aegina. We have the names of twenty-four of his plays, but no adequate specimens of them. To judge from the titles, the object of Eupolis must have been to satirize every case, mere pecuniary.

The Marcoz, which appeared in 421 B.C., was an attack upon Hyperbolus, the demagogue; the Autokrates (420 B.C.) was intended to ridicule a handsome pan-craeate of that name, who is the hero of Xenophon's Symposion; the Lacedemoniates was directed against the political opinions of Cimon, who was too much attached to that had, and even called his son Lacedemonius (Thucyd. i. 45). From the concurrent testimony of Lucian (Ade. Indoctum, § 217), of Platonis, and of the scholarist on Justus of Ephesus, it may be concluded that the writing of the Bapser was to ridicule Alexis for taking part in the obscene rites of Cottyo, and that it was for this attack that Eupolis was thrown into the sea. (See Buttmann's Essay on the Cottysis and the Bapistis, Mythologias, p. 12, &c.). Aristophanes and Eupolis were not upon good terms. Aristophanes speaks very harshly of his brother poet in The Clouds (551, &c.), and charges him with having pillaged from The Knights the materials for his Marcoz; and Eupolis in his turn made jokes on the baldness of the great comician (Schole on The Clouds, 539).

Eupolis published his first play when he was only seventeen years old (Suidas).

EUR, a river in France, which rises in the marshes and pools which occupy the eastern extremity of the department of Orne, near the town of L'Anguy. Some eight miles from its source it enters the department of Eure et Loir, through which it flows in a south-east direction for about 25 miles without receiving any considerable accession. It then turns northward, and flows in that direction about 25 miles, across the departments of Seine et Loir and Eure, and past the towns of Chartres, Maintenon, Ane, Ivry, Pacy, and Louviers, into the Seine, which it joins just above Pont de l'Arche; receiving in succession the rivers Yonne on the right bank; the Blaine, which water rises in the Loire, and the Moreau; the river Beure from the Vesgre, from Houdan, on the right; and the Ion, which passes Dannemarie and Evreux, on the left. Its whole course is merely 120 miles. It is navigable from Pacy, about 27 miles above its junction with the Seine, or, according to another authority, from St. George's at the junction of the Aue, about 20 miles higher up; but the navigation is liable to frequent obstructions. It is chiefly used for the conveyance of salt, and of wood for building and fuel for the supply of Rouen. The river never freezes in winter.

EURÉ, a department, in the north of France, comprising a portion of the ancient Normandie. It is bounded on the north by the department of Seine Inaccom, from which it is partly separated by the Seine; on the east by the department of Yonne; on the south by that of the Eure, which it is in part separated by the river Epte, a feeder of the Seine; on the south by the department of Eure et Loir, from which it is partly separated by the rivers Eure and Arve, or Aue, the latter a feeder of the Eure; on the north-west by that of Maine-et-Loire, and by that of Calvados. The form of the department is very irregular; its greatest length is from north-east to the Epte, near Mainvilliers, to south-west, near Monnay, on the road from Rouen to Alençon, 65 miles, and its greatest breadth is on the right bank of the river 80 miles from the town of St. George's, at the junction of the Arve with the Eure, 65 miles. The area of the department is 292 square leagues, or 2297 square miles, rather more than the joint area of the English counties of Cumberland and Westmoreland, and rather less than that of the two departments of Orne and Calvados. Its population in 1832 was 424,248, or nearly 185 to a square mile, being considerably greater than both the relative and absolute population of the average of the French departments; and very far exceeding that of the two English counties above mentioned. The department lies between 48° 39' and 49° 29' N. lat., and 1° 16' and 1° 40' E. long. The capital is Evreux, in 49° 1' N. lat., and 1° 8' E. long.

The department has, properly speaking, no mountains, though that name is given to the crags which rise to the south of the department. The department has an average altitude of about 300 feet in height. Mount Röti is the highest hill in the department; its barren summit rises above the fertile plain round Pont Audemer. The rivers all belong to the basin of the Seine, except the Calonne, which falls into the Seine at Pont de L'Éuvre, in the department of Calvados. The Seine crosses the eastern side of the department in a north-western direction past Vernon, Petit Andely, and Pont de l'Arche, and flows for a short distance along the boundary. A stream, the Bievre, which flows between the northern boundary of the department in three times, separating it from that of Seine Inaccom: its course within the department is about 40 miles, and along the border 27 miles; for all which it is navigable. The Eure is navigable for about 64 miles; its whole course is about 36 miles, and within the border of the department at St. George's; it passes Chénebrun, Verneuil, and Nonancourt. The Risle rises in the department of Orne, and crosses this department in a winding channel in a north-eastern direction; its length is nearly as 60 to 64 miles; and its whole course is about 36 miles. It begins at the border of the department at St. George's; it passes Bourth, Breteuil, Daville, and Evreux. The Rille rises in the department of Orne, and crosses that of Eure in a northward direction till it falls into the Seine between Quillebeuf and Honfleur. It passes the towns of L'Agil, in the department of Orne; and of Ruelles, Neuve-
The manufactures of the department are various and important: Dupin (Forces Productrices et Commerciales de la France, Paris, 1827), states the number of establishments in the various branches as 30,137, and the value of the articles produced at 26,772,297 francs, or above 1,100,000. The workmen are thus classified by Malte Brun: in the woollen manufacture 8,500; in the iron and copper works 8,000; in the tape manufacture 6,000; in the manufacture of silk, in the printing, and in the manufacture of glass, paper, and hosiers 2,000. The population is not however collected into large towns, there being no town with 10,000 inhabitants, and only five which have 5,000; and taking the whole department, the rural population is not less than 60 to 70. There are many iron-works, and at Romilly on the Andelle are some of the most extensive and important copper-works in France; nails and pins are made at Rugles on the Rille, cards for carding wool and cotton, and machinery at Louviers, etc. The manufactures of silk and of vegetable oils are of great importance; the manufacture of linens is widely extended; the linens of Bernay are much esteemed. The woollen cloths of Louviers are among the best in France: other cloths of inferior quality, drapery and flannel, are made in different places. The length of the navigable river is about 30 miles, and is half again as in the average of France. The department is also better provided with roads than the greater part of France: the road from Paris to Caen and Cherbourg crosses it from east to west through Pacy and Evreux; that from Burgundy to Rouen passes through Bonnemaison and Tharon; and that from Paris to Rouen by Vernon, Gavillon, and Pont de l'Arche, along the valley of the Seine, and from south-east to north-west. Roads from Rouen to Honfleur (department of Calvados) by Pont Audemer; to Alençon (department of Orne) through Noailles; to Bernay, and Chambois; and to Evreux through Pont de l'Arche and Louviers; and from Evreux by Vernon to Gisors, also cross it in different directions. The road from Paris to Dieppe just passes through Gisors in the eastern extremity of the department; and that from Paris to Alençon, Laval, Rennes, St. Brice, and Brest, crosses the department just within the southern boundary following the valley of the Aure or Arve through Nonancourt, Thilhères and Vernonnil. A road from Rouen to Beauvais just touches the north-eastern extremity of the department. The other roads are by-roads.

The department is divided into five arrondissements: that of Les Andelys, in the east and north-east; that of Pont Audemer, in the north-west; that of Bernay, in the south-west; that of Evreux, in the south-east; and that of Alençon, in the south and central. The population is thus distributed among them: —Les Andelys, 64,337; Pont Audemer, 89,744; Bernay, 82,828; Evreux, 118,397; and Louviers 68,942. The number of censuses or districts under the jurisdiction of a justice of the peace is 36; that of the communes 844.

The principal towns are Evreux, the capital, on the Iton, population 7988 for the town, 9963 for the whole commune; Louviers, on the Euro, population 8627 for the town, 9855 for the whole commune; Pont Audemer, on the Rille, population 5305; Bernay, on the Charentonne, population
4890 for the town, 6695 for the whole commune; and Les Andelys, on the Seine, population 3432 for the town, 5168 for the whole commune. [Andelys, Les; Bernay; Evreux; Louviers.] The population is from the returns of January 1, 1832.

The arrondissement of Les Andelys there is Gisors, Étrépagny, Écousis, Maineville, Lions-la-Foret, Charleval, and Ecou.

Gisors is on the Epte, which divides it into two parts, and on the road from Paris to Dieppe, 39 miles from Paris. The castle was built about 1490. In the wars of the English in France under Henry V., Gisors was taken by them; but it was afterwards delivered up to the French by the treachery of the governor. In the war of the 'League of the Public Good' against Louis XI. this town was never defended. The remains of the castle at the extremity of the town towards Rouen, on the river Epte. From its position and general outline, it much resembles the remains of Launcester Castle in Cornwall. The inclosure of the castle is now used as the site of the prison. A fosse is filled with water, and forms a promenade. Some portions of the antic town-wall yet remain. The church of Gisors is a large well-proportioned cross church, adorned with much elaborate sculpture; but its architecture is for the most part a jumble of the Romanesque and Gothic styles, and has many modern additions. It has some fine painted glass windows. The town itself is poor, but its situation is delightful, and the walks very pleasant. The population in 1832 was 3248 for the town, or 3553 for the whole commune. The inhabitants manufacture cotton-lace, printed calicos, and other linen; manufacture cotton-yarn, printed calicoes, and other linen; manufacture cotton-lace, printed calicoes, and other linen; leather, glass, and beer; they trade in corn and calves for the supply of Paris. There are a high school, a school of naval instruction, a school for outline-drawing, and a grammar school. Near Gisors is the antic castle of Vaux, now in ruins.

Étrépagny, otherwise Étrépagny or Trépagny, a small town a short distance west by north of Gisors, has a substantial but ancient church. Its population, as given in Dufaure's Histoire des Environs de Paris (1832), was 1597. Its latest authority, was 1250. The inhabitants manufacture lace, cotton-yarn, and knit goods, and trade in grain, pulse, cattle, and hemp. There are two fairs in the year.

Lions-la-Forets is on the road of the town from Paris to Rouen. It has a market-place covered in with wood, a chateau of modern construction, and an ancient parish church, formerly collegiate. The last mentioned is a substantial but rather plain building in the form of a Greek cross; it contains a very large organ. The town is the residence of Mr. Marigny, archbishop of Rouen. The inhabitants are given by Dufaure at 634: they manufacture lace. There are two fairs in the year.

Maineure is near, but not on the Epte, a few miles north of it. Lions-la-Forets is on the little river Lieur, which flows into the Andelle. It was inhabited in the Roman times, as appears from some ancient tombs, columns, painted walls, medallia, and other antiquities discovered here at the beginning of the last century. There was in the middle ages a castle at Lions, where Henry I. of England died A.D. 1135. The population of the commune is given by Dufaure at 1900. The inhabitants manufacture printed calicoes and leather, and trade in corn.

Écouis is a very small place, is near the Epte, and between Gisors and Vernon.

Pont St. Pierre, a village on the Andelle, has fulling-mills, a cloth factory, and a cotton-mill, in which about 300 workmen are employed: and at Romilly, just across the river, there is a large paper mill. Near these there are considerable manufactures of flax. Copper, brass, and zinc in sheets, and brass wire in pins are produced. At these works zinc is used instead of lapis calaminaris in the manufacture of brass. The coal is brought from Azin and St. Etienne, in France [An- cien Etat de Belgique].

In the arrondissement of Pont Audemer are Pont Audem, Beuzeville, Conteville, Corneilles, Lieurey, St. George du Vièvre, Pont Audem, Annebaut or Avopville, Bourgthéroule, Bourgchard, Routot, Bourneville, and Quillebeuf.

Pont Audemer is on the left bank of the Rille, and on the road from Rouen to Honfleur, 29 miles from Rouen. In the Norman period it was a military station, and was the scene of the battle of Poitiers in 1356, between Henry I. of England and Edward the Black Prince. The victory was gained by the king, to whom the fortress immediately surrendered. In the fourteenth century it was defended successfully by its lord, the count of Evreux, against the generals of the king of France; this was the last siege in which cannon were employed in that kingdom. It was afterwards taken by Duguesclin, its castle razed, and the walls and towers of the town destroyed. It is a small nest place, at the foot of an eminence, with handsome streets and good brick houses. It contains a directory of the department, not far from Elbeuf, derives its name (in Latin Burgus Thurcoli) from Thurold, one of the preceptors, and afterwards grand constable, of William the Conqueror. Its church was formerly collegiate. The inhabitants are given by Dufaure at 4173.

Bourgchard is not far from Bourgthéroule. There was an abbey at Bourgchard, but it is now levelled with the ground; there is an hospital or almshouse. The population is given by Dufaure at 1114. The market is considerable.

Dufau says: "The chief manufactures in this department are in the manufacture of cloth and wool, and Bourneville (population 781, Dufaure), on a bye-road from Bourgchard to Quillebeuf, is on the left bank of the Seine, on a point formed by a bend of the river. Its port is much frequented by the boats which run on a long canal, and is too large to ascend the river as far as Rouen discharge their cargoes here. It was formerly a place of considerable strength. The inhabitants (1500, Dufaure) carry on a considerable fishery, or pilot vessels up the Seine; the women manufacture lace."

Montfort, on the Rille, between Pont Audemer and Annebaut, is given as a village in some of our authorities, as a town in others. It has the ruins of an antic castle, besieged for three days. [Nieul-sur-Seine.] The name gives title to an English peer. The inhabitants (520, Dufaure) manufacture leather, paper, and woolen cloth, and trade in cattle and linen.

In the arrondissement of Bernay are Le Bec, Brionne, and Corneille, Le Bec-le-Roger, Rouen, and Corneville, Chambres, Thiberville, and Havour.

Le Bec, sometimes distinguished as Le Bec Helleuin, is near the bank of the Rille. Here, before the Revolution, was a Benedictine abbey of the congregation of St. Maur, one of
the wealthiest in Normandie, founded by Helonoin, a noble of the country, about A.D. 1034. The abbots' patronage was very extensive. Soon after its foundation this abbey became the seat of a famous school, founded here by Lanfranc, one of the monks of the convent, afterwards archbishop of Canterbury. Anselm Theobald, and Hubert, bishop of Canterbury, were subsequently raised to the same archiepiscopal see, and Roger, the seventh abbots, had the offer of that dignity, but refused it. The sees of Rochester, Beauvais, and Erexvres, were filled by monks from this abbey, which furnished abbots to the canons of Chester, Sly, and St. Edmund's Bury. The Empress Maud, daughter of Henry I. of England, is said to have been buried here. The abbey was fortified when Henry V. invaded France, and stood a siege of a month before it was surrendered to the English. The greater part of the town and surrounding country was burnt. The town was feet high, a few ruined arches, and one of the side chapels, are the only parts of the church which remain. A part of the grounds are appropriated to a stud for keeping up the breed of Norman Horses. The town of Le Bec is unimportant: its population is about 700.

Brionne was, under the dukedom of Normandie, a place of some importance; it had three churches, an abbey, and a lazare house, besides an ancient castle, of which some slight remains exist, and it was the seat of an earldom, created in favour of a son or brother of a son of the dukes of Normandie. The town is pleasantly and advantageously situated on the banks of the Risle. It has only one church now. The inhabitants may be estimated at about 1200. It is noted for spinning cotton yarn employs 120 hands, and a cloth factory 500 raps and linseed oils are expressed.

Beaumont le Roger, on the Risle, had also a strong castle and a Benedictine priory. The inhabitants are given in the Dictionnaire Universel de la France 1325: a cloth factory employs 400 hands, a glass-house 100; but bottles, chiefly intended for Bretagne, are blown in great quantity at the latter establishment.

La Barre and Beausenil are between the Risle and the Cher. The population was, according to the Dictionnaire Universel, 948 and 484 respectively.

Chambors is on the Charentonnet, above Bernay; and Tailler, near the source of the Calone; the inhabitants of the latter (population 1200 according to the Dictionnaire Universel) are occupied in weaving tape. This branch of industry employs at the neighbouring village of Drucourt and the surrounding communes, 4600 workmen.

Harcourt, not far from Brionne, gives title to an Englishman: there are some remains of an ancient castle, built by Sir Walter de Lacourt, and by Sir William de Beaumont, the companion of William the Conqueror in his invasion of England: the Dictionnaire Universel gives the population at 1297.

In the arrondissement of Eurevres are Neuvilly, Ruges, Conches, Damville, Breteuil, Bourt, Chenebrun, Verneuil, Tillou, Nonancourt, Irisy, Puye, St. Andre, Villiers-en-Denouvre, and Vernon.

Neuvilly (otherwise Neuvelye) and Ruges are on the Risle; the latter is higher up the stream. Neuvilly has 600 inhabitants, who trade in corn and cattle; at Viellye, near it, there are iron works. Ruges is of more importance; it is the centre of a pin manufacture which employs 250 workmen, and of a nail manufacture which employs 3600 more. Zinc and copper are rolled out into sheets: the manufacture of iron, once carried on in this town, has been transferred to Neuvilly and France.

Conches (pop. in 1826 1725) is on the river Conches, a small stream which joins the Iton between Damville and Eurevres. Nails, agricultural implements, and other iron goods are manufactured here: there are tan-yards, paper, oil and tan mills, and trade is carried on in hemp, earthware, hay, and cattle. The iron work of the bridges des Arts and d'Austerlitz at Paris were cast here.

Damville, Breteuil, and Bourt, are all on the Iton. Their population is given in the Dictionnaire Universel at 725, 2000, and 1670, respectively: there are iron works and hemp mill. Pine trees are made at Bourt; and at Breteuil, cannon of every calibre, projectiles of all kinds, screw tamps, caudrons, iron pots and other iron wares, tiles, and bricks. There are at Breteuil manufactures according to the remains of a castle, built by William the Conqueror.

Chenebrun, or Chennebrun, is on the Aube: it is very small; its population is about 360.

Verneuil is on the Aube: it is well laid out with broad straight streets, but wretched and ill-built houses of earth and wood, with a few only of brick: it had in 1832 a population of 3722 for the town, or 4718 for the whole commune. The manufactures of this town and its vicinity consist of leather for bookbinders (but this branch of industry has much declined), but there is also lace-making, and this is also languishing. There is a Gothic church in the town, the steeple of which is said to have been built by the English, and an old tower, the remains of a castle which formerly defended the town. This tower is popularly but erroneously ascribed to the Romans. The most probable date for it has been laid out in promenades. The English obtained a victory over the French at Verneuil in the reign of Henry VI., a.D. 1424. There is a small library.

Tillieres and Nonancour are also on the Aube: they have a population of 950 and 1350 respectively. At Tillieres pins and nails are made; and at Nonancour woolcombers' cards, machinery, woolen and cotton yarn, woolen cloth, calicoes, hoseways, linen, and paper; trade is also carried on in corn and cattle.

Ivy, on the Eure, at the junction of the Vesgre, is celebrated for the battle fought in the adjacent plain, in which Henry IV. routed the army of the League under the duke of Mayenne, a.D. 1599. A pyramid, overthrown at the Revolution, but restored by Napoleon, commemorates the battle. It is about a mile from town to river. The town is noted for musical wind instruments, ivory and boxwood combs, cotton yarn, and leather, and carry on trade in corn, cattle, and horses.

Pacy is on the Eure, at the point where, according to some of our authorities, the navigation begins, in a fertile valley. It was antiently a place of some importance, and was defended by a castle and strong ramparts. Before the Revolution it had three churches (one parish church and two others) and a Benedictine abbey. The inhabitants, 1384 in number, are noted for their manufacture of hats (for which they have a large fair), corn, woolen and linen cloth, and iron.

St. Andre, between the Eure and Iton, had a population of 977 (Dulacoure): some trade in cattle is carried on.

Villiers en Denouvre, a short distance from the bank of the Bever, in the pop. of the population of 852, than 400 (Dulacoure): it has some trade in cattle and horses.

Vernon is on the left bank of the Seine, and on the road from Paris to Rouen. Here was in antient times a castle, which William the Conqueror bestowed on his relation, Guy, son of the count of Bourgogne, and which was strengthened by Henry I., the Conqueror's son. The town is situated in a singularly beautiful valley, and is connected by a bridge of twenty-two arches with the suburb of Vernonnet, on the other bank of the Seine. Of the ancient defences of the town there are remaining only the castles, which were the residences of the place are preserved. The church, part of which exhibits a very early Norman architecture, was formerly collegiate; it contained before the Revolution several monuments. The population in 1832 was 2703 for the town, or 4888 for the whole commune. Among the suburbs is Vernonnet, Cotton velvet, plain and printed calicoes, leather, and cotton goods are manufactured: there is an establishment for making the equipment of the artillery, and another for sawing stone; also lime, gypsum, and tile kilns: trade is carried on in corn, flour, wine, wool, feathers, and cattle.

In the arrondissement of Louviers contains Pont de l'Arche, Guillon, and Neufbourg.

Pont de l'Arche is on the left bank of the Seine, just below the junction of the Eure, and at the point where the tide of the Seine begins to be perceptible. It owes its origin to Charles de Chauve, who erected here a palace. He there convened councils, held assemblies of his nobles, and drew up edicts; and built a fine bridge, defended at one extremity by a citadel, from which the name of the place (in Latin Pont Archeus) is derived, which was demolished about the beginning of the Revolution. Pont de l'Arche was burned by the English under Edward III. The walls of the town yet remain flanked by circular towers. The bridge is the lowest stone bridge down the Seine, and the only one of the kind between Vernon and Rouen: it is a picturesque object, with mills in the middle part of its length, and a lock under one of the arches to facilitate the navigation of the river and render it secure. On the bank of the river near the town are the remains of a Cistercian abbey, founded, A.D. 1190, by Richard, Count de Lion, in pursuance, it is said, of a vow which he had made when nearly lost in the rapid current of the Seine. The church of Pont
de l'Arche, though much dilapidated, is a fine building in the decorated style of Gothic architecture: it has some remains of the old palace and wall. A position is given by Dulaure at 1460: the inhabitants manufacture woollen cloth, and trade in cattle, horses, and fruits.

Gallien is near the left bank of the Seine, between Dijon and Troyes, about 24 miles from each. It was visited by St. Louis on the archbishop of Rouen, whose successors had a palace here up to the period of the Revolution, and enjoyed the sole right of trying civil and criminal causes. This palace, destroyed in the years of the English invasion, was rebuilt a century after by the archbishop, George d'Ambrose, and embellished by his successors: after being nearly destroyed during the Revolution, it has been repaired and fitted up as a prison, and contains now 1200 to 1400 prisoners who are employed in making ceramics. It is placed near Montfaucon, where there is a pass through the Carthesian canton here before the Revolution, founded by one of the archbishops of Rouen. A fountain in the town has the property of inuring with its deposits any object thrown into it. Gallien is a poor place; its population is given by Dulaure at 1360. The inhabitants carry on trade in cattle and woven goods. Near Gallien are vineyards, the most northern in Normandy: the grape grown is the small black cluster; the wine produced is of very inferior quality.

Neufhout or Neubourg, between Louviers and Beaumarchais, 6 miles north of the Seine, only 10 miles from Paris, is the eldest son of Henry II. of England espoused Marguerite, daughter of Louis VII. (Le Jeune) of France. The inhabitants, whom Dulaure gives at 1675, manufacture linens and calicoes, dainties, flax, &c., and carry on trade in cattle and woven goods.

The department constitutes the diocese of Erveux, the bishop of which is a suffragan of the archbishop of Rouen: it is in the jurisdiction of the Cour Royale of Rouen, and in the circuit of the Academy, or council of education of that city. It is also the division of France, to which the head-quarters are ascribed, which sends seven members to the Chamber of Deputies. Education is more attended to than in the average of the French departments: it furnishes one male scholar for every twenty-four inhabitants. This department contains the bishopric of Le Puy-en-Velay, and districts of Le Vexin, Normandy, Le Romoios, La Campagne, Ouche, Lieuvin, all in Haute or Upper Normandy.

EURE ET LOIR, a department in France, occupying a portion of the country between the Seine and the Loire. It is bounded on the north by the department of Eure, on the east by that of Seine et Oise, on the south-east by that of Loir et Cher: on the south by that of Loir et Cher; on the south-west, for a short distance, by that of Sarthe; and on the west by that of Orne. Its only natural boundary is on the north, west, and south, the river Eure by the department of Eure; on the north-east, the river Arve (or Auver) and Eure, and for a very little way on the north-east. Its greatest length is from north by east, near Villiers in Desceuvre (department of Eure), to south-west near Goyes on the river Eure, and its greatest breadth, at right angles to the north direction, from near Nogent le Rotrou to the neighbourhood of Thouy, 55 miles. It is between 47° 57' and 48° 56' N. lat., and between 0° 49' and 1° 59' E. long. The area of the department is 364 square geographical leagues (French measure) of 15 to 16 square miles each, making 2385 square leagues, which is not much below the average of the French departments, and a very little more than that of the two English counties, Kent and Surrey, taken together. The population is 162549, of which 478,939, or 30 per cent., is in the towns or villages, or rather in the parishes, of the seven towns or villages, which are the chief and most populous places in the department. The towns are Poissy, Le Plessis, Gisors, and Mortagne, all of which are boroughs, and are described in the Dictionnaire Geographique Universel, Paris, 1827, as the lands in this department are clayey, mixed with a small quantity of sand; there are also some calcareous soils mingled with clay and sand; others are clayey mingled with large stones (flammeuses grises et silex); others consist of a deep and sand. The slopes of the south-west side and east-south-east are mostly covered by hard vegetable soil; they sometimes are composed of marly and current (de marne et de silex), sometimes of a red sand and find. The marl, which is found almost everywhere, is used for the improvement of the land. In the arrondissement of Nogent le Rotrou (the L 2
western side of the department) there are many tracts of waste land scarcely capable of producing anything; the ashes of the heath and furze are used for manure. Two-thirds of the department consist of the former territory of Becque, the Eure [Becque], which is a great agricultural turn district; corn, especially wheat, which yields a great proportion of flour, constitutes its principal riches of this part of the department: the harvests are very abundant, and their produce is chiefly destined for the supply of Paris. In the valley of the Becque, near the Lomme, and not far from the town of Becque, there is a remarkable oak forest, famous for the fine timber it yields: the oaks are large, and the branches spread out in a spreading manner: the forest is divided into three parts: the first, the second, and the third, which are separated by rivers and streams, and are connected by roads. The forests are large and extensive, and the trees are of great height and breadth. In the same district, there is a large field of wheat, which is cultivated with great care and attention. The soil is fertile, and the climate is mild and invigorating. The people are industrious, and the produce of the district is abundant and varied. The department is divided into four arrondissements: that of Becque under the north, population of 1832, 76,532; that of Chartres, in the east and centre, population 103,783; that of Château-Rouet, in the south, population 59,725; and that of Nogent-le-Rotrou, in the west, population 44,747. These arrondissements are subdivided into 24 cantons, or districts, each of which is divided into several subdistricts. The chief towns are Chartres, the capital, on the Eure, population 13,536 for the town, and 14,429 for the whole commune. Chartres is a large town, and is situated in the department of Eure. Nogent-le-Rotrou, on the Seine, population 5167 for the town, and 6285 for the whole commune. Dax, on the Gironde, population 5812 for the town, and 8625 for the whole commune. This last and the smaller towns an account is subjoined. The town of Becque is situated on the Eure, and is not mentioned in the quantity of arable, but it is of good quality. A considerable number of horned cattle of a small race are reared; but not a sufficient number of horses for the wants of the agricultural districts; those which are bred in the arrondissement of Nogent-le-Rotrou, are in quantity, for the light cavalry. There are many sheep, some of which yield a fine wool; pigs, swine (which are sent in great quantity to Paris), and bees. Game is abundant; the rabbit in particular, is remarkable. The red partridges, plovers, larks, and especially a species of the plover called guignard, from which the Chartrises derive their reputation, are numerous; and pigeons are generally to be found. The rivers abound with fish; the golden eels of the Loire, the crayfish of its affluent, the Loing, and the Loire, the Eure, and the Sarthe, are all abundant. The fish is not very large; it is not very abundant; but it is of good quality. The woolen manufacture of the department is not great. The department is essentially agricultural; corn is sent from the districts of the Eure, to be re-exported, and distributed among the neighbouring departments. There are about 660 flour-mills; a great number of them are on the Eure, the Blaise, the Loire, and other streams. The cottages of the peasants are, in some parts at least, of a most miserable character; they call to mind the tents of the ancient Carthaginians who occupied the country. The only metal dug is some iron; but the mines supply only a part of the ore for the iron for iron-works, and are becoming exhausted; good free-stone is quarried, and sandstone for pavement; there is much marl; peat for fuel is obtained from several channels, also clay pottery. The finer kinds of earthenware are produced in the manufactories at Sèvres. The manufactures are of small importance; they are chiefly in the arrondissement of Dreux, and in that of Chartres. The staple production is that of flour, but it is only in one place that it is carried on on a considerable scale; some cotton is spun and some cotton goods are woven; woollen cloths, serges, and other light woollen goods, are manufactured; linen, flax and woven hose, foot-carpets, and common hats are made; there are a considerable number of tan-yards; a small quantity of earthenware is made, and a little beet-root sugar. The department is very ill provided with the means of water transport; a large part of the course of the Eure, along the boundary of the department, is, according to some of our authorities, navigable. With roads it is better provided. The great road from Paris through Tours to the south-west of France crosses the department, passing through Epinay, Maintenon, Chartres, Bonneuil, Château-Rouet, and Dreux; the western road from Paris to Rennes and Brest just crosses the northern part through Dreux; these are the only roads of the first class. Of the second class are the Orleans road, passing just within the south-eastern boundary of the department, through Thoiry. The road which runs from Chartres to Meung-le-Grand, the western road at Chartres, runs through Courville and Courroye, and Nogent-le-Rotrou in the direction of Le Mans, Angers, and Nantes. Of roads of the third class are a road from Paris to Chartres through Guédelongvre; roads from Dreux to Meung-le-Grand, and from Chartres to Nogent-le-Rotrou (and from thence to Alençon, in the department of Orne), and to Orleans. The other roads are by-roads. The department is divided into four arrondissements: that of Dreux under the north, population of 1832, 76,532; that of Chartres, in the east and centre, population 103,783; that of Château-Rouet, in the south, population 59,725; and that of Nogent-le-Rotrou, in the west, population 44,747. These arrondissements are subdivided into 24 cantons, or districts, each of which is divided into several subdistricts. The chief towns are Chartres, the capital, on the Eure, population 13,536 for the town, and 14,429 for the whole commune. Chartres is a large town, and is situated in the department of Eure. Nogent-le-Rotrou, on the Seine, population 5167 for the town, and 6285 for the whole commune. Dax, on the Gironde, population 5812 for the town, and 8625 for the whole commune. This last and the smaller towns an account is subjoined. The town of Becque is situated on the Eure, and is not mentioned in the quantity of arable, but it is of good quality. It was the capital of a county, its markets are well attended. Auqet (population 1500, Dulaure), is in the northern extremity of the department, in a pleasant valley between the Eure and the Blaise, the Eure and the Blaise, and the La Hague. The La Hague is a town of some importance, lying on the left bank of the Eure. The inhabitants carry on a trade in cattle. Nogent belonged to Philippe VI. de Valois, who died here a.p. 1338. It is probable that it derived from this prince its distinctive epithet of Le Roi; it was, however, a royal city, erected by Philip of Bautur, one of the courtiers of the cardinal de Richelieu. The castle of Nogent, built on a hill which commands the town on the western side, was an object of frequent contest in the times of feudal warfare and in the wars of the English. It was garrisoned by Henri IV. in his war with the League, taken by the inhabitants of the neighbouring towns, who had embraced the party of the League, and to whom the garrison was an annoyance, and retaken by the royal forces. Le Tremblay is very small; its population is under 200 (Dulaure); it lies a little out of the road from Dreux to Chartres. Châteauneuf (population 1250, Dulaure) is in a fertile valley between the Eure and the Blaise, and Nogent-le-Rotrou. Here was an ancient castle, Castrum Thuroldum, which was corrupted into Thimier, and gave to the surrounding territory the name of Thimerais; whence Châteauneuf is sometimes distinguished as Châteauneuf en Thimerais. In 1550 it was the residence of the Duke of Mayenne and retaken by those of Henri IV. The inhabitants now carry on a trade in cattle. Digory is not far from Châteauneuf, with a population, according to Dulaure, of 1027. Some of our authorities make this to be an unimportant, and retaken by the royal forces. Senonches and Mailloles are on the Blaise; the former near its source, the latter lower down. At Senonches (population 1911, Dulaure) steam-engines and hydraulic machines are made, and there are iron-works. Trade is carried on in cattle and horses. At Mailloles (750 inhab-
Angers, the second on a road branching from this at Courfl

eur to Bellême, Mansers, and Alençon. At Courfl (popula

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bana, Dulaure) woollen cloth and light woolen stuffs are
made. Peat is dug in the neighbourhood.

Brezolles is on the Meuvette. Dulaure gives the popula-
tion at 844. Trade in cattle carried on in horses and cattle. Some of our authorities make this to be only a village.

The arrondissement of Chartres is Epernon, Main
tenon, Gallardon, Guédelongroy, Auneau, Quarville, Voves, Jarnyville, Thouiry, Illaire or Illiers, Courville, and Pont-gouin.

Epernon is on the high road from Paris to Chartres, in a delightful situation on the slope and at the foot of a hill near the sources of the Euro. The town is tolerably well built: it was formerly walled in on three sides; on the fourth side (the north) it was defended by a castle on the summit of the hill, of which some picturesque ruins still remain. The country round consists of fertile meadows in length. The inhabitants (1465, Dulaure) manufacture leather: there are kilns for gypsum; and trade is carried on in flour, excellent pulse, horses, and cattle.

Maintenon is on the high road, the Aure, at the junc

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tion of the Vienne and the Loire. It is a town with

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wars of the English in France in the sixteenth century.

Dunois, who took it from the English a.d. 1443, destroyed the castle except one tower, which still remains. Gallardon was

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taken by the Huguenots under the Prince of Condé, in the year 1620. The inhabitants (1398, Dulaure) carry on trade in corn, pulse, horses, oxen, calves, and sheep.

Guédelongroy is on the Vay. Vayse de Villiers, who

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terms it a village, assigns to it a population of 500.

Courville and Pont-gouin are both on the left bank of the

Angers, on the road branching from this at Courfl
to Bellême, Mansers, and Alençon. At Courfl (population 1341, Dulaure) some trade in horses and cattle is carried on. The inhabitants (1500, Dulaure) occupy a part of no more than 866. La Fertr de Villeneuve is still smaller.

Bonneval is on the road from Chartres to Tours, in a pleasant fertile valley on the left bank of the Loir, which flows in several channels. It was formerly a place of some note, but is now only the site of an ancient town; the population (1750, Dulaure) manufacture carpets, counterpanes, flannels, woollen stuffs, calicoes, and printed cottons; and spin cotton and woollen yarn. Trade is carried on in corn, flour, wool, and cattle; and there are some considerable tanneries.

Druidical monuments in the neigh

b o u r d e r i e  of the town.

Cloyes is also on the road from Chartres to Tours, and on the Loir: it is a place of very little trade, with a popula

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tion of about 1500. (Vayse de Villiers.) Brou is on the Loire, which joins the Loir at its entrance to the town, at the low

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ation of 1870 for the town, and 2263 for the whole commune. The inhabitants make serges, and other light stuffs, and some of the fittings of weavers' looms. There are some marl-pits of considerable depth in the neighbourhood.

In the arrondissement of Tours, Nezwot, Ngenten le Rotrou, Author, Beaumont le Chétif, Champrond, La Loupe ou La Loupere, and Belhomer ou Belhomert.

Ngenten le Rotrou is on the road from Paris by Chartres to Le Mans, Angers, Nantes, and other places in the west of France, 33 miles, from the town. It is on a pleasant valley, watered by the Huine, on the left bank of which the town stands. It is a long place in proportion to its size. There is a castle, a picturesque ruin, which commands the town, and a château, standing on the hill in front of the residence of Sully. There are three hospitals, one of them founded by Sully, who, as well as his wife, was buried here; but the tombs were violated during the Revolution, and the remains dispersed. The town had in 1833 a population of 592, the commune of 6523: the manufactures are druggists, serges, and other light woollens, and cotton-yarn: there are several tan-yards, some tan-mills, and a dye-house. There are a public library, a high school, and an agricultural society.

Author is near the source of the Ouanne: its inhabitants (1211, Dulaure) make serges, druggets, and other light woollens. Beaumont le Chétif (a village, according to some of our authorities) is between Brou and Ngenten le Rotrou: its inhabitants (591, Dulaure) manufacture earthenware.

Le Mans, Angers, Nantes, and other places in the west of

France, 33 miles, from the town. It is on a pleasant valley, watered by the Huine, on the left bank of which the town stands. It is a long place in proportion to its size. There is a castle, a picturesque ruin, which commands the town, and a château, standing on the hill in front of the residence of Sully. There are three hospitals, one of them founded by Sully, who, as well as his wife, was buried here; but the tombs were violated during the Revolution, and the remains dispersed. The town had in 1833 a population of 592, the commune of 6523: the manufactures are druggists, serges, and other light woollens, and cotton-yarn: there are several tan-yards, some tan-mills, and a dye-house. There are a public library, a high school, and an agricultural society.

The department constitutes the diocese of Chartres, the bishop of which is a suffragan of the archbishop of Paris. It is comprehended in the jurisdiction of the Cure de Paris, and is within the Circuit of the Conseil Académique of that city. It is in the first military division, of which the head-quarters are at Paris. It returns four members to the Chamber of Deputies. The state of education in the department is favorably compared with that of France. The number of male children at school is in the proportion of one for every seventeen inhabitants.

This department consists of the former district of Charr

train, and a portion of Dunois, both of which were compre

hended in the county of Beaune et Bessin, and in the province of Orléans: of a portion of Orléans proper; of a considerable portion of the county of Perche, comprehended in the province of Maine; and of a small portion of the district Mantois, in the Ille de France.

EURIPIDAE of Athens is said to have been born at

EURUPHORIA.
Salamin in the year n.c. 480, on the day of the great victory obtained over the fleet of Xerxes. His father Mnesarchus and his mother Crito were among the refugees driven to Salamin by the progress of the invading army. They seem to have been Athenian citizens of a poorer class, as is shown by the position of this poet's mother was made by Aristophanes one standing subject of the ridicule which he so perseveringly heaped upon him. Philochoros, on the contrary, says that he was of noble birth; but still his parents might be poor. (Suidas, sv. 'Euripides' notes.) Euripides, however, found means to devote himself early and closely to the study of philosophy in the school of Anaxagoras, as well as to that of eloquence under Prodicus. While he was yet young, the persecution and banishment of Anaxagoras appeared to have determined him from, or at least to have restrained him from, the cultivation of philosophy as a profession, and combined with the strong natural bent of his genius to direct his exertions chiefly to dramatic composition. He is said to have commenced writing at the age of eighteen; and in the course of a long life he composed not fewer than seventy-five tragedies, or, according to other authorities, ninety-two, which raved in the public approbation the contemporary productions of Sophocles; and notwithstanding the constant and bitterly satirical attacks which, in the author's own time, they sustained from such eminent and intolerably attached to the elder tragic school, they secured him for all succeeding ages a place besides its two great masters. When upwards of seventy years old, weary, it should seem, of the feverish excitement in which he had been kept alive by a pertinacious contention and the turbulent applause that attended him at Athens, he accepted the invitation of Archelaus, king of Macedon, and went to live in honoured and tranquil retirement at his court. Here, however, a singular as well as tragic end awaited him. According to one account, he committed suicide, as many other such matters of antient biography, there are discrepancies), he had spent three years in this retreat, when, walking one day in a solitary spot, he was met by some of the king's hounds, which, rushing furiously upon him, tore him to pieces violently that they should by the disaster consequence of the laceration. Aulus Gellius tells us that the Athenians sent to Macedon to ask for the body of Euripides; but that the Macedonians constantly refused it, in order that their own country might retain the honour of the magnificent tomb which they erected for him at Pella, and which, according to Aminnias Marcellinus, was sanctified by the thunder-stroke, as Plutarch informs us the whole case with that of Lycurgus. Thus Athens was obliged to content herself with engraving the name of Euripides upon her emigrant monument, which time of Paussanias was yet standing beside the road from the Piraeus to Athens (Pausan. Attic. 1, 2), near the tomb of Menander.

Of the numerous tragedies of Euripides, nineteen survived. Many much aggrandized, but others the productions of the two elder tragic masters. We have already [Dramatic Art, &c., vol. ix. p. 131] pointed out his 'Electra' to the reader's attention, not as a favourable specimen of the general powers of Euripides—for, indeed, as a work of art it is distinctly one of the least meritorious of his extant pieces,—but as affording the clearest point of comparison between his most prominently distinctive features as a dramatist and those of his two great predecessors; this being the only instance in which we have a work of art that is distinct all of the three composed upon the same historical or mythological subject. 'Orestes,' the subject of which, inasmuch as it relates to the persecution of that hero by the furies of his mother and his proscription as a matricide, is the same as that of 'The Orestes' of Eschylus; incident, and character, excepting that of Orestes himself, they are wholly different, is more vigorous and more affecting than the 'Electra.' 'Iphigeneia in Tauris' and 'Andromache' follow out still further the fortunes of Orestes; both rank among those pieces of the most perfect and highest powers. They are, as a rule, to be given only to certain portions. The same may be said of the six following pieces: the 'Troades,' the mournfully grand conclusion of which exhibits the captive Trojan women leaving Troy in flames behind them; 'Hebeia,' relating to the subsequent history, incident, and character, of the 'Hercules Furens,' or 'Raging Hercules,' the 'Phoenissai,' having the same historical groundwork as the 'Seven against Thebes' of Aeschylus; the 'Herculides,' which celebrates the Athenian protection of the children of Hercules ancestors of the Laconidoman kings, from the persecutions of Eurystheus; and the 'Supplices,' which in like manner commemorates the interment of the Seven before Thebes and their army, gained, on behalf of Adratus, king of Argos, the former Severus, the latter the Theban 'Helen' is a very entertaining and singular drama, full of marvellous adventures and appearances, being founded on the stories of the Egyptian priests that Helen had facts remained concealed in Egypt, while Paris had more care of his affair. As for his airs and manners, 'Rhesus,' from the tenth book of the 'Iliad,' had been much disputed, chiefly on the ground of its relative inferiority—an argument which is outweighed by the external characteristics of the piece in which it is placed. The internal testimonies of the critics assign it to Euripides. For beautiful morality and unaffected overpowering pathos, his 'Ion,' his 'Iphigenia in Aulis and above all, his 'Alcestes,' are peculiarly distinguishable. He had subjects especially suited to his genius, his finest powers in the purity and sanctity of the youth from whom the first of these three tragedies is named, the unsuspecting innocence of the heroine of the second and in the tender yet resolute devotedness of Cassandra a scene portrayed in the third, to which Milton so beautiful alludes in his well-known sonnet, beginning

'Methought I saw my late expostioned saint
Braving to me like Alcestis' gloom and pain,
Whom Jove's great son to her glad husband gave.'

The 'Hippolytus' and the 'Medea,' exhibiting all the romantic violence of irregular and vehement feminine passions, are deservedly celebrated among the greatest as most thoroughly successful achievements of this drama. The former of the heroism of Hippolytus is sublime as beautiful; and as regards the conduct of Phaedra, Schlegel has well remarked, it merits the highest commendation for the strict observance of moral propriety in a subject of so critical a nature. After the 'Hippolytus' the same eminent critic is disposed to assign the next place among all the remaining works of Euripides to the 'Bacchae' on account of its harmonious unity, its well-sustained vigour and of the appropriateness to the very peculiar subject heretofore treated, of that luxuriance of ornament which Euripides contains; but we may also add an especial attention as being the only one remaining of the famous. It was composed expressly and immediately in honor of Bacchus himself, the patron deity of the theatre. I instance this glory and the power of Bacchus as the most eminent it is disposed to assign the next place among all the remaining works of Euripides.

From this piece itself and from all collateral evidence, it is to be inferred that the satyr-drama was never acted as a kind of shorter and lighter after-piece, to relieve the minds of the audience, especially the softer portions of the part, and somewhat to add a dramatic species, &c. To this it was added there is no evidence that it was accompanied by one of these shorter and lighter productions. Thus we find mention made of five separate plays of 'Achlys, seven or eight of 'Euripides besides a number of others by various minor authors. No withstanding its burlesque ingredients, the tragic character was so far preserved in the satyr play, that the subject appears to have been always historical, and the characters were serious, and sometimes drawn from the history of the grotesque masks, crowned with long shaggy goats' hair, while the satyr was negligently clad in skins of beasts and the Sileni decorated with garlands of flowers skilful.
woven. The satyr parts too appear to have been sometimes acted by pantomimic performers moving on a kind of stilts, to which the Indra is 34' 6" long. The Bice was 5' 2" long, upon the west of Ireland lie in 10° 5' W. long. Cape Fogle belongs to the Lowell Islands. The northern extremity of Europe, does not much exceed 3000 miles, and another drawn from Cape Matapan to Cape Nord Kyn, is 2400 miles long. I. Progress of Discovery. The earliest notices of the history of Europe are in the writings of the Greeks, who inhabited the south-eastern corner of our continent. From this country the geographical knowledge of Europe extended by degrees to the west and north. Homer, who probably lived about 1000 years before the Christian era, was acquainted with the countries round the eastern Mediterranean, the navigation of the Black Sea; but what he says about the countries west of Greece, on the shores of the Mediterranean, is a mixture of fable and truth, in which the fable often prevails. It would seem that in his age these seas were not yet visited by his countrymen, and that he obtained his knowledge from the Phenicians, who had probably for some time sailed to these parts. The Phenicians, having a common policy of trading nations, spread abroad false accounts of unknown regions, in order to deter other nations from following their track and participating in the advantages of this distant commerce. It is probable also that the Phenicians derived the name of the western Mediterranean; for when the Greeks began to form settlements beyond their native country, they first occupied the shores of the Jcbean, and afterwards those of the Black Sea. As the European shores of the Black Sea are not inhabited, but are not adapted for agriculture, excepting a comparatively small tract of the peninsula of Crimea, their early settlements were mostly made on the Asiatic shores, and consequently little addition was made by these colonies to the geographical knowledge of Europe. But the navigation of the Phenicians was generally confined to the western Mediterranean, and the course of their voyages was decided by Herodotus (450 before Christ), not only the countries on each side of the Mediterranean Sea and the northern shore of the Black Sea were pretty well known to the Greeks, but that, following the track of the Phenicians, they ventured to pass the Pillars of Hercules, and so reached the islands called Cissterides, or Tin Islands, by which name the southwestern part of England must be understood. It is even reported that some of their navigators sailed through the English Channel and entered the North Sea, and perhaps even the Baltic. It must be remembered that Herodotus professed himself totally unacquainted with the islands called Cartaxides (iii. 110), and Strabo (101. 4.) expresses a very unfavourable opinion of the alleged northern voyages of Pythoas. Thus a considerable part of the coasts of Europe was discovered, whilst the interior remained almost unknown. When the Romans began their conquests, this deficiency was partly filled up. The conquest of Italy was followed by that of Spain and the southern parts of France and Provence, and by the invasion of the Rhine. It was added, Caesar conquered Gallia and the countries west of the river Rhine, together with the districts lying between the different arms by which that river enters the sea. His two expeditions into Britain made known also in some measure the nature of the country, and the course of the little more than 200 years the interior of all those countries was discovered whose shores alone had been previously known. In the mean time nothing was added to the knowledge of the coasts, the Greeks having lost their spirit of discovery with their liberty, and the Romans not being inclined to naval enterprise.

After the establishment of imperial power at Rome, the conquests of the Romans went on at a much slower rate, and the boundaries of the empire extended beyond the Euphrates. This circumstance must be chiefly attributed to the nature
of the countries which were contiguous to the boundaries. The regions north of the Danube are mostly plains, and at that time were only inhabited by wandering nations, who could not be subjected to a regular government. Such at least are the countries extending between the Carpathian Mountains and the Black Sea; and therefore the conquest of Dacia by Trajan was of short continuance and speedily abandoned. The countries between the Alps and the Danube were soon added to the empire; but as the nations which inhabited them were north of the Alps and had given up a wandering life, they were enabled to elude the Roman yoke. The most important addition to the empire and to geographical knowledge was the conquest of England during the first century after Christ, to which, in the following century, the south of Scotland was added.

Nothing seems to have been added afterwards. The Geography of Ptolemy contains a considerable number of names of nations, places, and rivers in those countries which were not a part of the Roman dominions. Probably they were obtained from natives, and from Roman traders who had ventured to penetrate beyond the boundaries of the empire. But these brief notices are very vague, and in most cases it is very difficult to determine what places and peoples are intended.

The overthrow of the Roman empire by the northern barbarians destroyed a large part of the geographical knowledge previously obtained, except perhaps as to that portion of the Roman empire which was subject to the Franks. Franks' knowledge of geography became better known than it was before. But two sets of men soon made their appearance, who contributed largely to extend the geographical knowledge of the barbarian—missionaries and pirates. The Christian religion had been imported into the eastern parts of Germany, and the Franks' empire was the first to convert to the Roman power. The barbarians who subdued the empire soon became converts to the Christian faith, and some of them ventured among other barbarous nations for the purpose of converting them also. They visited the natives who inhabited the eastern parts of Germany, and their missions were at first slow; they did not cross the river Oder, or at least they did not venture far beyond it, and the geographical knowledge of this part of Europe was consequently not much increased. The progress of the missionaries was less important who penetrated from Constantinople into the interior of Russia, where they succeeded in converting to the Greek church the different tribes into which the Russians were then divided. This was effected in the ninth century. In the tenth the western missionaries got into the Scandinavian peninsula, and inhabited parts of Germany, but their progress was at first slow; they did not cross the river Oder, or at least they did not venture far beyond it, and the geographical knowledge of this part of Europe was consequently not much increased. The progress of the missionaries was less important who penetrated from Constantinople into the interior of Russia, where they succeeded in converting the different tribes into which the Russians were then divided. This was effected in the ninth century. In the tenth the western missionaries got into the Scandinavian peninsula, and inhabited parts of Germany, but their progress was at first slow; they did not cross the river Oder, or at least they did not venture far beyond it, and the geographical knowledge of this part of Europe was consequently not much increased. The progress of the missionaries was less important who penetrated from Constantinople into the interior of Russia, where they succeeded in converting the different tribes into which the Russians were then divided. This was effected in the ninth century. In the tenth the western missionaries got into the Scandinavian peninsula, and inhabited parts of Germany, but their progress was at first slow; they did not cross the river Oder, or at least they did not venture far beyond it, and the geographical knowledge of this part of Europe was consequently not much increased. The progress of the missionaries was less important who penetrated from Constantinople into the interior of Russia, where they succeeded in converting the different tribes into which the Russians were then divided. This was effected in the ninth century. In the tenth the western missionaries got into the Scandinavian peninsula, and inhabited parts of Germany, but their progress was at first slow; they did not cross the river Oder, or at least they did not venture far beyond it, and the geographical knowledge of this part of Europe was consequently not much increased. The progress of the missionaries was less important who penetrated from Constantinople into the interior of Russia, where they succeeded in converting the different tribes into which the Russians were then divided. This was effected in the ninth century. In the tenth the western missionaries got into the Scandinavian peninsula, and inhabited parts of Germany, but their progress was at first slow; they did not cross the river Oder, or at least they did not venture far beyond it, and the geographical knowledge of this part of Europe was consequently not much increased.

The coast of France has been surveyed by the French government from the Strait of Dover to Bayonne, except part of the coast of the Bay of Biscay from about Belle Isle to the Isle of Ré. Most of the harbours on the southern coast have been surveyed by the British government. Most of the islands in the Mediterranean have been surveyed; Corsica and Elba by the French, Sicily and Sardinia by the English. The survey of the Adriatic has been completed by the Austrians and English co-operating. The Adriatic to the Archipelago the coast has been surveyed by the English, and they have also carried on a survey through the islands and coasts of the Archipelago, which nearly completed. The survey of the coast of Holland the British government undertakes, as the coast of Holland is not yet surveyed. The coast of Sweden and Norway is not yet surveyed. The coasts of the northern parts of Europe, especially Prussia and Austria. England followed in the same steps towards the beginning of the present century, and to this great national undertaking we owe the publication of the Ordnance Maps. The southern parts of Sweden and Norway have likewise been surveyed. Thus we are in possession of very exact maps of nearly one-half of Europe. The maps of the other countries of Europe rest on the partial surveys of particular districts, and on a greater or less number of astronomical observations; but the maps of the countries which have been surveyed can still be laid down within certain limits of accuracy. Though maps of this latter kind cannot altogether be relied on, the attention paid by all governments to their gradual improvement is sufficient to ensure that the maps of the countries thus surveyed will be of considerable accuracy and correctness.

The great increase in commerce and navigation in modern times has convinced the respective governments of the necessity of a minute and accurate survey of their coasts. But all the coasts of Europe have not been surveyed, though more than half of them have been accurately laid down. The greatest part of the coast of Iceland has been surveyed by the Danish government, and this survey is still going on. The coast of Norway, and the coast of Cape Linnaeus, as far as the harbour of Christiansand, was surveyed by the Danes fifty or sixty years ago, but this survey is not considered accurate. The Baltic, including the Kattegat, has been surveyed by the Swedes, and their surveys are not only accurate, but not minutely, nor is the survey considered accurate. The coast between the mouth of the river Elbe and the Dollart was surveyed by the French, and continued to the Scheldt by the Dutch. The coast between the Scheldt and the English Channel, and the French, while the English ascertainment the outer dangers.

Our government has shown great activity in surveying the British coasts. A minute and accurate survey has been made of the whole eastern coast of Great Britain south of the Wash, and last year the survey of the western coast, including the Bristol Channel, has been completed. To the south of England, the survey of the south coast has been largely undertaken. The coast of this island is exposed to the frequent gales which prevail between the Isles of Man and the Lundy, and the Shetland and Scilly Islands as well as Guernsey, Jersey, Alderney, &c., have been surveyed completely, but the survey of the Orkneys is not yet finished. The coast of the Wash and the North Sea have been surveyed by the English, and they have also carried on a survey through the islands and coasts of the Archipelago, which nearly completed. The coasts of the eastern continent; and the hilly and mountainous countries extend along its western and southern shore to the mouth of the Danube. The northern boundary of the continent from south to north, from the mountain-range of the Caucasus and the shores of the Black Sea to the Arctic Ocean. In width it extends in this part of the continent from the Ural Mountains to 26° east longitude, and in the southern part of the continent from south to north, from the mountain-range of the Caucasus and the shores of the Black Sea to the Arctic Ocean. In width it extends in this part of the continent from the Ural Mountains to 26° east longitude.
are connected with them. Towards the eastern part it extends over ten degrees of latitude, but in its progress towards the west it becomes gradually narrower, partly owing to the mountains advancing farther north, and partly also owing to the seas which form its northern border running farther to the south. Here its mean breadth does not exceed three degrees of latitude, except where the peninsula of Jutland joins it. Along the coast of the North Sea it is still narrower.

By this narrow portion of the Great European Plain and the Baltic (which may be considered as its lowest part, being covered with water), the mountain-regions which constitute the western portion of the Continent are divided into two separate systems. To the north lies the system of the Scandinavian Mountains, and to the south what we shall here call the South European Mountain System.

The Great Plain occupies about 2,500,000 square miles, and the South European Mountain Region 1,100,000, and the Scandinavian Mountain System about 300,000 square miles.

Scandinavian Mountain System.—This comprehends the whole of the Scandinavian peninsula, or Sweden and Norway. A line drawn from the mouth of the river Torne, at the most northern angle of the Gulf of Bothnia, to the Va rampanger Fiord, a bay of the Arctic Ocean, would separate it from the north-western part of the Great Plain. A huge mountain-mass occupies the west part of this peninsula. It rises on the very shores of the sea to a height of some hundred feet, and attains, at a short distance from it, an elevation of 3000 or 4000 feet, and frequently more. South of 63° N. lat. it has not the form of a mountain-range, but of a mountain-plain, its surface frequently presenting a perfect level, and in some places swelling into hills. This elevated plain is from 100 to 150 miles across, and as it attains in many parts the line of perpetual congelation, which in this latitude is about 4200 feet above the sea, a great portion of
It is always covered with snow; while other districts, where the snow melts during several weeks in every year, afford pasture-ground. On the plain there rise a small number of summits, among which the Skagstølstind attains 8400 and the Sneehatten 8200 feet. The western side of the plain is indented by deep inlets from the sea, and extends from 60 miles to 120 miles, and again more, inland: the eastern side is furrowed by narrow and deep valleys, of nearly the same length. North of 63° N. lat. the masses of rocks take the form of a high ridge, the summits of which however rarely extend much above a few miles, and frequently present a sharp-edged crest. Their ascent on the side towards the Atlantic Ocean is rapid and frequently precipitous, a character which increases as we advance farther north, because the highest part of the range is near the point where the coast line constitutes the western shore.

The highest summit is the Sulitelma, which rises to more than 6000 feet; but many other parts exceed the snow-line, which varies between 2000 and 3000 feet, and towards the north sinks much lower.

The country to the east of this range, and at the base of it, is more than 1000 feet above the sea and descends to the Gulf of Bothnia in long slopes, interrupted by small level plains, and intersected here and there by ridges of hills, running in the direction of the slopes, and approaching the parts to the shores of the Gulf of Bothnia.

Mount Styllfollen is on the northernmost extremity of the mountain-plain, where it begins to contract to the dimensions of a range. It stands near 63° N. lat., and attains the height of 6486 feet above the sea. From it, as from a great arch, branch off northwards to the north, east, south-east, south and south-west, and though they soon sink down to hills, they continue through the south-eastern part of the peninsula, the mean elevation of which is from 300 to 400 feet above the sea, and above which the hills rise a few hundred feet. The Stael naan ridges enclose the great lakes of Mjølner, Weneren, and Wettern. To the south of the last lake these ridges unite, and form the table-land of Småland, whose surface is on an average about 200 feet above the sea, and which constitutes the most southern extremity of the Scandinavian mountain-plain. It falls gently slope towards the east, but very rapidly to the south and west. The peninsula of Scania, which joins it on the south, is low and flat.

The Faro Islands, which are between Norway, Cape Wrath in Scotland, and Iceland, and nearly equidistant from these three countries, resemble in their configuration the rocky plain of South Scandinavia, rising abruptly from the sea to more than 1000 feet, and presenting on their summits a surface of more than generally a level surface. This seems also to be the case with the south-eastern part of Iceland, which is called the Kofa Yökul, where a surface of more than 8000 square miles has never been explored, probably owing to the thick ice.
the sea. The country east of this line descends rapidly, but in high chains of hills, which contain some mountain summits, to the Mediterranean. On the highest part of the table-land also, a few high mountains occur, as the Sierra Urbion, which rises to 7272, and the Sierra Molina, to 4300 feet, but they do not form continuous and compact mountain chains, which present a large ex- tent of level ground, in some places a hilly surface, and in others ridges about 1000 feet above their base. Such are the ridges which divide the basin of the river Tajo from that of the Guadiana. But between the Tajo and the Duero the dividing ridge rises to 5000 or 6000 feet, and attains in the Sierra de Gredos even the elevation of 10,548 feet. In its continuation towards the Atlantic is the Sierra d’Estrella, 7324 feet high; and even the Sierra do Junto, not far from its termination at Cabo de Roa, is 2919 feet above the sea.

The Sierra Morena, which divides the basins of the rivers Guadiana and Guadalquivir, forms the southern boundary of the table-land. It does not however rise much above it, the mean elevation of this range varying between 3000 and 4000 feet. South of the Sierra Morena the country sinks considerably to the valley of the Guadalquivir, which, in its upper part is only about 1000 feet above the sea, and in its lower course traverses an extensive level plain, which, near the sea, is covered with swamps. The coast is washed by the Mediterranean by a long chain of mountains running east and west, a considerable part of which is always covered with snow, and has therefore received the appropriate name of Sierra Nevada. The highest summits occur between the gulf of Cadiz, 6600 feet high, Cabo de Machos (11,095), Cerro de Veleta (11,387), Cerro de Caldera (10,793), and Cerro de Fajos Altos (10,787). Many other summits exceed the snow-line, which, in this latitude, is about 9000 feet above the sea.

The most prominent plain is the plains of the Caronnes and the valleys of the Rhone and Rhine, which presents a different character. It contains also an elevated region, rising to between 2000 and 3000 feet above the level of the sea, but this region is of comparatively small extent, being divided into two parts, one between the Rhone and the Rhine, and the other between the Rhone and the Po, 150 miles long. On its surface rise three chains of mountains, which enclose the valleys of the Alifer and of the Upper Loire. The most western part is called the mountains of Auvergne, the middle the mountains of Forez, and the eastern range the Cevennes. The mountains of Auvergne, which exhibit unequivocal signs of volcanic origin, rise in Mont Cantal to 6690 feet, in Mont d’Or to 6200, and in Puy de Dome to 4840 feet. The country west of them continues high and hilly, but gradually declines in elevation as far as the Mont d’Or, and then extends in a low and level plain. The mountains of Forez rise in the Pierre Haute to 6200, and in the Mount Magdalene to 4800 feet. The two chains terminate about 484 N. lat., near the town of Moulins, on the Allier; the couteau du Puy, extending to the north and west of them has an undulating surface, resembling that of the southern counties of England; and does not exhibit ranges of hills, except in the south of Normandie and in Bretagne, where the hills rise from 200 to 300 feet.

The Cevennes, which separate the valley of the Upper Loire from that of the Rhone, rise in Mount Mezin to 5820 feet, in Mount Pilate to 3516 feet, and in Mount Tarare to 4736 feet. South of 47° N. lat. the Rhone and the Po, meeting from the southern side thus formed the Canal du Centre. North of this canal the chain rises again, but to a less elevation, and is here called the Côte d’Or, which, between 47° and 48° N. lat., terminates in a hilly plain, called the Plateau de Langres.

The Alps may be divided into two parts, the first by the sea, several of the rivers of France take their rise, and among others the Seine. From the north-eastern part of this plains issues a chain of low hills, called Monts Faucilles, which, at 48° N. lat., extend eastward till they meet the higher range of the Vosges mountains. This chain rises to the Ballon de Suiz to 4560 feet. The chain of the Vosges runs parallel to the Rhine and terminates at a short distance from the town of Mayence, in the Mont Tonnerre, or Donnersberg, 3636 feet high. The chain of this chain, as far as the Côte d’Argonne (a range of high hills which issues from the western extremity of the Monts Faucilles, and separates the valley of the Meuse from the sources of the eastern tributaries of the Seine), extends a rugged country, intersected by valleys and chains of hills, running in a northern direction, and terminating in the Ardennes and the Eifel, which are hilly and rugged plains, about 1800 feet above the level of the sea, occupying the country between the Meuse and the Moselle, in lat. 50° N. lat. West of the Côte d’Argonne extend the dry chalk-plains of Champagne, which gradually subside in the level country which occupies the north of France (the departments of Seine and Marne, Aisne, Oise, Seine Inferieure, Somme, Artois, and Nord), and joins that of Belgium. On this plain only a few hills, and those of very moderate elevation, occur at considerable intervals.

We pass now to that portion of the southern European mountain system which lies to the east of the valleys of the Rhone and the Rhine. Here we find the chain of the Alps, which extend from the banks of the Rhone as far east as 15° E. long., and cover an immense tract of country, measuring on an average about 130 miles across. The Alps may be divided into the Higher and Lower Alps. The Higher Alps extend to about 19° E. long., and the Lower between 13° and 18°.

The Higher Alps have the form of a quadrant, beginning on the shores of the Mediterranean, and running first due north, but gradually declining to the east, until they run due east, in which direction about 40° N. lat. they continue. Their mean breadth does not exceed 100 miles. Many hundred summits, perhaps not less than a thousand, rise above the snow-line, which here is found at somewhat more than 8000 feet above the sea. The highest summits are Mont Blanc (15,670), Mont Blanc du Maine (15,614), and Mont Cervin 14,778 feet above the sea. The valleys by which these mountains are intersected are narrow, and sink down to 2500 and 2000 feet, and still lower.

The Lower Alps do not rise to so great an elevation, few of the summits exceeding 9000 feet above the sea. The highest summit is Mont Torglou, near the sources of the Save, which is 9380 feet above the sea. But the space occupied by these mountains widens considerably as they proceed eastward; between 15° and 16° E. long. they are upwards of 400 miles across, and fill the whole interval between the Adriatic Sea and the Danube. They form also several chains running east and west, between which there are wide longitudinal valleys. East of 16° E. long., where they approach the mountain system of the Balkan, they narrow about 80 miles, and continue to run along the Adriatic Sea.

The Alps descend with a rapid slope southward to the plain of Lombardy, which extends from the western part of the Higher Alps to the Adriatic. Its length is about 250 miles, with an average breadth of 15 miles. Its total area is about 4000 square miles, but it gradually subsides as it advances east, till it terminates in a low sandy shore. It is mostly a dead flat, of great fertility, and very well cultivated.

South of this plain extends the Apennines, a mountain range which, in its southern extremity, joins the most southern part of the Higher Alps, and runs in one chief eastward along the whole of Lombardy, from which it rises with a steep ascent. It afterwards turns south and traverses, in different chains, the peninsula of Italy, terminating its most southern extremity, the Capo dell’Armi, on the straits of Messina, with the Monte Aspro, 5300 feet. The highest part of this range is between 43° and 42° N. lat., where the Monte Corno or Gran Sasso d’Italia rises to 11,061, and the Monte Silano to 9700 feet. The range is divided into several ranges, are wide and fertile.

In some places the mountains do not extend to the shores of the sea, but leave spacious plains, as is the case along the Adriatic, north of 44°, and again between 42° and 45°. The latter plains, called the Tavogl, are of no value, without trees, and of very indifferent fertility. Along the Mediterranean occurs the plain of Terra di Lavoro, in which the town of Naples and Mount Vesuvius are situated, one of the most fertile spots of Europe. The mountains districts along the Mediterranean are covered with lava.

The Island of Sicily, which is separated from Italy by the strait of Messina, has a hilly surface. Along the northern coast there runs a chain of low mountains, which rise to the same plateaus, which is separated from this chain is the volcano of Mount Zuma, which attains an elevation of 10,800 feet above the sea. Between the hills, with which Sicily is studded, and sometimes on their very tops, there
are plains of moderate extent, which are sometimes nearly 1000 feet above the sea.

The island of Sardinia consists of two chains of mountains running north and south, and divided in the east from those of the western islands, which is the higher, rises in Mount Schiuma to 6000, and in the Lyubbara mountains to 5768 feet. The western chain probably does not exceed 3000 feet in elevation. Along the coast there are some low swampy tracts, but the eastern shore is still more mountainous. If a few small tracts along the eastern shores are excepted, which are covered with swamps, it is everywhere studded with high hills and ridges of mountains. Some of the summits attain a great height. Monte Rororo is 15,744 feet, and Monte Puttia 13,510 feet above the sea. The valleys are numerous, but very narrow, and of indifferent fertility.

Passing to the countries north of the Alps we find that this great mountain-system, at its western extremity, is bounded on the east by the river Rhine, from the point where it issues from the lake of Geneva to its junction with the river Saone. Immediately north of the Rhine there rises another chain of mountains, different in character and in elevation, called the Jura. This chain extends from the banks of the Rhine, in a north-east direction, to the river Rhone, on whose banks it terminates between the mouth of the river Aar and the town of Basel. Its length may be about 160 miles, and its width less than 20 on an average. It consists of a number of parallel ridges, rising almost imperceptibly above a base, which is in places nearly 3000 feet above the sea. Some of the summits exceed 5000 feet in absolute elevation. The highest are towards the southern extremity of the range, the Prê des Marins attains 5610, Reuteu 5615, and the Dôle 5500 feet.

At the northeast corner of the Swiss plateau, between the lake of Geneva and the Rhône, and between it and the Alps, the plain extends over Switzerland, beginning on the shores of the lake of Geneva and terminating on that of the lake of Constance. This plain is between 1250 and 1500 feet above the level of the sea. At each extremity soundings exhibit a considerable depth, but the central districts exhibit only a strongly undulating surface. Its length may be about 180 miles, but its width does not exceed 10 miles. Opposite the northern extremity of the Jura, but on the northern banks of the Rhine, rises the Black Forest, a mountain-range, about 20 miles in width, parallel to the Rhine, and whose western sides approach the river sometimes within three or four miles. It terminates on the banks of the river Neckar. Its length may be between 150 and 160 miles. The upper part of this range extends in width about 30 miles, and between 2000 and 2500 feet above the sea; the number of summits which rise above these plains is not great. The Feldberg attains 4912 feet, and the Kandel 4160 feet above the sea. The Odenwald, which extends between the Neckar and Mainz, in the same direction, may be considered as a parallel ridge; it does not, however, reach the highest summit, the Katzenbuckel, rising only to 2000 feet.

Between the Black Forest and the Odenwald on the east, and the Vosges mountains on the west, lies the valley of the Rhine, which, though about 20 miles in width, but the length from Basel to Mayence is not less than 200 miles. At its upper extremity it is 800 feet, but at its lower hardly more than 400 feet above the sea. This valley presents a level surface of great fertility.

The Rhine, below the great estuaries of Schafthausen, is not more than 1000 feet above the level of the sea; but the Danube, at Danauachingen, nearly under the same meridian, is 2200 feet above it; yet between both rivers no mountain-range occurs. With only a hilly surface, and in an average distance of 20 miles, the river rises more than 300 feet above 1200 feet. This hilly country may be considered as the commencement of the elevated plain of Bavaria, which extends from the foot of the Alps (about 47° N. lat.), between the Black Forest and Odenwald on the west and the Böhmerwald, on the one hand, and the Rhine and Frisian and Thüringer Wald and the Rhineland (51° N. lat.). The length of this plain is 1880 miles, and its breadth about 1200 miles. The western part of the plain, which joins the Black Forest, is hilly, and intersected by a mountain-range, called the Rande Alp, which runs along the northern bank of the Danube for 70 or 80 miles, with a mean width of about 16 miles. South of this ridge the country is nearly 2000 feet above the sea, but north of it less than 1000 feet.

The eastern part of the plain, south of the Danube, is nearly a level, which sinks gradually and almost imperceptibly from the foot of the Alps towards the river. The town of Munich, which nearly occupies its centre, is 1664 feet above the sea, and Ratisbon, on the Danube, more than 1000 feet. That part which is the least elevated part of the undulating surface, upon which some hills rise towards the banks of the river Mayn. From the banks of the Danube the country rises slowly, but hardly more than 150 feet above the river, when it forms the water-shed between the Danube and its tributaries, and begins to the flood-plain of the bank of the last-mentioned river, where it is only from 600 to 800 feet above the sea.

The elevated plain of Bavaria does not extend far enough north to reach the Great Plain, being divided from it by a series of mountains and valleys. The Plain of Bavaria rises above the level of Germany, from the very banks of the Rhine to the Fichtelgebirge and Erzgebirge. This region, which has a width of about 100 miles, contains a great number of ridges, bearing different names. Their mean elevation is about 3000 feet, and the highest summits are upwards of 4000. The most northern of these ridges is the Harz. For a more peculiar account of them we refer to Germany.

The countries which we have hitherto considered are to the north of the Hither Alps. To the north of the Lower Alps, and divided from them by the narrow valley of the Danube, is another system of mountains, which encloses, in the form of a quadrilateral figure, the kingdom of Bohemia, and might therefore be called the Bohemian Mountains, which intersect each other in two different plains. They attain a mean elevation of 3000 or 3500 feet above the sea; their highest summits rarely exceed 3000 feet. The great valley of Bohemia, which is enclosed by these ridges, is subdivided into numerous basins, which are separated from each other by ravines, and from those which surround it. Near the higher ridges the surface of these valleys is 1000 feet and upwards above the sea, but they subside rapidly towards the middle of the great valley, where they are not more than 700 and 800 feet above the sea. Where the Elbe carries off the waters of Bohemia it is somewhat less than 400 feet above the sea.

At the eastern extremity of this mountain-system, where the rivers Oder and Morava take their origin, the Carpathian Mountains commence. They run first due east, then decline to the south, and which direction the range has passed 24° E. long., it turns suddenly to the west, and having proceeded in that direction to 23° E. long., it gradually declines to the south, and terminates on the banks of the Danube on both sides of the meridian of 22° E. long. On which extends between 30° and 35° W. and 45° and 48° N. lat., between which there are waste and fertile. No considerable chain branches off from the middle part of the range, but from its eastern extremity four or five ridges issue: these ridges running in a western direction some hundred miles, traverse Transylvania, and render the whole of the northern part of the mountains and wide valleys, which are generally very fertile.

Between these offsets of the Carpathians on the east, the principal range, and the Hungarian Ores Mountains on the north, and the eastern termination of the Alps (18° E. long.), lies the plain of Hungary, the most extensive that is
included within the South European mountain-system. It extends from north to south about 300 miles, and its mean breadth is not less. The Danube traverses it. To the west of the Danube is a small range on the plain, the Bakony Mountains, which in a few miles attains a height of more than 2000 feet; and farther south (near 45° N. lat.), the hills of Fünfkirchen occur: but both these ranges occupy only a small surface. The plain east of the Danube is a dead flat. That portion which lies west of the Danube is fertile, as well as that which skirts the Hungarian Ore Mountains, but by far the greatest part of it is either covered with sand or swampy, and affords only indifferently pasture. This great plain towards the south is only 300 feet above the sea, but towards the north it rises to 400 and 420 feet.

South of the Carpathian Mountains, and between them and the lower course of the Danube, extends the plain of Wallachia, 250 miles in length from west to east, and about 126 miles in breadth. It is generally level, but towards the north it produces a slight rise, and it is only about 100 feet above the sea. It is of great fertility, but in many places swampy.

The third great division of the South European mountain-system is formed by the Balkan, which, with its numerous branches, traverses the most eastern of the three great southern peninsulas, which advance from the body of the continent into the Mediterranean Sea. The Balkan range is not disjoined from the Alps by any natural separation, but is so closely connected with them as to form a continuous mountain-tract, which they have however assumed a dividing line about 18° E. long.

From this line the principal range of the Balkan runs in a south-east direction till it reaches 22° E. long., from which point it continues in a general due east direction till it attains its greatest height, 6629 feet, near the town of Emmeh. The length of this chain may be about 600 miles. Its elevation is considerable west of 24° E. long., especially between 22° and 24° E. long., where a great part of the chain, called here Shaardagh (Scaradus) and Egrissiu Dag, consists almost of quartzite, and must rise at least to 9000 feet. East of 24° E. long. it does not rise so high, and it is supposed that in this part its mean elevation varies between 3000 and 4000 feet. The extent of country through which these numerous branches is very great. West of 24° E. long., all the immense tract which lies between the Save and Danube on the north and the Adriatic as far south as Cape Linguette or Karnurnu, presents nothing but a continuous succession of hills and mountains which rise to a height of 5000 feet, and is probably the most rugged part of Europe, as it is certainly the least known. The country which lies between the great range and the Danube, east of 24°, is only mountainous near the foot of the range, for its slopes rapidly descend to the valley of the Save, which it ends in the banks of the river, on the banks of which the country exhibits merely an undulating surface.

From the southern side of the Balkan three ranges branch off: the eastern, which leaves the principal range above Varna or Odessa, called the Save or Stanches Dag, and runs south-east, parallel to the Black Sea, but gradually approaching it. About 50 miles west of Constantinople, it turns to the south, and terminates at the mouth of the river Marita. The latter portion is called the Kergen, which is probably the top of it. The second range branches off from the Balkan east of 24° E. long., and runs first south-east till it approaches the Egean Sea, within 20 or 30 miles, when it turns east and terminates nearly opposite the Tekir Dag, on the banks of the Marita. This chain, called Disporto-Dagh, rises to a considerable elevation, though none of its summits seem to attain the snow-line.

The country between the Strangda Mountains, the Disporto Dag, and the Balkan is only mountainous towards the south, that tract being entirely confined to the ridge only into hills, separated from one another by wide valleys, which in several places spread out into plains of moderate extent. This country possesses great fertility, and is one of the finest parts of the mountain-system. It stretches from the sea-foothills and the banks of the Albnus, so as to come within 100 feet above the sea. Its surface is covered with a succession of moors and heaths, ill adapted for agriculture, except in the alluvial tracts along the rivers. But this sterile country is surrounded by fertile marshes, which run along the shores of the North Sea, and are so low that it is...
necessary to defend them by dykes from the invasion of the waves. The width of these marshes varies from one to four or five miles, except at the western extremity, where they occupy the whole of the province of Holland. Towards the banks of the Elbe the soil mostly consists of sand, but it begins here to be covered with forests.

The countries between the Elbe and the Vistula are more fertile, though the sandy soil prevails, especially towards the north; yet even here extensive tracts of fertile land are cultivated, the mountain region, with borders on it on the south, especially in Silesia and the southern districts of Poland, the country may be considered as rather fertile. No marshes occur along the Baltic, but at the south-western extremity of this sea a series of small lakes begin which run northwards and fall in on the south, especially in Silesia and the southern districts of Poland, the country may be considered as rather fertile. No marshes occur along the Baltic, but at the south-western extremity of this sea a series of small lakes begin which run northwards and fall in on the south, especially in Silesia and the southern districts of Poland, the country may be considered as rather fertile.

That portion of the plain which we have so far noticed is drained by rivers which originate in the mountain-region south of it and traverse it in a north-western or northern direction. But east of the upper branches of the Vistula, the rivers originate in the plain itself, in which they drain. These rivers run either north-west and north to the Baltic and White Seas, or south and south-east to the Black and Caspian Seas. The watershed which separates their sources from the Baltic region is known as the Neman, Neman, Nere, and Dnieper, which separate the Bug and the Dnieper from the Vistula and the Dnieper from the Bug, the latter being the more important and more extensive of the two. It is the only large river which has its source in the Carpathian Mountains, and it is the only one which separates the Baltic from the Caspian Sea.

This range of hills runs in a north-eastern direction to the sources of the Bug, another tributary of the Baltic, in which it turns north and is lost in the plain. It is soon replaced by an immense swamp, which forms the highest point of the Caspian Sea, in all Europe. The principal body of this swamp covers nearly the whole basin of the river Priepet, which extends about 200 miles west and east, with an average breadth of about 50 miles. It also continues northward, but with a much diminished width, between the sources of the Vistula, the Niemen, Beresina, and Neman, and terminates on the banks of the Dnieper, south of Dnepropetrovsk and Polotsk. The surface covered by this swamp is perhaps not inferior to that of England, of which a large portion is water. We do not know what is the elevation of this swamp above the level of the sea, but we may conjecture that it is not less than 100 feet. Towards the north-western extremity of the swamp the watershed is crossed by the valley of the Vistula, which separates the upper waters of the Vistula from those of the Bug and the Dnieper, and the Vistula, which separates the upper waters of the Vistula from those of the Bug. It is the only large river which has its source in the Carpathian Mountains, and it is the only one which separates the Baltic from the Caspian Sea.

The highest point of the watershed is in a northern direction till it passes 60° N. lat. between the lakes of Onega and Lake Onega, and then turns south-east to the sources of the Suchona, the principal river of the Vistula. There it proceeds in an east-north-ea direction to the sources of the Pechara, which falls into the Arctic Sea, and of the Kama, a branch of the Volga, which terminates in the Ural range. That portion of the watershed which is east of the hills of Waldai is covered with an immense forest, called the Forest of Volkhovsky.

The country north of the watershed is, in general, of moderate fertility; there are some districts which are covered by peat, and the others have a rich soil. That series of small but very numerous lakes, which we noticed in the western part of the plain continues in this at nearly the same distance from the Baltic, forming likewise a subordinate watershed. East of 32° E. long. however it stretches farther, reaching the northern extremity of the great swamp, and then continues eastwards along the watershed to the hills of Waldai, and still farther in the Forest of Volkhovsky, where it terminates near 32° E. long.

The country north of 60° N. lat. is only in a few places fit for agriculture, partly on account of its cold climate, and partly on account of the sterility of the soil. That portion of the forest which lies west of the lake of Onega is rocky, and is mostly traversed by ridges of rocky hills, which lie in a north and south direction. These hills rise in some places to 300 or 400 feet above the sea. Most of them, as well as the level country between them, affords excellent pasturage ground. This region is remarkable for its numerous large lakes, which cover nearly one-fourth of its surface, and are connected by short natural channels. The largest of these lakes is Lake Onega, Onezhskoe, which is connected with the Volga by a canal.

There are only a few lakes east of the lake of Onega. It appears that the watershed here rises to a greater elevation, and that the slope of the country is more regular. Its southern districts are still covered with forests, and a few spots are cultivated; but its northern districts are found in immense plains, covered with moss, which by attracting the water of the melting snow renders them impassable for the greatest part of the summer. A few rocky ranges of hills occur on this plain, but we are not acquainted with their direction and extent.

By far the greater part of the Great Plain extends to the south of the watershed. Contiguous to its southern declivity extends a country of great fertility, from 300 to 400 miles in width. It begins on the west near the foot of the Carpathian Mountains, and terminates on the east where the Volga begins to run south-west-south. The parallel of 49° forms its southern boundary, as far east as about 40° E. long., whence it runs in a north-eastern line to the town of Simbirsk on the Volga. The town of Moskva, situated nearly in its centre, is 480 miles above the sea. The country east of the Volga, as far as the Urals range, is mostly covered with hills, and is even mountainous, being traversed by the offsets of the great range: it is of moderate fertility in the valleys, which are frequently wide. The hills and higher ground beyond are covered with grass, and afford excellent pasturage.

To the south of this region extend the deserts which are called the Steppes. They may be divided into the Higher and Lower Steppes, the line of separation between them being the high ground which extends north and south through the surface of the country north of the Volga. The western part of the plain, extending south of the fertile region to the very shores of the Black Sea. Their elevation above the sea may be between 150 and 200 feet. They are without trees, produce only in some places a few shrubs, and are covered over with a thick growth of coarse grass, which affords very indifferent pasture. In the last part of the summer and autumn their dry brown surface shows no sign of vegetation. Agriculture can only be carried on in the narrow bottoms along the rivers. The peninsula of the Crimea is connected with them by a low isthmus. Three-fourths of its surface resemble the Lower Steppes, but on its southern shores rises a mountain-range, whose highest summit, the Chatyr Dagh, is 5000 feet. The valleys of this range are fertile.

The Volga and Ural are at the eastern extremity of Europe, extending between the southern extremity of the Ural range and Mount Caucasus along the banks of the river. They occupy a space more than twice as large as the area of France. The southern part is lower than the northern part of the country. In the south the Caspian Sea being more than 100 feet beneath it, and the adjacent country rising very little above its shores. The town of Saratov on the Volga, more than 300 miles from the Caspian, is not above the sea level. We do not know how much higher the northern districts of these steppes rise, nor if their soil differs from that of the southern, which are covered with a fine sand, intermixed with shells, producing no trees nor shrubs, but at certain seasons a scanty grass. This soil is strongly impregnated with nitrates, as is discovered in the most of the mineral wells which occur here contain such a quantity of salt that it crystallizes in summer, and supplies the greatest part of the inhabitant of Russia. In no part of these steppes are any traces of agriculture visible except in the neighbourhood of Astrakhan.

We shall conclude this general survey of Europe by observing, that the Urals range, which runs about 1500 miles first south and then south-east, rises in its highest summit, the Pawdinskii Kamen, to more than 6800 feet above the sea, where the lowest part of the Volga just extend east of the river Ural far into Asia; and that Mount Caucasus, which is by far the highest, only few of its summits attain the snow-line, rises in its highest summit higher than the Alps, Mount Elbooruz at the elevation of 16,800 feet.

Looking at the map of Europe we find that its eastern line is formed alternately by wide projecting promontories and deep bays, which divide it from one another. This peculiarity has led a large proportion of its inhabitants to...
searing life, and as the winds and weather in the waters that surround this continent are not regulated by the seasons of the year, but are subject to continual changes, this circumstance has given to them that boldness in maritime enterprise which forms the most distinguishing feature in their character, and raises them above most other civilized nations of the globe.

Europe, in fact, considered by itself, is only a large peninsula, which is further cut up into a great number of smaller peninsulas by the interior seas and gulfs which penetrate far inland to the main mass of the peninsula; consequently, up to separate it from the continent. A much greater extent of coast than any other of the great divisions of the globe, as will appear by the annexed table, which however must be considered only as a rough approximation:

<table>
<thead>
<tr>
<th>Surface in square miles</th>
<th>Coast-line in miles</th>
<th>Ratio of one mile of coast to one square mile</th>
<th>Coasts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia</td>
<td>16,000,000</td>
<td>35,000; or including islands, 420,000</td>
<td>2,100</td>
</tr>
<tr>
<td>Africa</td>
<td>14,000,000</td>
<td>16,000</td>
<td>900</td>
</tr>
<tr>
<td>Europe</td>
<td>3,900,000</td>
<td>20,000</td>
<td>195</td>
</tr>
<tr>
<td>America</td>
<td>15,000,000</td>
<td>32,000; (without Greenland) 470,000</td>
<td>350</td>
</tr>
</tbody>
</table>

The Atlantic Ocean, with which all the seas that wash the shores of Europe are connected, except the Caspian, and this is rather to be considered as an immense inland lake, forms between the British Islands and the island of Shetland; the English Channel between the northern coasts of France and the southern coasts of England; St. George’s Channel, between Great Britain and Ireland; and the North Sea, which separates Great Britain from Denmark, Norway, and Sweden. The North Sea might be considered a closed sea, as it is united on the south to the great expanse of the Atlantic only by the straits of Dover, which, between the South Foreland in Kent and Cape Grisnez in France, is only eight miles wide. On the north, where is the comparatively narrow channel called the English Channel, if it were not on the north connected with the Atlantic by the open and wide expanse of sea which separates North Britain from Norway.

The close seas, which are united to the Atlantic by straits, are the White Sea, the Baltic, and the Mediterranean; with the latter the Black Sea and the Sea of Azof are connected.

The White Sea, the smallest of these inland seas, covers an area of only about 40,000 square miles. The strait by which it is connected with that portion of the Atlantic which is north of the British Islands, is 12 miles wide, and of considerable width, its narrowest part being from 30 to 40 miles across. This strait is entirely or partially covered with ice during four or five months of the year. Into its eastern part the Dvina falls; and into the western part of the strait the river Mezen.

The Baltic is connected with the North Sea by a channel with about 80 or 90 miles of average width; this channel branches off from the North Sea in an east-north-east direction, but after wards suddenly turns south. That portion of the river which extends from its source to the east-north-east is called Skagerrak, or the Sleeve of the British sailors, and the other part, which lies south and north, the Kattegat. At the southern extremity of the Kattegat are the three straits by which the Baltic is entered like the Gates of the Tower. The Sound, the Kattegat, and the Oresund, is the passage generally taken by ships; it is at the narrowest place only about two miles wide. The Great Belt is in the middle between Zealand and Fynen, and eight miles across at the narrowest place. The Little Belt, which is also a branch of a great river, the Eider, separates the island of Fynen from the peninsula of Jutland. The Baltic forms three great gulfs—those of Riga, Finland, and Bothnia.

Receiving, by the numerous rivers which fall into it, great masses of fresh water, it is less salt than the Atlantic, and supplies the cities with water, sufficiently explain why ice is formed nearly every year along its shores, and the navigation is interrupted for three or four months. The Mediterranean is connected with the Atlantic by the Strait of Gibraltar, which is about ten miles across. It is the largest of the close seas which wash the shores of Europe, but it receives the drainage of a comparatively small portion of its surface; the number of rivers which fall into it is very considerable, but few of them run 100 miles. Evaporation carries off a larger portion of its waters than is supplied by the rivers which flow into it, and there is accordingly a strong current setting continually through the straits of Gibraltar. The motion of this current is so strong that the east is proved by vessels requiring a greater time to sail from the coast of Syria to Gibraltar than from Gibraltar to Scadreron. Its waters are saltier than those of the Atlantic. It also forms several large gulfs; as, on the European side, the Bay of Lyon, that of Genoa, the Adriatic, and the Aegean Sea, or Archipelago. By means of this sea the straits of the Dardanelles (one mile across at the narrowest point), the Sea of Marmara, and the channel of Constantinople (six furlongs across at the most narrow place), the Mediterranean is joined to the Black Sea. The Black Sea, limited by the high and constant current pours through the narrow straits into the Aegean. [Euphrates] The Black Sea is connected by the strait of Yenikale with the Sea of Azof. It is less salt than the Mediterranean, and its northern shores in winter are frequently fringed with ice.

The Caspian Sea, whose northern-western shores only are included in Europe, is the largest of the numerous seas without an outlet which occur in the north-western regions of Asia. Ice is formed every winter along its northern shores. Its waters are salt, but only to a slight degree.

When we consider these seas as the receptacles of the drainage of the adjacent countries, we find that those towards the east have the most extensive basins. The basin of the Caspian Sea, though it is only drained by two large rivers, the Volga and the Ural, occupies a surface of 460,000 square miles; but it extends as far as it lies to the south-east, and runs with its northern boundary along the parallel of 60° N. lat. The basin of the Volga, the largest of the rivers of Europe, contains an area of above 750,000 square miles. The basin of the Black Sea is somewhat larger. Its south-western boundary is formed by the principal range of the Alps; its north-western by a line drawn from Switzerland to Moscow; and another line from this city to the mouth of the Volga, forms its north-eastern border. Its area in Europe is rather more than 900,000 square miles. The countries which are comprehended within this area, part of its basin are drained by the Danube, Dnieper, Don and Kuban, and their tributaries. The basin of the Baltic is nearly equal in extent, including the Cattegat and Skagerack, being on all sides surrounded by countries which border on the sea, and a surface of nearly 900,000 miles, though perhaps none of its rivers rise more than 300 miles from its mouth in a straight line. The great rivers which fall into the Baltic are the Oder, Vistula, Niemen, Duna, Neva, and the numerous rivers which form the Scandianian range, as the Torneaelf, Caix elf, Luleaelf, Piteaelf, Scaletaelf, Uemsaelf, Angermanaelf, Indaelf, Luunaelf, Liusnelf, and Delaf; and likewise the Goelaelf, and Glennum, which falls into the Kattegat, and the basin of the White Sea is drained by the Dvina, the Mezen, and Petchora, and some other smaller rivers, and occupies a surface of about 400,000 square miles. Though the coast-line of the Atlantic from Cape North Kyn to Cape Tarfo, consists in the whole of 5,000 miles, the western declivity of Europe, including the British islands, its basin probably does not much exceed 600,000 square miles. No considerable river flows into the Atlantic between Cape North Kyn and the mouth of the Eibe. Into the North Sea there flow the Eibe, Ely, the white, Scheeld, and of the rivers of Great Britain, the Spey, Tay, Forth, Humber, and Thames; into the English Channel, only the Seine; into St. George’s Channel, the Sovery; into the Bay of Biscay the Loire and Garonne; and immediately into the Atlantic the Clyde, the Shannon, the Duerio, Tajo, Guadiana, and Guadalquivir. The basin of the Mediterranean, including the Archipelago, is by far the
smallest of all those which belong to the inland seas of Europe, comprehending only about 250,000 square miles. The largest of its rivers, the Rhine, flows only 500 miles, including its bends. The other rivers, which are of a considerable length, are the Ebro in Spain, the Po and Tiber in Italy, and the Danube in the Balkan peninsula and the Danubian region in Turkey. All the rivers which drain the basins of the Mediterranean and Atlantic Sea rise in the South European mountain region; those which flow into the Black Sea rise within the Great Plain except the Danube and its tributaries, which drain about three-quarters of the basin of the mountain region. The rivers which run to the Caspian rise partly on the watershed of the Great Plain, and partly in the Uralian range; and the same is the case with those that drain the basin of the White Sea. The rivers which flow from the Baltic into the Baltic rise on the Great Plain; those which flow into it from the south rise on the edge of the mountain region; and those which fall into it from the north descend from the Scandinavian range.

Climate.—The climate of Europe presents great differences, if we compare it with that of those countries in other divisions of the globe, which lie within the same parallels. It is a well-established fact, that the eastern coast of North America is much colder than the western coast of Europe, under the same latitudes. This difference is in some places equal to 10° of latitude. Thus we find that the mean annual heat of London (51° 31' N. lat.) is nearly 52° Fahrenheit, while at Quebec (46° 48' N. lat.) it hardly exceeds 32° Fahr. At Lisbon (38° 43' N. lat.) it is 61° Fahr., and at Williamsburg in Virginia (37° 2' N. lat.) only 56° Fahr. It is however worth noticing, that the eastern coasts of Europe, especially those north of the Black Sea, are much colder, and approach in climate those of the eastern coast of America. At Moscow (55° 47' N. lat.) the mean annual heat is not quite 36° Fahr., whilst at Edinburgh (55° 36' N. lat.) it exceeds 47° Fahr.

This difference in the climate of Europe may perhaps be explained by the circumstance that this continent is encircled on most sides by seas whose water is warmer than that of the ocean at large. The water of the Mediterranean is about 10° warmer than the mean temperature of the sea in the Barents Sea, and is near 10° warmer than that of the sum of the maritime regions of Europe. Between America and Europe the warm water of the gulf stream, which exceeds the heat of the other water of the Atlantic by 8° or 10° Fahr., covers a surface not inferior to that of the Mediterranean, and the exhilaration of this immense reservoir of warm water is carried by the prevailing western and south-western winds to the western shores of Europe. Besides this, the water in the sea between Spitzbergen, Greenland, and the coast of Norway indicates a higher degree of temperature than drawn from some points on the surface of the sea on the opposite side of the earth itself. This has been proved by the experiments of Sir John Franklin and Captain Scoresby, though the contrary is the case in all other seas, as far as we know.

Dr. Bremner however thinks that there are two frigid poles on the earth, one in each hemisphere. The north of the globe is heated with the distance from the meridian in which these poles are situated. By comparing the few exact meteorological observations which have been made in remote countries, he is induced to infer that the meridians are about 30° from the western counties of Europe, and hence he presumes we may account for the greater mildness of the climate in these regions. The observations which the latest traveller through the north of Asia, Dr. Erman, has made in those regions, confirm rather to confirm the correctness of the theory of Dr. Bremner.

With respect to climate, Europe may be divided into three zones, the northern, the central, and the southern. These zones may be separated from one another by two lines, of which the northern begins near 52° N. lat. on the western coast, and terminates between 51° and 54° N. lat. on the Uralian range on the east; the southern commences about 45° N. lat. on the west, and terminates on the east at the mouth of the Danube (45° N. lat.). In the northern zone the temperature is warmer in winter, the summer lasting about three months (June, July, and August), and the latter nearly nine months. These seasons are separated by a spring and autumn of a few days, rarely two weeks’ duration. In summer the heat is very great, and the vegetation luxuriant. In the southern zone of Europe, the climate is torrid, and brings down immense quantities of snow. In the central zone the four seasons are distinct, and the passage from heat to cold and vice versa is very gradual. The heat is less than in the northern zone, and so the cold during the winter; still frost prevails during two, three, or four months, and snow is common except on the coasts.

In the southern zone frost is either not felt at all or only during a few days; and snow is of rare occurrence, or it does not continue long upon the ground. In the mountainous districts of the western extremity of the continent, a few nations occur which belong to the Mongolian race; to which must be added the Magyars, who inhabit nearly the centre of Europe (Hungary).

The inhabitants of the Caspian race may be divided into three great branches and several smaller ones, if we consider them with reference to their language. The first division comprehends those languages which are derived from the Latin and an admixture of the languages of the ancient aborigines and of the later destroyers of the Roman empire. These languages are spoken in the peninsulas of Italy and Spain, and in the countries west of the valley of the Rhine. They are the Italian, Spanish, Portuguese, and French languages. In some districts of the countries where these languages are spoken there still exists the languages of some of the aborigines of these countries. Of the languages spoken on the sides of the western extremity of the Pyrenean mountains, south and west of the river Adour, the Basque language is spoken by a population not exceeding 600,000 souls, according to the most exact computation. The Cymry or Welsh are one of the oldest languages spoken in Wales, and are on the north side of England, in the districts of the most north-western peninsula of France, which is called Bretagne (Little Britain), by a population amounting to about 2,000,000 individuals. The most extensive of these languages is the Celta-Gaelic language, which is still spoken on the west coast of Ireland, as well as in the northern districts of Scotland. The number of the individuals who speak it perhaps does not fall short of 7,000,000. Many persons think that the Cymry and Celta-Gaelic languages ought to be considered only as dialects of the same original language.

The second great branch of the languages is formed by those of Teutonic origin. These languages are spoken by the inhabitants of England, a great part of Scotland and Ireland, Iceland, Norway, Sweden, Denmark, Germany, the Baltic countries, and others. Of that branch the English peculiar dialect is spoken, though the affinities of all these languages cannot be questioned. It would seem as if these languages had been introduced into these countries by their first inhabitants, or aborigines, as at present no other language is spoken in them. The same original language is spoken on the eastern side of the British islands, nor do we find any mention in historical records of such other languages ever having existed.

The third great family of languages is comprehended under the name of Slavonic. The most western tribes that speak these languages are found in the eastern districts of Germany. The Czecks inhabit Bohemia, and the Wends the north-western part of the Prussian province of Silesia. In the south-western part of the same province the Lushnaklebiosy. Between Wends and Slavonic tribes are called Wendes, or Wends by the Germans; but they call themselves Sloveni. Towards the south the Slavonic language extends to the very summit of the Balkan, the inhabitants of Dalmatia, Croatia, Slavonia, Bosnia, Belgrade, and Bulgaria, speaking dialects of that language. From these extreme points the Slavonic language is spoken over the whole of the great plain of Europe to the borders of Asia, on the Uralian range, and on the river Ural. The most extensively spoken languages of this family are the Russian and the Polish.

In the immense tract of country in which the Slavonic language may be considered as prevalent, some extensive districts are occupied by nations who speak different languages. We shall first notice the tribes of Mongolian origin. The Bashkirs, Tatars, Cherkess, and setting aside, the Mongol tribe are the Magyars, who inhabit the greatest part of the Hungarian plain, especially that portion which lies east of the Danube, from the banks of which river they extend to the foot of the Carpathian mountains, where they
The second group of nations of Mongolic origin occupy the countries between the Scandinavian Peninsula on one side, and the Black Sea and the three great lakes of Ladoga, Onega, and Peipus on the other side. The Laplanders inhabit the country between the northern extremity of the Gulf of Bothnia and the White Sea; the Finns occupy the country farther south, as far as the Gulf of Finland. At the most eastern point of the Baltic, the Lithuanians, the Latvians, and the southern part of the Gulf of Riga. All these nations speak dialects of the same language, which is said to have a great resemblance to the language of the Magyars. The third group of the modern Slavonic tribes is situated in the Urals range, and between the rivers Ural and Volga. The most northern tribe is the Samoyed, who occupy the eastern portion of the government of Archangel, between the river Metzen and the Ural, and south of it the Estonians and the Livonians, who extend to the southern part of the Gulf of Riga. These nations speak dialects of the same language, which is said to have a great resemblance to the language of the Samoyedes. The fourth group of the modern Slavonic tribes is situated in the eastern districts of the government of Wologda, and the Sireynas, who also occupy the northern part of the government of Perm. In the southern districts of this government are the Permians, the Wogoles, and Wolyakes. Here are also a few families of the Mordovines, Cheremisses, and Chuwashes, who are dispersed over the surface of the governments of Viatka, Kasan, Simbirsk, and Pensa, where they inhabit an extensive district on the western side of the Volga. Their neighbours on the other side of the river are the Tatars, who are dispersed over the basin of the Volga, and Kirghises. Kirghises. The former occupy the countries contiguous to the Volga, on its eastern bank; but the Kirghises inhabit those regions between the rivers Uzen and the river Urals. They are both tribes are Buhdias. These tribes are still to be found in the northern and eastern districts of the Volga region, and Kirghises. They inhabit the most eastern part of Europe, the northern portion of the government of Orenburg, and some districts of that of Perm. These are the earliest tribes of the Slavonic origin, and the most eastern part of Europe. The eastern portion of the Volga, and Kirghises. They inhabit the most eastern part of Europe, the northern portion of the government of Orenburg, and some districts of that of Perm. These are the earliest tribes of the Slavonic origin, and the most eastern part of Europe. The eastern portion of the Volga, and Kirghises. They inhabit the most eastern part of Europe, the northern portion of the government of Orenburg, and some districts of that of Perm. These are the earliest tribes of the Slavonic origin, and the most eastern part of Europe. The eastern portion of the Volga, and Kirghises. 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These are the earliest tribes of the Slavonic origin, and the most The Warmest and Coldest Months

<table>
<thead>
<tr>
<th>Statistical Area</th>
<th>Population</th>
<th>Area (sq. miles)</th>
<th>Form of Government</th>
</tr>
</thead>
<tbody>
<tr>
<td>Republic, with two syndics and a council</td>
<td>150</td>
<td>15,300</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
</tr>
<tr>
<td>Duchies, with states having limited powers</td>
<td>310</td>
<td>36,400</td>
<td>Royal monarchical</td>
</tr>
<tr>
<td>States having a limited monarchy</td>
<td>57,607</td>
<td>59,000</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
</tr>
<tr>
<td>States having a limited monarchy</td>
<td>827,324</td>
<td>29,600,000</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
</tr>
<tr>
<td>18,093</td>
<td>4,600,000</td>
<td>Royal monarchical</td>
<td></td>
</tr>
<tr>
<td>States having a limited monarchy</td>
<td>25,812</td>
<td>1,360,000</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
</tr>
<tr>
<td>States having a limited monarchy</td>
<td>12,469</td>
<td>4,000,000</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
</tr>
<tr>
<td>States having a limited monarchy</td>
<td>13,825</td>
<td>38,000</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
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<tr>
<td>States having a limited monarchy</td>
<td>116,700</td>
<td>25,500,000</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
</tr>
<tr>
<td>States having a limited monarchy</td>
<td>1,485</td>
<td>500</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
</tr>
<tr>
<td>States having a limited monarchy</td>
<td>1,448</td>
<td>3,000</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
</tr>
<tr>
<td>States having a limited monarchy</td>
<td>19,173</td>
<td>9,000</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
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<td>States having a limited monarchy</td>
<td>209,188</td>
<td>23,600,000</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
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<td>States having a limited monarchy</td>
<td>10,305</td>
<td>810,000</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
</tr>
<tr>
<td>States having a limited monarchy</td>
<td>149</td>
<td>1,000</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
</tr>
<tr>
<td>States having a limited monarchy</td>
<td>4,398</td>
<td>650</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
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<tr>
<td>States having a limited monarchy</td>
<td>2,631</td>
<td>700</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
</tr>
<tr>
<td>States having a limited monarchy</td>
<td>154</td>
<td>94</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
</tr>
<tr>
<td>States having a limited monarchy</td>
<td>200</td>
<td>42</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
</tr>
<tr>
<td>States having a limited monarchy</td>
<td>13,499</td>
<td>2,390</td>
<td>Absolute monarchy, with the exception of Hungary and Transylvania</td>
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</tbody>
</table>

(a) The area is assumed from the President's decree of the 35th of April, 1899. Edition and others carry it above 18,000. The population, according to Köhler's Almanac for 1897, is 989,000, besides 13,926 troops.

P. C. No. 606.

VOL. X.—N
Zoology of Europe.—In giving a general view of the animals of Europe, it will be found that the number of wild quadrupeds at present existing (many species having become extinct from the progress of civilization), is too small to exhibit many characteristic peculiarities in their geographical distribution and local adaptation; and the close connexion of this continent with that of Asia makes it very difficult to draw any exact line between their productions. Many of the animals of the south of Europe are also common in the north of Africa; and most of the quadrupeds inhabiting the northern parts of our continent are found in the corresponding latitudes of Asia and America. But though the zoology of Europe does not possess much interest from the number, size, or peculiarity of its animals, this is in some measure compensated by the intimate acquaintance which we possess with the habits and manners of many of the smaller species, whose natural history has been carefully investigated by many able and industrious naturalists.

In the following table, which are found in Europe are arranged according to their position in the orders of the Cuvierian system; those which are peculiar to this continent, and those which are common both to it and other parts of the globe, are placed in separate columns.

**Order No. of species peculiar to Europe. No. of species common to Europe and other Continents. Whole No. of species. Whole No. of European species.**

<table>
<thead>
<tr>
<th>Order</th>
<th>Whole No. of species.</th>
<th>Whole No. of European species.</th>
<th>No. of species peculiar to Europe.</th>
<th>No. of species common to Europe and other Continents.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Quadrumana</td>
<td>186</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>II. Cheiroptera</td>
<td>192</td>
<td>27</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>III. Carnivora</td>
<td>320</td>
<td>50</td>
<td>17</td>
<td>33</td>
</tr>
<tr>
<td>IV. Marsupialia</td>
<td>67</td>
<td>0</td>
<td>0</td>
<td>67</td>
</tr>
<tr>
<td>V. Rodentia</td>
<td>295</td>
<td>35</td>
<td>12</td>
<td>23</td>
</tr>
<tr>
<td>VI. Edentata</td>
<td>23</td>
<td>0</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>VII. Pachydermata</td>
<td>30</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>VIII. Ruminantia</td>
<td>76</td>
<td>8</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>IX. Cetacea</td>
<td>76</td>
<td>28</td>
<td>10</td>
<td>18</td>
</tr>
</tbody>
</table>

**Total** 1343 156 58 92

We here see the relative number of European mammals placed according to their organization, in different groups or orders. We may remark that no animal is found in Europe belonging to the Marsupialia and Edentata, while of the Quadrumana and Pachydermata two species only inhabit our continent, one belonging to each order, the Barbary ape (mus apella) and the wild boar (Sus scrofa). The former is found among the precipices of the rock of Gibraltar, and thus enters into the geographical limits of Europe.

The domesticated quadrupeds occupy a much more important station among the animals of our continent than any of the wild species: under this head we shall mention the horse, ass, goat, sheep, ox, hog, dog, and cat, and in the more northern parts of Europe the rein-deer may be added.

No wild races of horses at present exist which have not descended from domesticated varieties; but it seems probable that they were formerly in Tartary, and more especially in other parts of Asia. From the former country it is conjectured that they were originally imported into the north and east of Europe; while in the southern and western parts of the continent they were probably derived from Barbary and Arabia; but this is of course mere conjecture, as we cannot name any time within historical limits when these animals were not spread over all or the greater part of Europe. The horses of Spain were celebrated in the time of the Romans, after which they were crossed with the Barbary and Arabian until the Moorish dynasty. They may be considered as the lightest and fleetest of the old European breeds, and the nearest approaching to the Arab; but they have fallen off greatly during the last century, little care being bestowed in keeping up the more noble breed. The best Spanish horses are generally about four feet six or eight inches high, and closely resemble the beautiful Arubians of Barbary called Barbos: those of Andalusia, Granada, and Extremadura are the best. The heaviest horses in Europe come from the shores of the North Sea, and the smallest from the north of Sweden and from Corsica. Those of Germany and Italy are of little note. Switzerland produces good draught horses, and those of Holland are noted for the same qualities. The French are useful and hardy, and well endowed with fatigue, though it is not possessed of the size and beauty which now characterize the English horses: the native breeds have been much improved lately by crossing with English stalesions. Greater attention is paid to the breeding of horses in England than in any other country except Arabia; but while the Arabs only endeavour to preserve their breed in its original purity, we have improved upon it by crossing with other varieties, till the English horses both in size and fleetness, and equal those in many instances in symmetry, though they are not quite their match in powers of endurance. The English horses have been divided into four principal classes—the racer, the hunter, the carriage-horse, and the dairy-horse.

The ass in Europe holds a very inferior place to the horses.

(4) Including the governments of Peru, Viáka, Kafra, Bimble, Panama, Saffid, Asturias, and part of Ossburg, 563,980 square miles.

(5) According to the Appendix of a decree in the Madrid Gazette of August, 1806.
It is generally an ill-used and neglected animal. Originally of Asiatic extraction, it does not accommodate itself so well to our climate as the horse; for it feels the effects of cold more, and degenerates in northern countries; a circumstance which partly accounts for the contempt in which it is held. In the southern parts of Europe it is a fine species, supposed to be native to those of Western Asia and Egypt. The Spanish and Maltese are the finest breeds of asses in Europe. One principal use of this animal is for the breeding of mules, which are extensively used in the mountainous parts of Southern Europe, generally for the purpose of transporting from those possessing the sureness of foot of the ass, with greater size and strength, they are found exceedingly useful.

Sheep and goats, though placed in distinct genera, are nearly allied, that the characters which distinguish them are very slight; and there are several races or species of wild sheep and goats nearly approximated.

It is not easy to trace the present domesticated varieties of either of them to any species still existing in a wild state, for both goats and sheep were among the earliest animals domesticated by man. Cuvier imagined that all the present varieties of the domestic goat have arisen from the Capra aegagrus, a wild species inhabiting the mountains of Persia, where it is called Paseng by the natives. He also states that the continuous series of intermediate species from this wild goat has been supposed that this variety, which is met with there in a wild state, might have been a hybrid between the common goat and the ibex. It seems probable that the goat preceded the sheep in domestication; at any rate it did so in Europe, generally supposed to have been domesticated before the oxen. The goat is a harder animal, and will live on the roughest fare, being an inhabitant of mountainous districts, where it is principally bred. The most numerous and finest varieties of domestic goats are in Asia. The Welsh breed is large, with fine horns, generally considered the best for meat production. In Spain there are long-haired hornless breeds, with upright ears. The utility of goat's milk is well known; and though the flesh of the adult animal is not much valued, that of the kid is very palatable; the horns and hair are used in different parts; and the skin is formed into leathers for making gloves, &c.

Sheep seem to have been originally derived from western Asia, whence they were imported into Africa, where they arrived at greater perfection than in their parent country. All the wild varieties of sheep have hair, and not wool: the change in the covering of the body seems to have arisen from the effects of cultivation and climate. The different kinds of domestic sheep are all supposed to have arisen either from the Argali (Ovis ammon), or the different races of O. musimon; the latter is still found wild in some of the islands of Europe, as Caunia, Sardinia, and Corsica. There seems formerly to have been a wild race of sheep in Great Britain, which was very large, with very large and beautiful horns; and the skin is formed into leathers for making gloves, &c.

The ox, which belongs to the largest tribe of ruminating animals, is eminently serviceable to man, though since the horse has come into such general use, oxen have been less esteemed. There are several races of these animals, of which the Cretan, 3. Wallachian; 4. Merino, or Spanish; 5. the English, of which there are many varieties. The most important among the continental races is the Merino, which differs from the others in color, and a double set of woolly hairs on the cheeks. The wool is of the finest quality for manufacturing cloth. This breed is extended over the greater part of Spain. But Great Britain possesses the most valuable race of sheep, taking every thing into consideration. There are several races of sheep in the island, which, in the breeding and fattening, are sent to the continent of Europe, but there is the wild breed of Scotorius, which is kept in Ireland, and is of the same breed as the Scotch blackface.
s-orted that eats in some places, near woods or forests, will stray away and return to a savage state, when they assume very much the characters and appearance of the wild cat. According to Bower's *History of Quadrupeds*, wild cats are found in the Southern States and in different parts of the Eastern States. The domestic cat is very useful in destroying vermin, as rats and mice, and is a favourite pet, though it is not capable of much attachment.

The reindeer, which is naturally wild in the north of Europe, becomes, when tamed by the Laplander, of the greatest value to him. It serves him for food, clothing, and as a beast of burden; by its organization it is famed for crossing the snowy wastes, without which this animal would be impassable: it will draw a heavy galloway, when the temperature is tolerable, go with amusing softness. The riches of a Laplander are estimated by the number of reindeer which he possesses; during the winter when the ground is covered with snow, and the ox and horse would make little headway, a full herd of this animal would be a present of great value.

A lichen (*Cladonia rangiferina*), which grows in the greatest abundance, and often covers the soil in stony places for miles, affording nourishment for vast herds of reindeer, which root for this vegetable under the snow like swine in a swamp, the roofs of whose houses have been made to shelter this animal in England, but hitherto they have not succeeded. The reindeer is not adapted to our climate, and does not seem likely to be of much use in any point of view even if the experiment should succeed.

The wild European mammalia at present met with is only 150, which includes 28 belonging to the whale tribe, and 8 species of polecats or sables, among which the morse or walrus (*Trichechus rosmarus*) is placed; these being deducted, the number of land animals is reduced to 125, of which very small number are the three other great continents: of these seventy are also found out of Europe, most of them being common to Asia; there only remain forty-four quadrupeds which are now peculiar to Europe.

We have already mentioned the only quadrupedal animal found within our limits, the Barbary ape, or magot, which, though now naturalized, is probably not an aboriginal inhabitant of Gibraltar.

Of the Giraffe there are fourteen species found in Europe, and most of which belong to the genus *Giraffa*, a small and harmless race of hogs. The most common and best known species is the *G. marinus*, the droller more of the English, which lives in caves, ruined buildings, church tons, and hither and holler trees, where it hibernates during the whole winter, snugly wrapped up in the wing membranes, and suspended by the hind feet. There are two or three, or perhaps more European species of the genus Rhinolophus, commonly called horse-ears, and which are the sources of Plethodon, which has been described as found in Europe. As many as sixteen have been enumerated by Jenkins as inhabitants of Britain.

Most of the Carnivora of Europe are very insignificant animals by the size of their congenerous of Asia and Africa. The only bear is the brown bear from the frozen regions south and limits of our continent are the bear, the wolf, and the lynx; but it seems probable that the lion was once met with in the south of Europe. Herodotus says that it was found in Greece between the rivers Nestus and Acheolus (c. 1250), and he mentions the existence of the genus of Xerus being annoyed by lions on its march from Arcadian to Thessalian [Artheus]. The fact of these animals having inhabited our continent is also confirmed by Aristotle, Pliny informs us he is merely copying other writers), and Plautius. The common bear is the only one of the two common brown bear (*Ursus arctos*), and the polar bear (*U. maritimus*): the former was once general over the whole continent, and is now found widely diffused in the most southern parts of the continent. The brown bear is the only one of the two which is found in the Alps and Pyrenees. It is a lonely animal, hibernating during the winter in the hollow of a tree or a cavern, where it remains till the spring without taking any sustenance. It is supposed to be nourished during that time by the fat which accumulates beneath the skin in great quantities in the summer. Cuvier describes a black bear peculiar to our continent, differing from that of America: however, as he never saw but one living specimen, and did not know its habitat, it was probably as rare a variety of the former species. The white bear is almost confined to the frozen regions south and rounding the north pole, but a solitary individual is occasion-

The birds of Europe are much more numerous than the mammalia. Above 900 species have been described as regular inhabitants of our continent, and a good many more are occasional visitors; but we must confine our notice to the more general and typical species. In the northern or arctic regions very few birds met with, and
most of them belong to the wading and swimming orders; to whose nourishment and increase the arctic solitudes are particularly congenial. Almost all these species are found also in the northern parts of Asia and America; and the largest proportion occur in southern latitudes, extending even to the shores of the Mediterranean. One of the most characteristic birds of arctic Europe is the great snowy owl (Strix nyctea), which preys chiefly on the ptarmigans and ground-squirrels frequenting these northern regions in great numbers. Two other formidable birds, the Falco rupicolus and Falco lagopus, both of which we proceed to warmer latitudes, and vegetation acquires a more decisive character, the number and species of birds subsisting on the produce of the earth and on insects greatly increase. Several woodpeckers are met with in the pine forests of Finland, Lapland, and among the higher mountains on the continent. The latter (A. imperialis) is chiefly found in the southern countries. Four species of vulture are met with on the Alps, two of which are found in the north of Africa and the western part of Asia, and another in Lapland, which is almost peculiar to the Alps, is a noble bird, partaking more of the characters of the true falcons, being very courageous and sanguinary; it is above four feet and a half long, from the tip of the bill to the extremity of the tail. There is another naturalist who says, 'the herring is a bird, and that even the ibex and chamois are sometimes killed by it.' The great-eared owl represents in central Europe the snowy species of the arctic regions; it is common in the German and Hungarian forests, and is sometimes, though rarely, met with, in the mountains of Sweden and Norway; and, being widely dispersed, the great bustard (Otis tarda) ranges from the western extremity of central Europe to the confines of Asia. The red grouse (Lagopus Scoticus) is the only species of rock grouse as yet known to the fauna of Europe, and seems to occupy an intermediate station between the centre of Europe and the confines of its polar extremity: the largest species is the famous rock of the woods (Tetrao urogallus), once an inhabitant of the Scottish forests. The rocky and uncultivated parts of Spain and Turkey inhabited by two species of rock grouse (Pterocles), of a genus different from those belonging to northern latitudes. On the shores of the Mediterranean there is a union of the ornithology of Europe, Africa, and Asia: the pelican, the spoonbill, the heron, and the stork, are met with and inhabited very plentifully. Few of the birds of Europe are remarkable for that brilliancy of plumage which is so splendid a characteristic of the birds of tropical climates, but this is, in many instances, more than compensated by their sweet music. In Scandinavia, a few species of the phalarope, and other small wading birds, are met with. The melody of the blackbird and thrush is too well known to require any eulogy. But Europe is by no means destitute of birds characterized by the beauty of their colours, though they are chiefly confined to its southern boundaries. Colonies of migratory birds winter with us, and some are very plentiful. The golden oriole, the European bee-eater, the hoopoe, and the roller are met with in abundance in the two Sicilies during the spring and autumnal migrations; and a modern author says the oriole comes from the West Indies, and is not in the postillers' shops in Naples and Palermo.

The reptiles of Europe are few, and generally harmless. The common viper is almost the only venomous serpent. Numerous little lizards are common in the houses in the southern parts of the continent, in Italy; but most of them are not peculiar to Europe, being also found on the opposite shores of the Mediterranean. An excellent edible species of turtle inhabits this sea, which resembles in appearance the logger-head of the West Indies, but is much more print in appearance. The most remarkable and curious reptile in Europe is the Protesus anguinus, which somewhat resembles a water lizard in shape, or an eel with very imperfect legs: it is found in the lake Zirknitz, in Carniola, and more often at the bottom of the grotto of the Maddalena at Adelsberg. It was conjectured by Sir H. Davy and others not to be a natural inhabitant of the surface of the globe, but to be forced up from a subterranean lake through some crevices in the rocks. It was also doubted whether this was a perfect animal or only a larva of some other, but it has been proved to be furnished with both gills and external lungs, and is a very rudi-
some fish is exceedingly destructive and voracious; it has been called the fresh-water shark. It is found in almost all the fresh waters in Europe, though more plentifully in the northern than the southern parts. It sometimes grows to a very large size.

EUROPE, BOTANY OF. This continent in its most southern limits exhibits a strong resemblance to the vegetation of Africa; its adjacent islands, Sicily, for example, along with the vine, grow, as in the more arid climate, the poisonous leafless Euphorbia Canariensis, an inhabitant of the Canaries, and its congener E. boissieriana, Euphorbia deltoidea, a fine globular shrub, is also much liked and grown with the latter plant (E. Acripia), and the Solanum sodomaeum of Egypt. The Pea, the Pomegranate, and the Peach (Punica Granatum), ripen their fruit abundantly; Agave Americana, the American aloe, darts up its gigantic flower-stem from the base of huge leaves; the Styrax, or sweet gale; the sugar-cane is cultivated at Avola; the cotton-plant (Gossypium herbaceum) yields product of the finest quality on the banks of the Simeto, while the great Italian reed (Arundo Donax) supplies the place of the bamboo, and furnishes the long stakes on which the vine is trained. Many parts of the south of Spain partake of this character. The Similar espers holds the bushes with its fragrant white clusters, maize and Guineas corn are common articles of cultivation, the Peucuan (Chichénitán) ripens its fruit in large clusters, and the Guatamala, the latter part of the Canaries are as common an open crop as in the fields of Peru. At Barcelona, in the neglected Botanical gardens, we find a few trees, the Sapum of Brazil (Cardiaca Sapuma), the Atteba of Peru, and some others from similar climates flourishing as if in their native air. In Portugal the laurel (Coriaria Lucida) seems almost identical with the Hixia of the Canaries, while the Cord trees at Lisbon unfold their nobly hanged blossoms within all the native South American air. In Italy it is even more the case; we extend as far as Nice in the form of the dwarf Palmetto; and the Victor's laurel (Laurus nobilis), a common evergreen, is a European representation of the laurels of the Canaries. Sicily is the olive; the fig. the olive, the orange, the grape, and maize, and find a climate congenial to their southern constitutions. Even in valleys the olive will not exist higher than 427° N., nor the vine produce good wine beyond 45°, except in a few sheltered places. About the northern limits of the olive, that is to say, in the parallel of the south of France, a marked change occurs in vegetation; most of the southern equinoctial forms of vegetation either disappear or become uncommon. The Quercus Cerris, so common in Italy and Turkey, is hardly found, the chestnut (Quercus ilex) (Ceratoilex and sessilifolia) supply its place. Cluster pines and Scotch firs (Pinus pinaster and sylvestris) and other species, especially Pinus halepensis, grow along the seacoast and occupy the position held by the more southern species in the interior, or the Cypresses (Thuya argenteum, Thuya cypreele, on the branches of which its peculiar mistletoe is sometimes met with, sweet chestnuts (Ostrya Veca), the narrow-leaved ash (Fraxinus oxycarpa), the flowering ash (Orma Eucarpia), mastich-trees, and Phyllireas increase the catalogue of trees, no vestige of which is to be traced much higher in a wild state. Still more to the north, where the vine begins to languish, its place is better occupied by broad plains of wheat and other corn; the hilly trees of England, elms, limes, oaks, alders, beeches, barnes, willows, and poplars are found everywhere, with rich pastures and verdant fields, unknown in the land of oranges and myrtles. At last, in the more northern districts of the continent, aspers (Populus tremula), bird-cherry (Prunus Padus), birches, down-trees, alderbush, junipers, spruce-firs, and pines are the principal trees that remain; barley and oats are the only corn-plants, but potatoes continue to be reared in the short cold summer.

Among plants less conspicuous than these and less popularly known, changes occur between the north and south of Europe not less striking to the eye of a botanist. In Sicily occurs a Staphyla, a form of vegetation so African, that Arabia Felix and Abyssinia are the nearest points were a parallel can be found. Mandrakes (مونغورا autocomplete) grow on the whole tracts in Tunisia and Sicily in autumn with their sky-blue flowers. Quantities of labiate plants, Boraginsee and gay Lilacées, Medecagos in abundant variety, an endless host of Cistus and Helianthemans Narissii, Tulips, many species of Ophrys, and numerous kinds of Gentiana and Cytisus mark a zone of vegetation corresponding very much with the vegetation of the atlas. To the north of this limit such plants either disappear or diminish essentially in number and variety; Alpinaceous and Brasiliaceous species become predominant, fungi swarm in the autumn, turnips and buckwheat (Polygonum acutyanum) are cultivated advantageously, as also are hemp, flax, hops, carrots, parsnips, common clover, beans, beets, and lucerne, as common field-crops. But in higher latitudes the predominant forms of herbaceous vegetation are numerous species of Ranunculus. Potentilla, Saxifraga, Arenaria, Primula, Mosses, and Lichens; and there also occur abundance of stunted or pigmy trailing shrubs, such as bilberries and whortleberries (Vaccinium Myrtillus and abelmosum), Salix herbacea, Arabus Alpina. Arabodaphne to the extent that they make up a monotonous carpet. These changes take place if we merely look to the districts of the plains. In Europe, as in other parts of the world, similar alterations in vegetation occur as we ascend into the atmosphere. In Sicily for instance, with an almost temperate vegetation in the valleys there is a transition to the middle forms of European vegetation midway on the mountain side, and then to the most northern flora at its summit, 3000 feet above the sea [Etna]; and so with other mountains as we advance to the south, till at last on Saba in, not a trace of vegetation can be discovered above the height of 3546 feet. EURYALE. [Sternleibee; Medusa] EURYBIA. [Medusa] EURYALIA. [Isopoda] EURYLAIMUS. [Musciplaidia] EURYMEDON. [Anatomia, vol. 1, p. 494.] EURYNYOME. A genus of brachyrurus crustaceans established by Dr. Leach, and forming the second genus of the Parthopeces of Milne Edwards, who remarks that it establishes the position between Parthenope or Lombrus and the other Orygiophyta. The general form of the body and aspect approximate these crustaceans to Parthenope, whilst the disposition of their external antennae is similar to the chironomids in Mosca. The carapace is nearly in the form of a triangle with a rounded base, and is strongly tuberculated and covered with asperities. The rostrum is horizontal, and divided into two triangular horns. The eyes are small: the orbits deep, their upper border very much elevated. The internal antennae are bent back longitudinally, and the first joint of the external antennae terminates at the internal angle of the orbit. The epistome is nearly squared, and the second joint of the external true feet strongly dilated, the external true accessory foot, and its median suture occupies the two last thoracic rings. The feet of the first pair are scarcely longer than the succeeding ones: in the male they are rather long, whilst in the female they are very short, but less than those of the second pair. The other six are very small. Abdomen consisting of seven articulations in both sexes.

Example, Eurynome aspera. Length about half an inch, colour lively red with bluish tints. Locality, the coast of Norvomoutier and the Channel (La Manche), at rather considerable depths. (Leach; Milne Edwards.) [Parthenope.]

Eurynome Aspera.
EUSIBIUS IUS. [LEPTOPHIDAE; MACROPIDAE.]

EUSTODYMID. [TROLLERS.]

EUSEBIIUS PAMPHILI, bishop of Cæsarea, in Palestine, the friend of Constantine, and one of the most distinguished among the earlier Christian writers, was born in Pamphylia towards the end of the reign of Gallienus, about the year a.d. 244. He preserved many traditions of Abraham, Isaac, Jacob, and Joseph, and acquired a great reputation for learning; it was said of him that he knew all that had been written before him. He became intimate with Pamphilus, bishop of Cæsarea, who introduced him into the councils of the year 309, and in memory of whose friendship he added to the volume of that of Pamphilus. In 313 he was himself raised to the see of Cæsarea, which he filled until his death. He attended the great council of Nicæa, a.d. 325, where he joined his brethren in denouncing the heresies, but he is said to have raised some objections to the word 'consubstantial with the Father' as applied to the Son, in the Nicæan creed. His intimacy with his namesake Eusebius, bishop of Nicomedia, who openly espoused the cause of Arius, led him also to favour the same; and to use his influence with the emperor for the purpose of reinstating Arius in his church, in defiance of the opposition of Athanasius. [Arius; Athanasius.]

The party to which he attached himself were called Eusebians, from their leader Eusebius of Nicomedia; and although a physician, with no special talent for oratory, he fought against Athanasius and his supporters, as they did not as yet openly advocate the objectionable tenets of Arius, who had himself apparently submitted to the decrees of the council of Nicæa. In 331 Eusebius attended a council at Antioch, where he joined with a small party in reproving the emperor for not reinstating Arius, with respect to the council, and an alleged desecration of some sacred vessels. Eusebius was deputed by the council to defend before Constantius the judgment which they had passed against Athanasius; but the emperor, on meeting him, found that he had united with the emperor to have Athanasian banished. The part which he took in this unfortunate controversy caused him to be stigmatized as an Arius, though it appears that he fully admitted the divinity of Christ; and all that his accusers can prove is, that he believed that there was a certain subordination among the persons of the Trinity. [Mesheim, Ecclesiastical History; and Schoell, History of Greek Literature, and the notes and references therein.]

Eusebius of Nicomedia, afterwards openly advocated the views of Eusebius of Cæsarea, under the reign of Constantius, especially at the council of Antioch, a.d. 341. Eusebius of Cæsarea died a.d. 340.

Eusebius was possessed of most extensive erudition, sacred as well as profane, and he was one of the warmest defenders of the Christian cause, in an Armenian M.B. used by him. In his works are—1. 'The Ecclesiastical History,' in ten books, from the advent of our Saviour to the defeat of Licinius by Constantine, a.d. 324. Eusebius has been styled the father of ecclesiastical history. He is silent on the subject of the Arian controversy, although he had begun at the time when he ended his narrative. Upon the whole, his history is written with considerable discrimination and impartiality. 2. 'De Preparations Evangelii,' in fifteen books. In this work he establishes, in an admirable manner, the connexion of the antient philosophers, the purest part of which, he maintains, was borrowed from the Jewish sacred writings. Among the writers whom he quotes, and whose works are now lost, are the Phænicians Sanchonithus and the Mysticus, of whom the accounts of the early fathers, and the speculations of the philosophers he draws arguments in favour of the truth of the Christian doctrines. This work of Eusebius was followed by another—3. 'De Demonstratione Evangelici,' in twenty books, of which only a few fragments that are measurementderive from the early fathers, and the speculations of the philosophers he draws arguments in favour of the truth of the Christian doctrines. This work of Eusebius was followed by another—4. 'Chronicle of the History,' which is known by fragments until it was lately discovered in Codex Constantinopolitanae, and published by Zorab and Mai at Milan in 1818. The work is divided into two books; the first, entitled 'Chronography,' contains brief separate sketches of the history of the various nations and states of the old world, from the Creation till the year 325 of our era. The second book consists of synchronical tables, with the names of the contemporary rulers of the various nations and the principal occurrences in the history of each, from the time of Abraham to the destruction of Jerusalem. It was made use of the works of Africanus, Josephus, and others. The discovery of the Armenian copy of Eusebius has been a valuable acquisition, as it serves to correct several errors and to supply many deficiencies in chronology and ancient history. The other Eusebius is the author of the native Armenian 'Ursinon Urbiun at Locorum Sacrum Scripturae.' 5. 'The Life of Constantine,' in four books, a piece of panegyric biography. 6. 'A Life of his friend Pamphilus, of which only a fragment remains; and of another writer.'

EUSTACHIAN TUBE. [R.A.]

EUSTACHIUS. Bartolomeo Eustachio, or Eustachius, was one of the distinguished band of Italian professors to whom we owe the restoration of anatomy and much of its recent progress in medical science. He was born in the early part of the sixteenth century at San Severino, in the marquisate of Ancona. Having accomplished himself in the classical and Arabic languages, he studied medicine at Rome, and afterwards settled there with a view to practise that art; but being a celebrated cardinal Borromeo, the interest he could throw himself into his person and his unusual talents were sufficient to elevate him to the chair of medicine in the Collegio della Sapienza; yet he never obtained any degree of professional success, and after a long struggle with the difficulties of poverty and sickness, died in great indigence about 1574.

It is not surprising that Eustachius should have failed as a practical physician, for the exclusive devotion with which he pursued his favourite study must have left him little time for the cultivation of the lucrative branch of his art; but the complete failure as a teacher, of a man of so much genius and enthusiasm, is remarkable. It may be attributed perhaps to the ascendancy of the rival school of Padus, supported by the wealth of Venices, and illustrated by the great name of Vesalius and his successors. He may be due in part to a defective temper, of which some indications may be observed in his writings, and to the jealousy with which he concealed his discoveries. Eustachius published little in his lifetime, though he lived long and laboured much; yet his name is akin, and in many respects his, and composed when anatomy was yet an infant science, are of high authority even at the present day, and bear witness to the accuracy and extent of his researches. They are all in Latin, and are nearly all collected in his 'Opuscula,' published by his son, in 4to. He published himself, and again by Boerhaave, Leyden, 1707, in 8vo. He also published an edition, with annotations, of Erhart's 'Lexicon Hippocraticum.' His principal work, 'On the Deputed Point of Anatomy,' upon the cavity in the back of the tuba leading from the ear-drum to the throat, and a certain valvular membrane in the heart which bear his name are among the former.

EUSTATHIUS, archbishop of Thessalonica in the latter part of the twelfth century, was one of the most learned scholiasts of his age. He wrote a Commentary upon the 'Iliad' and the 'Odyssey,' which is a mine of antient erudition, and contains extracts from the older commentators, such as Apollonius, Aelianus, Demo-
aethenes of Thrace, Porphyrius, and others. It was first printed at Rome in the edition of Homer, 4 vols. fol., 1542-48; the latest edition is that of Leipzig, 1827. Eustathius wrote likewise a Commentary on Dionysius Periegetes, or the Geographer, which was published by Robert Estienne, 1st ed., 1514, and was a companion to the latter in its fortunate Parthian campaign. He is believed to have been of senatorial rank. He is known as the author of a compendium of Roman history, in ten books, from the foundation of the city down to the fall of Carthage in 146 B.C., and has not a little been the subject of criticism and controversy. The first edition is said to be that of Harveykamp, Leyden, 1729, 12mo, improved by Verselijk, Leyden, 1762, 2 vols. 8vo.

EUTYCHIANS, a sect of Christians which began in Ethiopia, called by Eutyches, its reputed founder, though the opinions attributed to him are said to have existed before (de Eutychianismo ante Eutychen, by Christ. Aug. Selig, and also Assemani, Bibliotheca Orientals, tom. i., p. 219), was a monk who lived near Constantinople, and was one of the more important of the hereticians of the times. He was already advanced in years when he came out of his retirement, A.D. 448, in order to oppose the Nestorians, who were accused of teaching 'that the divine nature was not incarnate in, but only attendant on, Jesus, being superhuman nature,' a doctrine which was at that time in the ascendant, and which, as such, might be regarded as amounting to a denial of the divinity of Christ. In his zeal for opposing the error ascribed to the Nestorians, Eutyches ran into the opposite extreme of saying that in Jesus there was 'only one nature,' 'one Word,' 'one human nature,' having been absorbed in a manner by his divine nature. Eusebius, bishop of Dorylea, who had already opposed the Nestorians, denounced Eutyches before a council assembled at Constantinople by Flavianus, bishop of that city. That assembly condemned Eutyches, who was cast out and banished, and his name was added to the list of heretics. In the year 454, he was summoned for the council of Ephesus the name of 'a meeting of robbers.' Flavianus appealed to Leo the Great, bishop of Rome, who, in his answer, condemned the doctrine of Eutyches, but could not obtain of Theodosius the convocation of a general council. After the death of Theodosius, his successor, Marcianus, convoked a council at Chalcedon, A.D. 431, which is reckoned as the fourth ecumenical council of the Church, and which the pope's legates attended. By this assembly the acts of the council of Ephesus were confirmed, and the doctrine of Eutyches was condemned, and he, who had already been banished by the emperor, was again condemned, and deprived of his ecclesiastical office. The doctrine was at the same time expounded, that 'in Christ two distinct natures are united in one person, and are not merged into one substance,' like Proclus and others, delivered his views in this way: and like them he furnishes some valuable contributions to the history of mathematical science amongst the Greeks.

The commentaries of Eutocius on the works of Archimedes and Apollonius are the only works by which he is known to modern readers. His commentaries on Apollonius were published in Halley's Oxford edition of the works of Archimedes, 1710; and those on Archimedes in various works, from the Basil, 1544, to that of Oxford, 1792.

Of the commentaries of Eutocius, those on the treatise of Archimedes 'On the Sphere and Cylinder' are most valued; and chiefly for his account of the various modes of solving the Delian problem of the Duplication of the Cube. All of them, however, though of great importance and value, are not without a certain modification, or mixture of opinions, which caused the sect to be subdivided under various names.
all however comprehended under the general name of Monophysites, or believers in one nature. (Asennani, 'de Monophysitis,' at the beginning of vol. ii. of his Bibliotheca Magica...'). Turgot's arguments in favour of that doctrine in the same vol., pp. 288,9.) In the sixth century a fresh impulse was given to the Eutychian doctrine by one Jacob, a monk, surnamed Baradus, who reconciled the various divisions of the Monophysites throughout the East, and spread their tenets through Syria, Armenia, Mesopotamia, and Egypt, found supporters among several prelates (among others in the bishop of Alexandria), and died himself bishop of Edessa, A.D. 586. He was considered as the second founder of the Monophysites, who assumed from Constantine's heresy of heartfelt bitterness to him—since Arsenianism they still constitute a very numerous church, equally separate from the Greek, the Roman or Latin, and the Nestorian churches. The Armenians and the Copts are Jacobites, and so are likewise many Syrian Christians in contradistinction to those Melchites, who belong to the Greek church. Jacobite congregations are found in Mesopotamia.

The Monothelites who appeared in the seventh century have been considered as an offshoot of the Eutychians or Monophysites, though they pretended to be quite unconcerned with them. They admitted the two natures in Christ, explaining that after the union of the two into one person there was in him only one will and one operation. This was an attempt to reconcile the Monophysites with the orthodox church, and it succeeded for a time. It was approved by him, of his Monophysite prelates, and even by Pope Honorius I., in two epistles to Sergius, patriarch of Constantinople, which are found in the Acts of the Councils. But the successors of Honorius condemned the Monothelites, and in Martin I., in a bull of excommunication, A.D. 649, signed by Constantine the Younger, in opposition to the Emperor Constans, who protected them) to the devil and his angels. Constans, indignant at this, caused his exarch in Italy to arrest Martin, and send him prisoner to the Chersonese.

At last, under Constantine, who succeeded Constans, the council, held devoted two years in Mayence, A.D. 686, condemned the Monothelites, and with them Pope Honorius himself. (Mosheim, 'The Acts of the Councils; and Bossuet, in his 'Defence of the Declaration of the Gallican Clergy,' 1692.)

EVA’GRIA. [Medusa.] EVA’GRIUS. Born, 282, or 283, at Antioch, where he acquired his early education. He was afterwards appointed courtier to his father, who was a clergyman in that city, possessed considered theological attainments, but was prevented by ill health from acting as preceptor to his sons. Johannes, therefore, the second and most gifted of the three, was shortly after his father's death (1744) sent to Slesvig, where his tutor left him entirely to his own choice of books for his leisure reading. Among these were translations of 'Robinson Crusoe' and 'Tom Jones,' the former of which he so captivated that he proposed its hero as a paragon beneath the beautiful roof of the latter that the Danish poet breathed his last on the 17th March, 1781, after being confined during two years to his bed or arm-chair, and almost deprived of the use of his limbs. The two poets may further be contrasted with each other in the high moral tone of their writings, vividness of conception, and harmony of expression.

EVANGELIST is the Greek appellation Evangelistos (ευαγγελιστης, from ευαγγελιστης), which signified a messenger of any good news, as in Isaiah XXVII. 37, 38, and elsewhere. VOL. X.—O
EVANGE LION.

EVANGELION. [LENTARY THEORY]

EVELYN, JOHN, author of Sylva; "Memoirs," &c., was the second son of Richard Evelyn, Esq., of Wotton, near St. Albans, and was born at that place October 31, 1620. He received his education at Lewes free school and Balliol College, Oxford. In 1641 he went abroad, and served for a short time as a volunteer in Flanders. Instead of taking arms in the royal cause, as his father and brothers would have inclined him, he went abroad a second time in 1644, with the king's permission, and spent, with one interval, the next seven years on the continent, diligently employed in studying theology, philosophy, cultivating his taste in the fine arts, and acquainting himself with such particulars of manners, trade, and manufacture as were most worthy of notice. In June, 1647, he married the daughter of Sir Richard Browne, the royalist ambassador at Paris, and in 1648 he was called to the bar, sitting as a solicitor in the Court, near Deptford, where he fixed his abode on returning to England in 1652. He lived in privacy and study till the Restoration; after which, being much esteemed by the king and of some weight by family, fortune, and character, he was called upon to make a return for his public services, and engaged in many capacities in the public service. He was appointed a commissioner to take care of the sick and wounded, on the Dutch war breaking out in 1664, commissioner for the re-building St. Paul's, a member of the Board of Trade on its establishment, the first auditor of the Royal Library, and continued through life a diligent contributor to its "Transactions." His most favourite pursuits were horticulture and planting, upon which he wrote a number of treatises, which are collected at the end of the fifth edition of Sylva, and entitled "A Discourse on Forest-trees and the Propagation of Timber in his Majesty's Dominions," first published in 1664. The object of this, the best known and chief of Evelyn's works, was to en-courage planting, both as a matter of national interest and of private advantage. It sold largely then, as Evelyn himself said, had no small effect. In the same year he published the first "Gardener's Almanack," containing directions for the employment of each month. This was dedicated to Sir Christopher Wren, and drew forth one of his best pieces, entitled "The Garden's Almanack." Mr. Evelyn's works on the fine arts are: "Sculpture," 1662. a history of the art of engraving, in which the first account is given of Prince Rupert's new method of mezzotint engraving; "Parallel of Ancient and Modern Architecture," 1667. A Memorial of theAnti-papists above Me- dials," 1672. All these, though long superseded, were numer- ously extolled, and were in fact valuable additions to the then existing stock of literature.

By the death of his brother, in October, 1699, Mr. Evelyn succeeded to the family estate at Wotton, where he died, February 27, 1706, full of honour as of years. He was a diligent and successful labourer, in that age of discovery, in the subordinate departments of science; a valuable praiser, as he used to call himself, in the service of the Royal Society. His mind being thus well formed for the character of a gentleman. A friend of the learned and the good, devoid of jealousy, pious, benevolent, intellectual, delighting in the occupations of his station, yet always ready to quit them for the greater service; he was respected even by the court pro- fessionals to whom he was a daily preceptor. To the present age he is best known by his Memoirs, a journal extending nearly from his childhood to his death, which contains much curious matter relative to his travels, and to the manners and history, political and scientific, of the age. Many of his letters, and that of Lord Clarendon, and of Charles I. with Secretary Nicholas, and Clarendon with Sir R. EVERGEM, a town and commune of East Flanders, in the district of Ghent, about three miles north of the city of Ghent, in 51° 47' N. lat. and 3° 44' E. long. The canal of Sint-Sebaldus, which connects Ghent with the Scheldt, passes through Evergem, the little river Caele runs on the south of the town, on the south-west is the river Ghent, and on the west the Lieve, which rises in the north-east quarter of West Flanders and joins the Bruges canal near Evergem. The population of the town is 7590; it contains a church, a few public buildings, a cotton-printing and dyeing, breweries, distilleries, and a salt-works; in the commune there are also a few weaving factories and give employment to many of the inhabitants. In 1832 the town contained a communal and six private schools: in the former 57 boys and 49 girls were taught, and in the latter 105 boys and 64 girls. (Vandervenelen's Dictionnaire Geographique de la Province de la Flandre Orientale.)

EVERGREENS, in horticulture, are plants which shed their old leaves in the spring or summer after the new foliage has grown, and which consequently are verdant through all the winter season as well as the summer, and in some cases, the lauré, the ilex, and many others. They form a considerable part of the shrubs commonly cultivated in gardens, and are beautiful at all seasons of the year. The principal circumstances in which evergreens physiologically differ from other plants are the hardness of their cuticle, the thickness of the parenchyma of their leaves, and the small number of breathing pores formed on the surface of those organs. These peculiarities, taken together, enable the leaves of evergreens to withstand heat with more success than other plants, but are often not sufficiently to sustain them against such influences in excess. Hence we find them comparatively uncommon in those parts of the continent where the summers are hot and dry, and most flourishing shrubs and trees at once. This is rendered more intelligible by a consideration of the actions borne by their evaporating pores, or stomates, and those of deciduous plants. As far as this subject has been investigated, it appears that their leaves are usually altogether destitute of such organs on the upper side, and that those of the lower are mostly fewer in number and much less active than in deciduous plants.

The greater part of evergreens are raised from seed; some are propagated by cuttings or layers, and the vari- ous foliage and other hedges by artificial budding and grafting. The soil in which they succeed best differs with the kind: American evergreens, such as rhododendrons, kalmias, &c., grow best in equal quantities of peat earth, sand, and vegetable mould; European sorts grow in their greatest vigour in a fresh, loamy border, but thrive well in any sort of soil.

The operation of transplanting evergreens may be performed with success at almost all seasons of the year. Midsummer planting has even been recommended; but however is a work of necessity rather than propriety, because its operations are entirely upon the nature of the weather after the operation; if it be cold and wet for some time, they may succeed; but if, on the contrary, it be hot and dry, they are sure to suffer: for this reason, if the practice may be adopted, it is not to be recommended. The com- mercial bulk however has been known occasionally when planted at this season, either for hedges or as single plants. The hollies in one very remarkable case, were carefully dug up in the cool of the evening and removed to large trenches
which had been prepared for their reception; a quantity of water was then poured upon the roots, and the soil thrown upon the top of it, which of course was carried down and deeply intermixed in the pots, thus rendering the plants perfectly firm. In the instance alluded to the weather was very favourable for a considerable period after the operation was performed.

Autumn and spring are much better seasons for work of this kind; the plants then suffer from the intense heat of the sun, and are more likely to be benefited by dews and frequent rains.

But, according to the most experienced cultivators, the winter months (that is, from October to February) are decidedly the best time for transplanting the tenderer sorts of evergreens, until the middle of January. Mr. McNab, who is one of the greatest authorities upon this subject, says,—I have planted evergreens at all seasons of the year with nearly equal success, except from the middle of June to the middle of August, and even during this period I have planted some; but unless the weather is very full and moist, it is difficult to prevent the plants suffering considerably, and in many cases it is years before they recover. Although, however, I have planted evergreens ten months out of the twelve with little difference of success, yet one season has a preference over the others with me, and when there is the power of choice I would recommend late in autumn, winter, or early in spring; that is, any time from the middle of October to the middle of February; and, in general, the beginning of this period is the best. No rain is requisite till the middle of December; always providing that the weather and the ground are favourable; that is, supposing there is no frost, no dry wind, nor much sunshine, and that the ground is not too much saturated with wet, either from rain or from the melting of snow. In the above circumstances the principal things to be attended to in planting evergreens is to fix on a dull day for winter planting, and a moist day for spring and autumn planting.

It is of great importance to keep a number of the more tender sorts of evergreens in pots, in order to send them to a distance if required; and if they are to be transplanted at home their roots are not so liable to be injured as when they are dug from the ground. The more tender species of the following genera should be treated in this way:—Arbutus, Cercis, Juniperus, Erica, Laurelia, Magnolia, Phyllirea, Pinus, Quercus, Rhamnus, Thuja, &c.

In lifting evergreens particular care should be taken of the young roots, as upon their preservation the success of the operation, in a great measure, depends; especially if the tree has arrived at any unusual size. Some evergreens are planted like other plants; but the following precautions should be observed in all cases where individuals of any great size are the subject of the operation.

When the plant has been lowered into the hole dug for it, the roots may be thrown out of the loosen and lifted (not trod in), and a basin made to hold a quantity of water, which must be filled several times until the whole is completely saturated; this will convey the particles of soil down to the roots of the plant, and render it much more firm than any other method. By this treatment we have seen plantations of evergreens formed without a single failure, which, when finished, appeared to have been growing for many years.

It matters little what size the plants have attained, if they can only be lifted without injuring the small fibres of the roots: they have been moved, from ten to twenty feet high and otherwise large in proportion, with complete success. Should, however, the roots be unavoidably injured in the planting, the branches must be closely pruned and shortened in proportion; so that when they begin to draw upon the roots for support they may not require more nourishment than the latter can supply.

Considering the great importance of evergreens in a climate like that of Great Britain, where they flourish in such univalved beauty, it is very curious how so much nourishment is acquired by the bleek exposed situations, they cannot be too extensively planted. The following lists will furnish information as to the principal kinds to be procured in the nurseries:

I. Evergreens whose beauty depends exclusively upon their foliage.

Trees.

Abies. All the species, where the soil is light enough to suit them, particularly A. Douglasii, excelsa, the Norway Spruce. *Dowdara, the Cedar of India, Cedrus, the Cedar of Lebanon, and *Larix, the common Larch, together with *balsamea, the Balm of Gilead, *picea, the Silver fir, and *Picea, the Silver fir of the Himalaya mountains. *Anis. The Cedar of Lebanon will grow well in a swamp.

Araucaria imbricata, the glory of the mountains south of Chili: it will hardly succeed north of the midland counties.

Cunninghamia lanceolata, the Chinese fir; very handsome, but only suited to the south of England.

* Cupressus sempervirens, the common cypress, and C. horizontalis, the spreading cypress, are quite hardy: and the latter, if to be preserved, forms a tree much more ornamental than the other with its formal shape. But the nurserymen almost always sell a slight variety of C. sempervirens for it.

*Cupressus tuscana, the Cedar of Goa, is a beautiful tree, but only suits the climate of southern Europe.

Hedera 

Hex Aquifolium, common Holly: the nurseries contain endless varieties of it, both green and variegated. The latter are not to be compared with the others for beautiful effect.

Juniperus. The J. excelsa forms a fine tree: *J. Virginianna, the common Virginian Cedar, is less handsome: but both are quite hardy. [Juniperus.]

Pinus. All the species where the soil is light and sterile enough, with that proportion of decayed unfermented vegetable matter; as, for instance, as appears in the drift of old oak, of which there are many varieties; austriaca, of which the Loenbecke and the Fulham oaks are possibly domesticated forms; Turner, Suher, the cork-tree, and grammunis, the Belotta, or Spanish oak with sweet acorns, are all fine species equally handsome when young as bushes, and when old as trees. [Quercus.]

Talusus baccata, the common Yew, and fusticita, the Irish Yew.

Thuja occidentalis, the American, and orientalis, the Chinese Arbor Vitalis.

III. SHRUBS OR BUSHES.

Aristolochia. Maquii, a Chiian broad-leaved shrub, quite hardy.

Abies Canicrassiana, a curious dwarf fir, only suited to plant singly upon grass.

Cunninghamia lanceolata, the Chinese fir, rarely grows beyond the size of a bush.

Arbutus Andrachne, the Oriental Strawberry tree, and hybrida.

Aucuba Japonica, a Japanese spotted-leaved bush.

Buxus sempervirens, the true box; will succeed in light, especially sandy, sterile soil; prefers chalky downs; will not thrive in stiff wet soil.

Juniperus communis, the common juniper; Suecica, the Swedish juniper, much less handsome; Sabinna, the Savin bush, excellent for undergrowth and ornamental as a single bush upon lawns.

Laurus nobilis, the sweet bay, quite hardy, though a native of the warm south; its aromatic leaves employed in confectionary, pickles, &c.

Ligustrum ovalifolium, the common privet; excellent for hedges and for undergrowth, especially the evergreen variety.

Phillyrea. Every variety of this valuable genus should be cultivated; olea and latifolia as large species, media as a middle-sized one, and angustifolia as a graceful bush. Pinus junilto or Magnus, the alpine pine tree.

Rhamnus alaternus, of which there are several varieties, and R. Clusi; hardy bushes, which bear pruning or cutting down to the ground remarkably well.

IV. TWI NERS.

Hedera. Many varieties of the common ivy: Caneiriensus, the Irish ivy; and chrysospilos, the golden berried.

II. Evergreens whose flowers have a conspicuous epiphora.

O 2
Trees.

Andromeda arborea requires peat; grows 40 feet high in North America.
Arnica, the common strawberry tree; of this there is a beautiful variety with deep red flowers, and another with double flowers, much less handsome than either.
Artemisia afra grows without protection near Edinburgh; it is not, however, a native of the United Kingdom, nor are several other New Holland species, which will flourish without protection in the southern counties.

Eucalyptus teretifolia, palmerina, exist in the open air near Edinburgh: they and other species will thrive in the Scilly Isles and West of England.

Ligustrum lucidum, the wax tree, a Japanese plant.
Magnolia grandiflora, with many varieties; they are exceedingly hardy enough to live in this country away from the shelter of a wall, except quite in the south; un-protected specimens exist, however, near Edinburgh.

Shrubs or Bushes.

Andromeda. The handsomest species are A. Catesbaei, angustifolia, Maritima, which is rather tender, palmerina, speciosa, and Rendeliana. Require peat soil.

Arenaria spinosa, a trailing plant.

Annyrrhinum Lyci, a beautiful little American bush, requiring peat.

Berberis aquifolium, fuscocaralis, repens, Asiatica, aristata. [An old name.] Buedsch. (Cuscuta) fruticosa stands the sea-breeze well upon chalky cliffs.

Cytisus, all the species. They are quite hardy if planted where wet cannot lodge in winter, and exposed to the full heat of the sun in summer.

Colletia spinosa.

Cotoneaster microphylla and rotenoides, small bushes.

Cyrtisus scoparius, common broom; there is a double variety; albus, the Portugal white broom.

Daphne All handsome, the following the most so: Laureola, the spurge laurel, grows well beneath trees; pontica, with pale green fragrant flowers; and Cneorosum, or Garland flower, one of the most lovely and sweetly perfumed plants in the world, but not cultivated except in a dry peaty soil and a well ventilated situation; late spring frosts injure it so much that it is not worth cultivating in valleys.

Daucua dependens, and some others.

Eriogonum, an old name.

Erica Australs, cornea, stricta, Mediterranea, codonodes. [Erica.]

Eschallonium rubra, illinna, montevicensis, handsome South American shrubs. Bees take great delight in the blossoms of the last; the second species smells very strongly of the fungus when in flower.

Galga elliptica, with long pendulous catkins of a yellowish green colour.

Genista tinctoria, the dyer’s broom, with a few others.

Helianthemum of all kinds, to cover rockwork, or ground where the wet does not lodge in winter.

Kalmia latifolia, angustifolia, especially the first; require peat.

Lavandula spica and latifolia, common lavender.

Lobelia latifolia, or Labrador tea, and pulsatilla; low bushes required, and much water is required.

Moziesia pultifolia or Irish heath; there is a white variety.

Myrtus communis, and its varieties; lives out of doors south of London.

Pireus Laurocerasus, the common laurel; lustiana, the rough laurel.

Pittosporum Tobira, quite hardly south of London; sweet-scented.

Rosmarinus officinalis, common rosemary.

Rhus radicans. Numerous varieties are to be procured; the wild monte Cayman, marmham, and caudate are the most robust; hybridium obtained between the Indian and American species is less hardy; farrugineum and hispidum, dwarf alpine species; campanulatum, a North Indian species.

Salvia farinacea, Spanish broom; and acquifolium, a Turkish broom.

Tiburonius. Of the Laurustinus, one of the prettiest of all evergreens, there are three species; V. Tinus, the common Laurustinus, the hardiest; V. lucidum, with shining leaves, rather larger and more delicate; V. strictum, with upright shoots, more hairy, and the least hardy of the three.

Ulex europaeus, the common furze; a double variety, which is particularly handsome; and U. strictus, the Irish furze, a smaller species, which does not flower abundantly.

Ursus. Several species quite hardy. They only require to be grown in places where water does not stagnate in winter; V. glabra, filamentosa, Dracena, fimbriata, and superbis, are the handsomest species.

Twiners or Climbers.

Rhylosia cappelrotata, with dull brownish-red trumpet-shaped flowers; rather tender.

Cephalophyllum grumatum, grumatum, japonicum, sempervirens; all handsome honeysuckles.

Jasminum revolutum and officinale, the common white jasmine.

Ivora major and minor, the larger and smaller periwinkle; trailers.

Everlasting Flowers. This name is popularly given to certain plants whose flowers have the property of retaining their brightness and colour for many months after being gathered. They owe this quality to a hardiness of their tissue, which has even a degree of moisture to part with, and which, consequently, does not collapse or decay in the progress of acquiring perfect dryness. It is generally in the scale of the involution of composite plants or in the braec of others that this property resides. Those who wish to make such plants will easily find the following in the gardens of this country.

Hardy annuals. Helichrysum bracteatum (yellow), Xeranthemum annuum (purple or white), Helianthus annuus (white), and Saponaria ocis (pink), tripolirica and mulitvaria (white), and Asclepias tuberosa (white). Gypsophila steevens and anemone (purple).

Tender annuals. Rhodonthe Manuslesis (red), Mornita nuda (yellow), Gomphrena globosa (purple).

Greenhouse shrubs or herbaevas plants; Astelia excisa (cinnamon), Helichrysum argenteum (white), ericoside (pink), cromacte, prostratum, and others (purple).

EVESSHAM, a borough and market-town, having separate jurisdiction, locally situated in the hundred of Blacken- ham, in the county of Worcestershire, 15 miles north-east of Worcester, and 96 north-west-by-west from London. Even- shaw was formerly called 'Evesham,' or 'Evesholme,' an appellation derived from 'Eves,' a surname of Egwin bishop of Wet, who was supersedeously supposed to have been bound to an abbey with the Virgin Mary on the spot. It owes its importance to an abbey that was founded here in 709, and dedicated to the Virgin.

The abbots and the convent received numerous grants of land, as well as ecclesiastical and temporal privileges from various kings, and other benefactors. The last abbey, one was Clement Liebfeld, who built the isolated tower, now almost the only relic of this once celebrated abbey. This tower, called the abbots’ tower, is a beautiful specimen of the pointed architecture of the period immediately following the Norman. Information respecting the dismantled barton, adorned with windows having rich open mouldings, and surrounded by open embattled parapets and eight pinnacles. It was originally intended for a campanile, to which purpose it was converted in 1745. The tower is 110 feet in height, and is 22 feet square at the base.

A battle was fought near Evesham on the 4th of August, 1265, between Prince Edward (afterwards Edward I.) and Simon Montfort, earl of Leicester. Leicester placed King Henry III., whom he had made prisoner, in the van of his forces, who might have been killed by his son’s troops, who were fighting for his release. However, the king was recognised nearly at the first onset by the prince, who rushed through the thickest of the battle to the assistance of his father, and soon placed him in safety. Leicester’s defeat was complete, and he himself, as well as his son, fell in the field of battle.

The corporation claim prescriptive rights and privileges, but they were all confirmed by charter in the 3rd year of the reign of James I. They had the power of trying and a determining capital offences, except high treason; and as late as 1740 a woman was burnt for petty treason. A court of record is held every Tuesday for the recovery of debts to 100l.; a court of session is also held for the borough on the Friday after the county quarter-sessions. The borough returned two members to parliament in the 23rd of
Edward I, and again in the reign of James I, since which time it has continued to do so. In 1831 there were 3991
inhabitants: the number registered is 339. Evesham is one of the few municipal boroughs the boundaries of which
were not altered by the Reform and Municipal Corporation
Acts of 1832, its position being fixed by that of the
river Avon, over which is a stone bridge, which connects
with the parish of Benthworth, which is within the boundaries
of the borough. The two principal streets are wide and
clean, and the town has a cheerful appearance. The Vale
of Evesham is famous for the richness of its soil, and large
portions of land near the town are laid out in gardens, which
supply the neighbouring towns and villages with vegetables
and fruit. There are also some corn-mills, and a linseed-oil
call. The market-day is Monday. Fairs are held on the
second Thursday in August, nothing is sold on that
market-day, and the 21st of September: the latter is famous
for cattle and horses.

The borough comprises the parishes of All-Saints, St.
Lawrence, and Benthworth, in the archdeaconry and diocese
of Worcester. The living of All-Saints is a vicarage, which,
with the curacy of St. Lawrence, is of the clear annual value
of £20l. The church is said to have formed part of the
abbey; it is in the later style of English architecture, and
has a tower, spire, and a handsome porch. The church of St.
Lawrence is a hospital church, and contains some remains
of the original Gothic. In the south aisle is the chapel of
Clement Lichfield; it is only 18 feet by 16, but is (as Tindal says) of such elegance and delicacy of
construction as a verbal description would but very imperfectly
convey the idea of. All-Saints is a very ancient
parish, and some other endowments. At Benthworth there is
a school, founded by John Deacle in 1709, for poor children
of that parish. There are also several donations to the
poor, and for apprenticing children.

In the neighbourhood is a castle belonging to the
Beauchamp family, but it was destroyed by Abbot William
D’Andervill in 1169, and the site was converted into a
burring-ground, for which we believe it has continued to be
used down to the present day. (For a full account of the
abbeys and antiquities, see Tindal’s History of Evesham.)

EVIDENCE (Judicial). Evidence, in jurisprudence,
denotes the means by which facts are ascertained for juridic
purposes. The practical importance of the subject is obvious
from this definition; and it has accordingly not only
received the attention of the learned, but has formed a
prominent part of the systems of jurisprudence of most
civilised countries, though the particular rules of evidence
adopted have varied according to the constitution of the
tribunal by which judicial truth is to be ascertained.

This subject is sufficiently treated in judicial
purposes by professional judges, contains (so far as we
now know) few regulations respecting evidence, the whole
subject being comprised in one short chapter of the Digest,
which lays down several positive rules for the exclusion of
witneses within prescribed degrees of consanguinity to the
litigant parties. In the common law of England, where
facts are ascertained by juries, the body of rules and
restitutions denominated the law of evidence has been
gradually established and elaborated, but in the
very same degree as the progress of the
laws, in the infancy of the trial by jury, as
we understand that institution, the only positive rules
respecting evidence were those which related to the two
witneses in treason required by statutes passed in the
reign of Edward the Second, the Murder Act, which
imposed restrictions upon the admission of testimony
seems to show that, in this country at least, the tendency
of civilization has been to contract and not to enlarge (as
some writers have supposed) the rules of judicial evidence.
The same tendency is as clearly discernible as in any other
capacity of the law. The State Trials sufficiently prove that it was the practice
formerly to admit without scruple or question every
species of testimony; whereas the present law of evidence
is almost wholly composed of restrictive rules.

The principle, which forms the basis of the whole
of the English law of evidence (which are the same at equity
as at common law, and in criminal and civil proceedings) it is
proposed—1. To enumerate the limitations which it pre-
scribes to the competency of witnesses; 2. To give a brief
summary of the principal rules by which the reception
of oral evidence is governed; and 3. To state the principal
rules which relate to written evidence.

1. Of the competency of witnesses.—The general rule
of English law upon this subject is, that all persons may be
cried as witnesses in courts of justice, and that it is
standing to comprehend the subject of their testimony, and
sufficient religious principle to ensure a right sense of
the obligation of an oath to speak the truth. Thus very young
children are admissible as witnesses, if they have a
competent knowledge of the nature of an oath, and a religious
apprehension of the consequences of falsehood. All testi-
mony, by the law of England, must be given under the
sanction of an oath; but the form of the oath is immaterial,
and there can be nothing in it which raises a doubt in the
mind of the witness that in swearing to the truth of what
he states he is appealing to a Divine being able to punish
him for falsehood.

To the general rule of the admissibility of all persons
of sufficient intellect and religious belief there are several im-
portant exceptions. In the first place, a husband cannot
be a witness for or against his wife, nor a wife for or against
her husband; a rule which is said to arise from the identity
of interest subsisting in such a connexion. However, in
divorced upon petition, the husband may be examined by
omitted by either of these parties upon the other, such testi-
mimony is admitted upon the ground of necessity. Secondly,
in actions at the common law, a party to the suit cannot
be examined as a witness; but in courts of equity defendants
may be examined, and the cause may be quashed, if the
witnesses upon which the plaintiff depends be omitted by
omitted for that purpose; and in those courts, if a plaintiff
consents to be examined as a witness his evidence may be
admitted. Thirdly, a person cannot be a witness who has
been convicted of treason or felony, or of any offence which
would be an infamous crime, such as perjury or
which is liable to a punishment which the law considers
infamous, as whipping, branding, or the pillory. This
principle of exclusion, which is derived from the Roman
law (Digest, lib. iv., tit. De Testibus), is now of little practical
importance, as statute laws have substituted a different
enactment in felonies, or the actual endurance of the punish-
ment in felony or misdemeanor, excepting perjury or
suboration of perjury, shall have the effect of restoring
the competency of the party as a witness. Fourthly, the
law of England excludes the evidence of those who have a
direct interest in the result of the proceedings in which
they are called to testify. The indefinite state of the rule
respecting the nature of the disqualifying interest has led to
much perplexity in its practical application.

The principle of exclusion is illustrated by a great variety of cases, is, that, in order to disqualify a witness on
the ground of interest, he must either be directly and imme-
diately benefited by a result of the proceeding favourable to
him, or a party to the suit who is in a personal pecuniary
liability to costs or to some process founded upon the deci-
dion of the cause in which he is called to testify; or he must be
in such a situation as to be able to avail himself of the
decision of the cause, by giving it in evidence in support of
his own interest in some future litigation. The first and
alternatives is, in fact, nothing more in principle than a part
of the same proposition which excludes the parties to a
suit from being witnesses; for where the determination
of the suit in one way directly affects the witness in inter-
est it is in a direct pecuniary liability. The second section of the
rule which is peculiar to the law of England, and first
appeared in practice about fifty years ago, is of more doubt-
ful expediency. It is much more exclusive in its operation than
the former, as it excludes witnesses upon an incidental pecuni-
ary interest, by introducing into the question of the compe-
tency of a witness a particular action the complicated and
embarrassing process of considering his position in
every supposable litigation which may afterwards a-
flect upon his interest, and so removing the practical difficulties arising from this objection, it was enacted by the stat. 3 & 4 Will. IV., c. 42, § 26, that
"if any witness shall be objected to as incompetent, on the
ground that the verdict or judgment in the action on which
it shall be proposed to examine him would be affected, the
evidence for or against him, such witness shall nevertheless
be examined; but in that case a verdict or judgment in that:
action in favour of the party on whose behalf he shall have
been examined, shall not be admissible in evidence for him; nor shall a verdict or judgment against the party on whose behalf he shall have been examined be admissible in evidence against him. By the 27th section, it was enacted that the name of every witness objected to as incompetent, on the ground that the verdict or judgment in the cause in which he is examined would be admissible in evidence for or against the party on whose behalf he shall have been examined, and shall be afterwards entered on the record of the judgment; such indorsement or entry to sufficiently evidence that such witness was examined in any subsequent proceeding in which the verdict or judgment shall be offered in evidence.

II. The principal general rules by which the reception of oral evidence is regulated.—The first general rule (which applies equally to written and oral testimony) is, that the evidence introduced must be relevant to the point at issue between the parties. The object of special pleading by the common law is to reduce controversies between parties to particular issues, or propositions of fact affirmed by one and denied by the other, which are to be decided by the jury; and the rule of evidence, that the proofs in the cause must be strictly confined to these issues, is founded upon obvious reasons of justice as well as convenience. Secondly, the affirmative of every issue is to be proved; that is, the party in whose favor evidence of oral testimony is given bears the burden of proving it. This principle is taken from the civil law; *Ei incumbit probatio qui dicet, non qui negat.* Thirdly, in proving a fact, the best evidence of it must be given of which the nature of the thing is capable. Thus, a party is not entitled to prove the contents of a document by copy, and still less by oral testimony, where the deed itself may be produced; nor to prove the execution of a deed by any other person than a subscribing witness, when he is living and producible. This rule is justified by the presumption of the law that the production of the best evidence might have prejudiced the party in whose power it is, had he produced it. This rule is not, however, to be understood as requiring that all the evidence which can be given upon the fact in dispute shall be put in evidence; for instance, the party in whose favor evidence is given of an attesting witnesses to a deed or other contract, it is not necessary that more than one should be called. Fourthly, hearsay testimony, which is a statement on oath of what an absent person has said respecting a fact to be proved, is, in general, excluded both on the ground that the witness to the actual fact does not declare his knowledge upon oath, and also because he is absent from the cross-examination of the party to whom is to be afforded by what he states. To this rule, however, there are the following exceptions:—1. The declarations of deceased persons, male and female, under the apprehension of immediate death, and who are therefore considered to be speaking under as powerful a religious sanction as the obligation of an oath; 2. The declarations of deceased persons, male and female, against their interest; 3. The declarations of deceased persons respecting rights of a public nature, such as the boundaries or general customs of a manor or district; 4. The declarations of deceased persons on questions of pedigree, or family occurrences of antient date before the memory of living witnesses, such as births, deaths, or marriages. With respect to the two last exceptions, the rule of declarers is this: knowing that such declarations are admissible, if they have been made post mortem, that is, after the matter to which they relate has become the subject of litigation.

III. Written evidence consists of records, documents and writings. Acts of Parliament are records of the highest nature, being the memorials of the legislature: but a distinction is made with respect to evidence between public and private statutes. A public statute requires no express proof in courts of justice, every one being presumed to know the law which he is bound to observe; as to them, therefore, the citation of the statute itself is in all cases sufficient. But private acts of parliament are considered as documents relating to individuals, and must therefore be proved by copies compared with the original roll of parliament. A second and inferior species of records is the proceedings of courts of justice, which are proved by exemplifications, sworn copies, and office copies. Exemplifications are transcripts made by individuals who authenticate them upon oath, when they are produced in evidence. Office copies are copies certified to be true and accurate by an officer of a public department, and are admissible in evidence, in the court to which the records belong. Charters and deeds are proved by the production of the instrument and proof of the execution by the party to be charged with it; but where the document is more than thirty years old, the execution need not be proved by personal testimony and a copy is sufficient, and who refuses to produce it: in either of which cases the contents of the document may be proved by a copy, or if no copy exists, by oral testimony. Deeds attested must, in general, be proved by one at least of the subscribing witnesses; but if the attesting witnesses are dead, or are not to be found after a diligent search, or are infamous, or for any other reason incompetent by law to give evidence, the execution of the deed may be proved by proof of the handwriting of the parties. The proof of handwriting, by the act of 1829, § 3, is defined as the proof of the party's handwriting by the party, being the person who has signed the deed, or their personal representative, and not by the party's personal representative. The handwriting is wholly excluded, comparison of handwriting being inadmissible for the purpose. If the party is dead, then the approach to the handwriting is made by the party's personal representative. As a witness acquainted with the writing of the individual in question, and who has seen him write, or who has had a writing by him, or a copy of his writing, or a writing by him, and a belief that the document to be proved is in his handwriting.

From the above summary of the principal rules of evidence existing in the English law, it will be observed that the system is extremely exclusive. Upon the subject of hearsay evidence, the rules are so strict that the amount of credit to be given, but entirely rejects them from being heard wherever a pecuniary interest is at the result of the cause, however small, is shown to exist. So also with respect to the receipt of secondary and religious evidence; there are no proceedings of a second-hand except in the cases above enumerated, but excludes it under all varieties of circumstances. That the statement of an interested person is always to be received with caution, often with suspicion, and often with disbelief is readily admitted; that it should be peremptorily rejected as unworthy to be heard is a different and much more questionable proposition. Again, it is true that we ought not to attach so much weight to hearsay evidence as to direct testimony, because it is beyond all doubt that the latter is the more trustworthy. But if the means and causes of error are multiplied, in proportion as you remove from the actual observer and add links to the chain of testimony, *Any testimony,* says Mr. Lorrie, in his chapter on the Degrees of Assent, 'the further it goes, the less weight it carries even as a piece of evidence, and the less force and proof it has. A credible man voicing his knowledge of it is a good proof; but if another, equally credible, do witness it from his report, the testimony is weaker; and a third that attests the hearsay of the hearsay is yet less considerable. So that, in traditional truth, the force of the force of the proof; and the more hands the tradition has necessarily passed through, the less strength and evidence does it receive from them. Allowing the justice of this proposition, that hearsay evidence, it may still be questioned whether its absolute absolute unadvised rejection for judicial purposes is justifiable. So also with respect to the mode of proving handwriting, it might be unsafe wholly to rely upon the evidence of comparison of handwriting with the original, and in relating it may be made admissible in aid of the present vague and unsatisfactory mode of proof by the general belief of a witness.

The most plausible reason for the exclusiveness of the English law of evidence is derived from the nature of the trial by jury, with reference to which it is contended to be safer to withdraw doubtful evidence altogether from their consideration, than to leave it to persons who are often uninstructed, and incapable of drawing correct distinctions from it; although there seems no good reason why such proof should always be inadmissible. If not justified by the fact, namely, that the means of
proof actually legalized are infallible guides to truth; whereas the truth is that many of these are quite as liable to lead to a false conclusion as those which are excluded.

In this state of things, therefore, there seems no good reason why all practicable means of attaining to truth, however various in their degrees of effectiveness, should not be com-

municated to the courts. Nor has it been used by

pression in the profession; the inclination of the courts of late years being to let in as much light to a cause as possible, and to regard objections to evidence rather as matters of credibility upon which juries may exercise their judg-

ment, than the competency to be wholly withdrawn from their consideration.

In the article Equity a reference is made to the present head of Evidence, and we shall accordingly briefly state the manner of ascertaining facts in courts of equity, which differ somewhat from what is found in courts of law, where the witnesses are produced and examined orally before the court.

Witnesses in proceedings in equity are examined upon written interrogatories before the examiner of the court or before commissioners in the country, both examiner and commissioners being sworn to secrecy. The answers of the witnesses to these written interrogatories, or their deposi-
tions, as they are called, are taken down in writing, and form the only evidence for the plaintiff and defendant (except the defendant's answer, if the plaintiff choose to avail himself of it) to be considered by the court.

The interrogatories are drawn by counsel, according to the instructions which he receives as to the facts which a wit-
tness is considered able to prove; but it frequently happens that the instructions are very defective, and the counsel is obliged to supply them, or met with obstacles in the way of elicit the proof of facts favourable to the party to whom he is employed. Though each several interrogatory, when well drawn, is framed for the purpose of establishing some simple and distinct fact, written interrogatories cannot from the nature of the thing, be made to consist of questions that are difficult to comprehend. In the oral examination of a wit-
tness, it necessarily happens that several questions must be asked consecutively for the purpose of completing the in-

vestigation into and the establishment of every important fact in the present case. Consequently, the interrogatories must be framed on the same principle, and there-

fore every subsequent part of an interrogatory must be framed on the supposition of every previous part being an-
swered in some way; and consequently, it is hardly possible to make written interrogatories without knowing what inter-
rogatories have been proposed to him by the opposite party, and without knowing what he has said in his deposi-
tions in chief. Such a cross-examination must be in general altogether useless, and often dangerous to the interest of the party examiner, for it is possible that the witness may be an incompetent witness, or unless the witness is a one whom he would himself have examined in chief. Under the 32nd Order of the 21st of December, 1833, the last interrogatory before that date commonly in use is in the form of a question, accompanied by a request that the witness may be produced to answer any other matter or thing which may be of benefit or advantage to the parties at issue in this cause, or either of them F. E. A party however is not bound to insert this interrogatory, and indeed no great harm will result if it is not inserted. Due to various causes, such as disinclination on the part of a witness to give himself further trouble, particular affection to one of the litigating parties, or forgetfulness, it might have been anticipated that this general interrogatory would fall in its object; and so far it has been so described to be the case.

This mode of ascertaining facts in equity is evident-

ly very defective, and has been the subject of consider-
able complaint and of lengthened inquiry; but hitherto nothing has been done to amend the system.

(See Minutes of Evidence taken before the Chancery Commissions, appended to their Report of 1826; and a recent pamphlet (1837) by W. A. Garrett, entitled Suggestions for Reform in Proceedings in Chancery.)

Those who may be inclined to follow this subject further with great length will find much acuteness in Bentham's Rationale of Judicial Evidence, and the full development of the English law of evidence is contained in the treatises of Mr. Phillips and Mr. Starkie.

EVIL EYE. It was an antient superstition that certain persons were endowed with the faculty of injuring those on whom they cast a hostile or envious look. The eyes of such persons were supposed to dart noxious rays on every object on which they fixed. This power of injuring with the eye was called Bazeonia (Baezeonia) by the Greeks, and Evula by the Romans. Says Strabo, 'Of this I have collected the testimonies of the antients concerning it (as Pottas, Archæologia Graeca, lib. ii. c. xviii., and Aslarus, de Fascino, Græ ris Antiq. Rom. tot. xii. p. 855), may be consulted for particulars. Those who enjoyed great prosperity or were conspicuous for their wealth were supposed to be afflicted by these persons; because their love of them was so much exalted by praise and flattery, were more particularly liable to the effects of fascination. Hence when the Romans praised any thing or person, they used to add, Professisti or Professavi dixisse, to aver it to have been done by one who entertained no fascination that might ensue, and to prove that their praise was sincere.

It is remarkable that the same superstition prevails to the present day in several parts of the world, even in the northern part of our island, and in Ireland. In Greece it is called Mal-ochoi, and among the lower orders of people its effects are supposed to be very powerful and fatal. Where a person is bestowed on beauty, riches, or any other advantages, the person praised immediately exclaims, 'se mal-ochoio non vi fosso,' from an apprehension that the praise may not be sincere, but proceeds solely from a malicious intention to injure the person mentioned. This exclamation is accompanied with a sign of the hand, or by holding up pieces of coral, shells, or various kinds of stones worn as amulets.

The belief in fascination is extremely antient, and in the opinion of some is connected with the story of Medusa and the Gorgons, whose eyes caused immediate destruction. From this source the superstiton of the evil eye is probably derived.

Virgil alludes to this superstition in his third Eclogue:

'Non scire quid esset scelerum superstitio,' says Tullus, 'in his 'Discovery of Witchcraft,' has one or two passages relating to it. He says, p. 53, 'The Irishmen affirm that not only their children, but their cattle are (as they call it) eye-bitten when they fall suddenly sick.' It is likewise mentioned in Martin's Description of the Western Islands of Scotland, in Heron's 'Journey,' vol. ii. p. 226, and in several volumes of the Statistical Account of Scotland,' as still believed there.

'Nothing,' says Dallaway, in his 'Account of Constantinople'; 4to. Lond. 1797. p. 391, 'can exceed the superstition of the Turks and the Bulgarians respecting the Evil Eye.' The pictures of the infidels. Passages from the Koran are painted on the outside of the houses, globes of glass are suspended from the ceilings, and a part of the superfluous expansion of their horses is designed to attract attention, and divert a sinister influence upon the owner.'

(Millingen's Observations on an Antique Bat-relied, on which the Evil Eye, or Fascinum, is represented; Archæolog. vol. xix. p. 70-74; Brand's Popular Antic.

EVI. KING'S SCHOLAR.

EVILMERODACH. [BABYLON, HISTORY.]
EVOLVE, [INVOLUTE and EVOLVE.]
EVOLUTION. [INVOLUTION and EVOLUTION.]
EVOLUTIONS, military. The movements made by any body of troops either acting by itself or in conjunction with other bodies, for the purpose of arriving at or of retiring from a field of battle, or of placing itself in a position to act offensively or defensively against an enemy. In circumstances attending the great movements of armies along their lines of communication, and the dispositions of the troops on the field of battle, are developed under the words Strategy and Tactics. The present article will therefore comprehend, with a description of the principal evolutions of a battalion of infantry, a regiment of cavalry, and an entire army, are performed; and will conclude with a short account of the movements of light troops in the field.

-When a battalion formed in line has to march in that order towards the front or rear, in order to ensure exactness in the movement three directing sergeants post themselves a little way in front of the centre of the line, and observing some object in the required direction, they advance directly towards it, the battalion following and keeping itself perpendicular to the line of march. While the battalion is thus moving in line, the two flanked companies are wheeled backwards, and made to march in files perpendicularly to the line of the battalion following it; and on a halt being ordered, they face towards the enemy.

This order of march can of course only take place where the country is open; when partial obstacles occur, the troops near them necessarily form in file till they have passed them, and then wheel into the new direction; but when the obstacles are of great extent, and occur frequently, it is evident that the march of the battalion should be in column.

Columns formed for this purpose are designated columns of companies, of subdivisions, and of sections, according as their breadth, or the extent of their front, is equal to that of a whole, a half, or any portion of a company; and they are said to be at open order, at half, or at quarter distance, according as the intervals between the companies or their subdivisions, in the column, are equal to their whole, half, or one-quarter of the breadth of the column. The order is said to be close when the several divisions are at the distance of one pace only from each other in the length of the column.

The wheel from line into column, and the converse, when the battalion is at a halt, must obviously be performed by causing the divisions to describe a quarter of a circle on their respective pivots; but when a battalion in column is on the march, and such a wheel is required by the circumstances of the ground, it should be at the full distance from each other, that is, at intervals equal to the length of a division, it is necessary that the first division, after having described on its pivot an angle equal to that which the new direction is to make with the line of march, should, as the wheeling pivot of the next division has arrived at, as if pivoted of the first division: the second division then wheels and marches in like manner, and so on. The same rule may be followed when the divisions are at less than full distance, in which case either merely described by the direction, then marching forward a few paces, and completing the wheel, the other divisions doing the same in proportion as they arrive at the ground where the preceeding division performed the evolution. The wheelings may be made upon either extremity of a company or subdivision, and they may take place either forward or backward, according to circumstances; occasionally also a company is required to perform a wheel upon its centre, in which case only half wheels backward, and the other half forward; but in all cases the wheeling pivots are to remain dressed, or in one line.

When a battalion is formed into a column for the purpose of an attack, it is called a column of manoeuvre; and when so formed in order to move along a road or through a defile, a column of route. In either case the column may be in open order, at half, or at quarter distance, or in close order; and in the first formation the column of course occupies an extent of ground equal to that which occupies a line, minus the length of the first division. Column at half, or at quarter distance, or at close order, have the convenience of moving upon less space than the open column, with equal capacity of forming in any manner that may be required for resisting an attack; and their compact form enables them to avoid the evils attending the loss of distances which may occur with an open column, from the inequalities of the ground.

The battalion in line may be formed into a single or double column; the former upon or in rear of either flank company, and the latter into two companies or the two centre subdivisions. In either case the column is equally fit for its purpose, and the preference of one to the other must depend upon the ground or upon the point to which the movement is to be directed; the single column, which was in the first the centre column of the line, according to the breadth of the defile; whereas the double column, if much diminished, maybe in danger of becoming disordered by the intermixture of the flanks. For an attack, the column formed on the centre of a battalion can be more truly brought to bear by a single column than a single column formed on one of the wings, seeing that the divisions in line have but half the distance to march through in order to arrive at their places in the column, and a corresponding advantage is enjoyed when the battalion has to deploy into column from line. It is to be observed that the front of a column should never be unnecessarily contracted, and battalions should be so instructed as to render it indifferent whether the first or second rank is in front, or whether the right or left flank company is in the rear, for it will be seen that the obstructions which may occur in the order of battle is to be reversed, and then the divisions must necessarily change their positions by countermarching.

A battalion in column at open order is formed in line by wheeling the divisions so as to wheel upon their respective pivots, but a close column of companies, having its head already in the alignment, is deployed by causing the several divisions to move out by files to the right or left parallel to the alignment; each division having got beyond its own pivot wheeling to a pivot which is true-half, or to one-quarter of the breadth of the column. The deployment may take place upon any one of the companies, which then remains at rest.

Echelons are movements when it is required to advance or retreat obliquely, and when a change is to be made in the position of a line, corresponding to a wheel of the whole about some given point: the movements are made to the front when an enemy's flank is to be turned, and to the rear when it is required to cover the flank of the enemy. Echelons are the safest that can be adopted by troops in presence of the advantage of preserving a general front during the march. A direct echelon, as it is called, may be formed by the different companies or subdivisions marching from their position in the line towards each other upon a forward pivot, and halting successively whilst the line is formed into a column at the required distances. The oblique echelon is formed by causing the different companies or subdivisions to make a wheel upon their pivots through any angle less than a right angle, generally not more than one eighth of a right angle, and so on until the parallelig of the divisions being ensured by causing a non-commissioned officer of each division to place himself, as the case may require, before or behind some given file; suppose the eighth, from the pivot, and to take a given number to his flanks, the division is then to wheel up to the place where he halts.

An important evolution of a battalion is that of placing itself in a square or oblong form, with the men on the four sides facing outwards, so as to be enabled to resist an enemy that is in column. The men are formed into four rows, always formed hollow, or so as to enclose a space in which baggage or treasure may be placed for security; if otherwise, it is evident that great numbers of the men would be useless, since they could not use their fire-arms.

When a battalion in line is to form a hollow square, the manoeuvre may take place upon any given company, or upon one formed of the two contiguous subdivisions of two companies, which then for the moment remain at rest; while the other companies break out of the line and march towards the centre of the ground, and form the square or oblong in echelon, when the companies are stationary, so as to form with them a column of companies at quarter distance. The second division in the
column closes up to the first, and these two form the front of the square; the two rear divisions then face outwards, the last but one closes up to the last, and these two form the rear of the square. The remaining divisions wheel outwards, and constitute the two sides of the square or oblong, which is the form of the column in retreat. If the enemy resist an attack of cavalry, the two front ranks kneel and slope their firelocks outwards till, at the word of command, they fire a volley: the men in the two standing ranks fire by files, or independently of one another. It is said that Bonaparte, when in Egypt, formed his infantry in squares whose sides were six ranks deep, in order to resist the Mamoulcary cavalry.

When several battalions form themselves into squares, they dispose themselves either en echelon or in two lines, each of the four divisions forming the interval between the squares of the interval between two squares in the second line; by which means the fire of one square may defend the face of another.

Squares may be reduced to columns, and these to line, by reversing the processes above mentioned. One square consisting of several battalions is not recommended, as much time would be spent in its formation, and the safety of the troops would be endangered should they be attacked while so occupied.

A body of column may be obliged to engage in a street or narrow pass where deployment is impossible. In this case, if the column is advancing, the two front companies or divisions fire, the first kneading and the other standing; after which, on a favourable occasion presenting itself, the other divisions should issue in order to take the fire, retire, the first division, after firing, faces outwards, half to the right and half to the left; these subdivisions file away to the rear, where they reload; the second division follows them to the rear, in like manner, and so on.

Evolution of a Regiment of Column.—The movements of cavalry on a field of battle, like those of infantry, consist of marches to the front or rear, in line or en echelon; deploying from open or close columns into line, and the converse.

If it be required to form a line for attack from an open column of divisions upon any particular division, those divisions which are in line make a wheel forward equal to three-eighths of a circle, and those which are in rear wheel forward one-eighth; all the divisions being thus parallel to each other, they march in this order up to the line on the division which remained stationary, wheeling into it as they arrive. On the contrary, if the column be in retreat, and it be required to form a line on the defensive from an open column, the echelon becomes a column, the first or leading squadron, all the divisions are to make a wheel equal to one-eighth of a circle, and in this order march up and wheel into the alignment. It must be observed that the line first formed in these cases is to be at the centre of the squadron, which would be the case if the line were in the intended line, in order to allow the officers in front of each squadron to dress the troops, which they can do more correctly than the officers of divisions who are in the line itself.

To deploy in line to the front from a close column of squadrons for an attack, suppose on the second squadron; all the squadrons except this break into divisions by threes, as it is called (that is into divisions consisting of three horses in each of the two lines); the divisions of the first squadron between the battalions, the third and fourth squadrons in such a manner as to form the intended line, and marching till they get opposite them; if the order of the intended line, which is supposed to be in front of the ground occupied by the first squadron, and into this line all the squadrons now march. But if the line be required to be formed on the rear of the regiment when in retreat, the first line being at some distance in front of the square, this squadron must then change its front by a counter-march, the others break into divisions, wheel a quarter circle, and march to the left till they come opposite their proper places in the intended alignment, into which they then march as before.

The evolutions are made as above stated when the regiment is in column with its right in front; but it is easy to apply the precepts to the contrary case.

The reason why the squadrons are made to break into divisions by threes is that, since the breadth of three horses is about equal to the length of one, each division of three can wheel within a space equal to that which it occupies in line: the practice however has been objected to on account of the extension of the files which is produced when marching in this order. The evolutions by the usual divisions or sub-divisions have been preferred on this account, but the former method prevails.

Evolution of an Army.—The general principles upon which the evolutions of armies, divisions, or brigades are to be performed, correspond nearly to those of single battalions. When a whole line has to advance parallel to itself, or of the battalions is considered as the regulator, and all the others should conform to its movements. The commander of this battalion must therefore devote his whole attention to the direction of the divisions, sub-divisions, the battalions, and the flanks of the army, all of which are under the command of the general commanding the army, while the flank officers of the other battalions must endeavour to preserve the regularity of their own battalions by the line of the colours.

Columns of route or manœuvre are formed of any number of battalions, each in column of companies, or of sub-divisions, in rear of one another; and if the columns are at close order, the interval between every two battalions is only six paces, or the same as if all the troops were drawn up in line. If the battalions are in open columns, the intervals between the battalions are twelve paces; but when the columns are at open order, the intervals of the battalions should be equal to the breadth of the column, together with one and a half to two and a half times the width of the battalions in line. Such columns as the last can instantly be thrown into line by each company making simply a wheel on its proper pivot. When one general column is required to form into what is called a line of columns, the whole of all the battalion columns must be thrown into lines, it being understood that the distances of the several columns from one another in the direction of the line may, according to circumstances, be of any extent, from six paces (in which case the columns are said to be contiguous), to the proper distance for deployment, that is, a distance equal to the length of a column.

A column whose divisions are either at quarter distance from each other, or in close order, can always wheel into a line of columns, because each battalion, in performing the wheel, leaves room for the wheel of that which is in its rear; but a line of contiguous columns, when the depth of each battalion exceeds the extent of its front, cannot for want of room be wheeled into a single column. When such a column is required to be thrown into one, the line of columns in open order should be made to face to the right or left far enough to allow the wheel to be performed. When a line of columns is required to be changed into one column, for the purpose of performing a march towards either flank, the most convenient disposition of the wheels is for the men of the left, or the right, or the rear of the line to face to the left, or to the right, or to the front, as the case may be, and each battalion or column stand with their right wings in front, if it is intended that the march should be towards the right; and the contrary, if it is to be towards the left, for then a simple wheel to the front brings the divisions into the alignment in their proper order.

When a column is on a march, the baggage should be in the rear; or if, on any account, it is placed within the line, it should be, together with the artillery which accompanies the column, in the intervals between brigades, and never in the rear of the column, because the first line being at some distance in front of the square, the original extent of a column in front is of importance, and deflecting, in order to pass an obstacle, should be avoided if possible, on account of the loss of time which it occasions. In fact, it will happen that, whether on the stream, a ditch, or a bank, the obstacle will be more conveniently passed by extending than by contracting the front.

Echelon movements of an army are almost always those which are made in pursuit of the enemy, and will be in the qualities of ground generally preventing large bodies of troops, if they were otherwise advisable to do so, from acting against one another in continuous lines. Like the echelon movements of battalions, those of an army may be either direct or oblique: the former are executed by advancing brigades, battalions, or companies parallel to and at unequal distances from their front; and this advance may be made from the centre of the line when it is intended to refuse both wings to an enemy, or from one flank when it...
is intended to turn that of the enemy. The direct echelon may also be produced by posting columns in proper situations, ready for deployment, parallel to the enemy's position; the distances between the battalions to echelon should be sufficient to allow them to form squares chequerwise, as to flank one another.

Oblique echelons of an army are formed by wheeling, and then marching in the new directions so as to gain ground towards a flank; or performing the manœuvre should not exceed a company, as it might be hazardous to present one flank of a large body towards an enemy in position, and thus expose the line to be enveloped. And, as the enemy would endeavour to counteract the intended project of outflanking him, should the French observe it, advantage ought to be taken of the localities to conceal some of the divisions, and to gain points of support for the bodies placed in advance of the rest of the army. When it is intended to refuse one wing, the battalions should march so as to be in column as long as possible, and then form them on the part of the line which is stationary should be ready to enflade the enemy on his advance towards the retiring divisions. Movements of attack may be made in columns, which should deploy in line by file at a given signal, the central column being the most effective at an enflading fire preventing a nearer approach in column.

Generally speaking, the most convenient order for an advancing army is column, in echelon or in line, provided the columns can be covered by the ground from the enemy's artillery; since it may be readily moved up to any given point of attack, while the enemy has few means of judging where that point of attack will be.

The retreat of a position under fire, are best effected by an echelon march of companies; but when the line is extensive, the battalions which are most remote from the new alignment, and which may be attacked by cavalry during the movement, should be marshalled up in columns of battalions, as the divisions being at quarter distances from one another.

The retreat of a line is accomplished by causing each alternate battalion to retire, perpendicularly to the front, to a certain distance towards the rear, not exceeding 200 yards, which may be the best scheme each battalion by their fires; the remaining battalions protecting the retreat of the others, and then retiring as far as the intervals between the former battalions, who then retreat still further, and so on. The intervals in the lines should be occupied by light infantry in echelon, and the columns of battalions deployed in squares, the skirmishers at the same time run to any cover from whence they may aid the supports by a cross fire.

When light troops have to advance across a bridge, or through a short defile, on arriving at the bank of the river, or at the entrance of the defile, the skirmishers lie down in line and fire; the supports, strengthened by the reserve, charge the enemy on the bridge, or in the defile, drive him back, and then the extent line as skirmishers, while the former skirmishers pass the bridge or defile, and now constitute the supports and reserve. In retreating the supports pass first over the bridge or through the defile, covered by the skirmishers, and immediately deploy, in order to act as skirmishers in the line, and wheel, skirmishing themselves round the corps, and then follow up the enemy, and rapidly pass, followed by the supports, and the whole form in column in rear of the present skirmishers, who then, by their fire, protect the retreat if it is to be continued.

EBOCA, a principal town of the Alentejo, in Portugal, is built on an eminence in the midst of a fine open country, which produces wine, oil, and corn, and is south-west of the Serra de Oas, which forms part of the range which crosses Alentejo from east to west. Evora is an archbishop's see, has a college, two female houses of education, several good buildings, and a fine aqueduct, attributed to Sertorius, who for a time made this town, then called Ebo, his residence. Julius Cesar, after his Spanish campaign, made Ebo a municipium, with the name of Julia. There is now at Evora a handsome basilica, one of the Roman period, supposed to have been dedicated to Diana: the front presents an hexastyle of the Corinthian order, the columns remain, and the capitals are of very delicate workmanship, but the entablature is gone, and has been removed. The gate is of Moorish style. (Murphy's Travels and View of this Temple, with Copies of Roman Inscriptions found at Evora.) Evora has about 12,000 inhabitants, some manufactures of flax and leather, and a considerable inland trade.
EVREMOND. CHARLES de St. Denys, Seigneur de St. Evremond, was born April 1, 1613, at St. Denys le Guast, near Coutances, in Normandy. He entered the army early, and by his literary talents and spritely wit, as well as his bravery, acquired the friendship of Turenne, Condé, and other of the most brilliant men of that remarkable epoch. Condé made him lieutenant of his guards, for the sake of his society; and he fought with that great commander at the bloody battles of Rocroi and Nordingen.

But the prince, though fond of artillery at the expense of others, could not turn a blind eye to his brilliancy, and to the memory of Evremond, by an imprudent exercise of his satirical humour, lost his patron and his lieutenantcy in 1648. In the wars of the Fronde he espoused the royal cause, and was rewarded with years of imprisonment and a pension. He incurred a three months' imprisonment for having been at Bayonne by order of Cardinal Mazarin; but found means to restate himself in the minister's favour. Another indiscretion in ridiculing the treaty of the Pyrenees (unless, as has been said, there was some secret cause for his disgrace, and this was only a pretext), led to a second order for his imprisonment. He received timely notice, and fled, first to Holland, then to England, in which two countries the rest of his long life was spent. Louis XIV, though solicited by his most favourite courtiers to pardon him, St. Evremond, remained in exile till 1689, when he granted the permission to return. But it was then too late for St. Evremond again to change the scene; and though in banishment, his life had all that he required for happiness. He was a favorite of the ladies; his society was courted by the most distinguished wits and beauties of that reign; nor was he less fortunate in possessing the regard of William III, who knew him in Holland, and took much pleasure in his company. Devoid of any sign of original talent, presenting modestly of every source of social power, he retained his faculties, mental and bodily, to the last, and died in his 91st year, September 20th, 1703.

St. Evremond was one of those who, aiming chiefly at a short cut to fame and power in the world, built up the reputation which they have enjoyed in life. He possessed however extensive reading and an independent and acute judgment, as well as wit. His verses are deservedly forgotten; but his treatises on Roman literature and on the modern drama are ranked among his best works. His letters are among the most brilliant specimens of that style of composition in which the French have excelled. He appears to have been a disbeliever in revealed religion, but was not a scoffer, and he checked wantson insult to religion in his works. He was a Catholic and an Aristocrat; but some controversial tracts were falsely published under his name long after he was dead. He never derived profit from the sale of his works, nor authorized their being printed; so that the earlier editions, which were all pirated, continued to be sold in large numbers by their cheapness, and by their popularity. The first correct edition is that of Des Maizeaux, 3 vols. 4to., London, 1705, with a life prefixed, from manuscripts revised by the author and editor jointly, wholly before the death of the former. Des Maizeaux also translated the whole into English. Numerous notices of St. Evremond.

EVREUX, a city in France, capital of the department of Eure, on the little river Iton, a feeder of the Eure, 51 miles west of Rouen. The city has the abbey church of St. James.

Evreux is mentioned by Ptolomy and by Ammianus Marcellinus, in the Itinerary of Antoninus and in the Theodosian Table. It bore the name of Mediolanum, and was the capital of the Mediolanenses, called the Eburovices, and afterwards applied to their chief city, and in the middle ages appears under the corrupted Latin forms of Eburocin and Ebros, from which is derived Evreux. It has been the seat of dispute whether the old Mediolanum was near or in the town.

The neighbourhood known by the name of Old Evreux; but the remains of a theatre and of several antiquities which have been discovered may be considered as showing that Mediolanum was close to, if not on the site of, the present city. Evreux was called the Præfectura of the dukedom of Normandie, Richard I., severed it from the duchy and erected it into a distinct county in favour of his second son, from whose descendants it afterwards passed to the house of Montfort. In the beginning of the twelfth century (in 1119) it was burned by Henry I. king of England; and toward the close of the same century (in 1194 and 1199) it was twice destroyed by Philippe Auguste, king of France, who shortly afterwards acquired permanent possession of it. The county of Evreux was bestowed as an estate on a branch of the royal family of France, which subsequently acquired the throne of Navarre; but on the death of Charles le Mauvais, king of Navarre, it reverted to the French crown. In the wars of the English in France, under Henry V. and VI., Evreux was repeatedly taken and retaken. The last time it was captured, after a vigorous resistance, by the French, from whose hands it has never since passed away.

A great proportion of the inhabitants (who in 1632 were 7986 for the town, or 9963 for the whole commune) are occupied in building, part built of wood and clay or plaster. The streets are broad and beautifully neat. The city stands in the midst of gardens and orchards in a fertile valley watered by the Iton, which divides into two branches before reaching the town, and flowing on each side, under or near water, and afterwards reunites, rendering the position of the city insular. Part of the waters of the Iton are conducted through the city by means of a canal.

The part of Evreux in the cathedral, which was rebuilt by Henry I. of England, after he had burned the former one with the rest of the town: the nave alone retains any vestiges of early architecture: its massy piers and semicircular arches are evidently of Norman origin, and are probably the work of the church erected by Duke William, are so far as respects their structure, comparatively modern. The interior is adorned with some elegant carving, both in stone and wood; there are some good specimens of painted glass.

The church of St. Taurinuus (formerly attached to the Benedictine abbey of which the remains are seen in the seventeenth century) contains some valuable specimens of Norman architecture: the interior has been modernized. A portion of the monastic buildings serves as a seminary for the Catholic priesthood. The church of St. Gilles, now converted into a chapel, preserves some sculpture of great pretension.

Among the other remarkable buildings are the episcopal palace, the hospital, a fine new building, the office of the prefect, formerly the hospital, and the prisons. There are some handsome public walks.

The manufacture of Evreux are woolen cloth, woollen and cotton yarn, bed-ticking, calico, cotton velvet, hose, leather, paper, wind musical instruments (flutes, clarinets, &c.), and ivory and box-wood combs. Trade is carried on in these articles, and in grain, brandy, cider, hemp, and tobacco. The commerce in wine is very considerable. The manufacture of women's wear, especially hats, is of considerable importance; that of hats, last eight days. There are a subordinate court of justice, 'une chambre consultative des arts et manufactures,' a central society of agriculture, sciences, arts, medicine, surgery, and pharmacy; a high school for young men; a public library of 6000 volumes; and a botanical garden, at which courses of lectures on botany are delivered.

In the neighbourhood of Evreux, about a mile and a half from the town, is the Château de Navarre. Jeanne, daughter of Louis Huitin, king of France and Navarre, in 1572, being her mother'sCFG, married the count of Evreux, who succeeded her father, married the then count of Evreux, and built a château, which she called the Château de Navarre: this structure was, in 1866, levelled to the ground by its possessor, the duke of Bouillon, who had the property during the Revolution. Later, the land passed to the descendants, it became national property, and was given by Napoleon to the Empress Josephine, who resided here for a time. The house, which is of stone, is formal and ill proportioned; but the woodwork and the furniture are rich and the gardens well attended. The château is now deserted. Old Evreux appears to have been the site of a Norman and probably that of a Roman fortress. There are some remains of a Roman aqueduct and Roman marble columns in it.

The arrondissement of Evreux contains 11 cantons or districts under the charge of a justice of the peace; two of these are in the town of Evreux. It comprehends 287 communes, and had, in 1832, 118,397 inhabitants. The department comprehends the department of Eure: the bishop is a suffragan of the archbishop of Rouen. The foundation of the see is ascribed to the third century. (Dawson Turner, Tour in Normandy; Dulau, Histoire des Environs de Paris; Dictionnaire Géographique Universel, &c.)
EX. [DEVONSHIRE.

EXAMINATION. [EVIDENCE

EXAMINATIONS (Exanthematous diseases), variola, a发热; a term under which are comprehended the eruptive fevers, or the diseases commonly termed rashes. Rashes are superficial red patches, variously figured, and diffused irregularly over the body, leaving interspaces of a natural color, and terminating in evacuation, which is said to be effective element in the definition of an exanthematus disease, as this term is usually employed by nosologists; but the writers on cutaneous diseases give it to a modified signification, and comprehend under it only those diseases which are properly rashes, whether those rashes are attended with fever, and whether they are contagious or not. Thus Dr. Bateman comprehends under the order Exanthematous measles, scarlet fever, tetter-rash, roseola and the rose, purpuric, and erythema.

EXARCH, one of the governors of Italy under the Byzantine emperors, established by Justinian after the reconquest of Italy from the Goths in the sixth century. The first exarch appointed was Longinus, A.D. 568. The residence of the exarch was at Ravenna, then a sea-port town of the greatest extent between Greece and Italy. The exarchs, who were generally chosen among the officers and favourites of the Byzantine court, were of course removable at the pleasure of the emperor, but several of them remained in their office to the end of their lives. Their ambition and the marked display of opposition to the authority of the state, together with the violence with which the destruction of the empire was carried on, led to the overthrow of the empire by the Lombards, who invaded the greater part of Italy, and were also under the exarch of that time, and that authority was soon confined within the walls of Ravenna. At last, in the year 732, Ravenna being taken by Astulf and Astolphus, king of the Lombards, the exarchate, as well as all dominion of the Byzantines over North Italy, was at an end; but the exarchs continued to reign over the parts of Apulia and Calabria, where they remained known as the Exarchs or Byzantine governor. (See Chronological Series of the Exarchs in Petau, Rationarium Temporum.)

EXCAVATIONS. [FOUNDATIONS.

EXCENTRICITY. [PHLEGMATIC HYPOTHESIS.

EXCENTRICITY, a term applied to the ratio which the distance between the centre and focus of an ellipse or hyperbola bear to the length of the semi-axis major [Eccentricity, § 1]. With regard to this word, it should be noted that in the older writings on conic sections it was not the ratio of these two lines, but the former of them, namely the distance between the centre and focus, which was called the eccentricity.

Let \( a \) be the semimajor axis of an ellipse or hyperbola, \( b \) the semiminor axis, and \( e \) the eccentricity; then

in the ellipse \( e^2 = 1 - \frac{b^2}{a^2} \)

in the hyperbola \( e^2 = 1 + \frac{b^2}{a^2} \)

EXCESS. For a peculiar mathematical use of this term, namely, the spherical excess, see SPHERICAL TRIANGLE.

EXCHANGE. The term exchange is commonly employed by merchants to designate—first, the written instrument by which persons of different countries or in different parts of the same country are brought to a condition for final liquidation; and, secondly, the varying price of such negotiable instruments in the market.

The first division of the subject is discussed under the title "Bill of Exchange," the following article will discuss the second, and will include an investigation of the principles on which exchange transactions are based.

An international or, as it is commonly called, foreign trade, arises out of the unequal or exclusive capacity of different countries to produce the various objects of desire. One country, for instance, has abundance of coal and iron; another enjoys a climate especially adapted to the culture of the vine; whilst a third possesses some peculiar advantages for the growth of wheat. If interchange were not restricted by legislative enactments, if trade were perfectly free, the first country would supply the other two with iron wares, taking from the second wines, and from the third wheat; whilst the two last would in like manner exchange their respective productions with each other.

Peculiarities of soil and climate, abundance and cheapness of land and labor, the exclusive presence of certain animals, vegetables, or minerals, all give rise to interchange between nation and nation. Every country has some peculiarity which gives it an advantage with respect to that peculiarity over all other countries: it is by means of interchange that such advantages are shared equally among all.

In the article BILL OF EXCHANGE, already referred to, we have explained how this mode of settling accounts between parties in different countries arose; and the various legal rights of the parties to a bill of exchange are also in that article fully explained.

In investigating that part of the subject which belongs to the present article it is necessary to bear in mind that different countries use different denominations, in weight, and consequently in value. The pound, for instance, is the money of England, the franc that of France, the dollar that of America. These several coins contain very different quantities of the precious metals. They are in fact, not equal to one another; the silver of the franc, whilst the gold of the dollar is equal to only twice as much. The value of a currency depends on the quantity of pure metal contained in the coin which forms its legal tender, alloy being left wholly out of the account.

In the other countries making use of the same metal a par may exist; but between two countries one of which makes use of gold and the other of silver an invariable par cannot exist.

The following is a statement of the contents, in pure silver, of the several coins forming the money of account of the several countries:

<table>
<thead>
<tr>
<th>Country</th>
<th>Coin</th>
<th>Weight (g)</th>
<th>Value of Silver (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>Ecu</td>
<td>35.59</td>
<td>26.30</td>
</tr>
<tr>
<td>Germany</td>
<td>Talon</td>
<td>32.96</td>
<td>20.32</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Messings</td>
<td>34.12</td>
<td>22.81</td>
</tr>
</tbody>
</table>

Hence the mark is worth, in Paris, 1.915 francs; in Amsterdam, 14 silver 5 pence; and in New York, 282 cents.

Gold is now a legal tender in America, and the sovereigns and dollars of 10 shillings, containing the eagle of 10 dollars worth 2l. 1s. 6d.; the dollar of gold, 4l. 6s. 8d.; and the 10l. sterling equals 217 dollars; all of which are different expressions for the par between England and the United States—both being gold-using countries.

In the latter part of the 19th century it was observed that a par of exchange did not exist between two countries making use of different metals as the standard of their respective currencies; we shall now explain the reason. Gold is the standard in England. The dollar of silver in America possesses a conventional value independent of the gold or silver coin without affecting the former. Foreign coins, the franc or the guilder for instance, possess no such conventional value. They are merely a commodity liable to fluctuation with the varying price of silver.

Within the last ten years the price of silver in the London market has varied from 4s. 10d. to 5s. 1d. per ounce of 444 grains pure, the medium price being 4s. 11d. to 5s. The extreme prices give the following results:—

<table>
<thead>
<tr>
<th>Price of Silver per oz.</th>
<th>Value of Franc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>s. d.</td>
<td>Value of £1.</td>
</tr>
<tr>
<td>4 10 d.</td>
<td>26 30</td>
</tr>
<tr>
<td>5 5 d.</td>
<td>23 15</td>
</tr>
</tbody>
</table>

Thus making a fluctuation in the so-called par of exchange of rather more than 4 per cent.

The assumption of a par of exchange where no par can exist is likely to lead at times to great inconvenience. Suppose, for instance, that the price of exchange between Paris and London be assumed at 25 £5fr., which is about the medium. Suppose further that exchange is quoted at 26 30fr.: what would be the inference? Why that exchange was 28 per cent. in favour of England, and the cost of transmission being much less than the above difference consequently bullion was about to pour into London. But sup-
pose that at the same time the market price of silver had declined in London to 4s. 10½d. per ounce, and gold in Paris had advanced in a like ratio, what would be the effect? Why the supposed premium in favour of England would become a discount in favour of France, for the time being, would be brought to coincide with the usual rate.

Though there exists no invariable par of exchange, it is extremely useful to the merchant to know the average value of the currency of every country with which he trades, in order to ascertain what may be called the approximate prices, which must be the pivot around which fluctuations will necessarily turn. This approximate par (a term which we make use of for the sake of conforming, as nearly as truth will permit, to the language familiar to merchants) should be grounded on the average value of a currency taken over a period sufficiently long to include fluctuations from highest to lowest. To the approximate par so taken will be the tendency of the rate of exchange to conform.

The approximate par of exchange will be liable to be affected by four pairs of circumstances, and fall in the price of the precious metals. These are—
1. Changes made by the supreme authority in the quantity of the pure metal contained in the coin by way of increase or diminution.
2. Depreciation from the use of paper money, and restoration.
3. Clipping, and restoration.
4. Wear and tear, and restoration.

1. Legal Changes in the Coinage. Governments have not always been in the habit of keeping the weight and fineness of the material contained in the current coin an easy way of getting rid of improvidently contracted debts. The English pound was once a troy pound of silver; it is now about four ounces. The French livre, once probably the same quantum as the pound, is now less than a seventeenth part of a lb. By what a succession of frauds must this change have been brought about?

A government having borrowed so many pounds of its subjects would find it a very convenient thing, when the day came to pay them, to substitute for the current coin shillings 'a pound,' and as it would have all the debtors in the kingdom on its side, popularity would be divided on the measure. But although creditors at home may be compelled to submit to this robbery, creditors abroad cannot. Their contract is to receive a given sum of the money of their own country, and the only effect of any debasement will be that the foreign debtor will require more of the debased money to liquidate it; in other words, exchange will fall in the ratio of the debasement. Thus suppose the sovereign to be in pesos 1.12d. exchange on the Paris Bourse, if at 25½f. would fall to 23½f. If, on the other hand, the franc were reduced, exchange would rise.

We can illustrate this by two historical facts. Formerly the Spanish dollar contained as much silver as 4s. 6d. sterling, and consequently the average value of 100l. was 444 dollars 44 cents. The weight of the dollar however has been since reduced, and it now contains only as much silver as 4s. 2d. sterling, so that the average value in 100l. sterling is now 249 dollars; the difference being 8 per cent. The old language of quotation however has never been wholly abandoned by the American merchants. They still assume the old par, so that when exchange is quoted at 10 or 11 per cent premium—a premium which, as we shall presently see, could not be maintained for an hour—it is in fact at 2 or 3 per cent. only (the remaining 8 per cent being nominal); and when it is quoted at 6 or 7 per cent. premium, it is in fact at 2 or 2½ discount. The other fact to which we allude is that the coalescing of the gold standard in the United States, at a rate, compared with silver, to render the American currency practically debased.

Before the introduction of the Gold Bill the average value of 100l. sterling, as we have seen, was 489 dollars; by the gold standard it now coin into 487 dollars, being a difference of 1½ or nearly 1¼ per cent. Thus the par between England and America is now 487d. = 100l., or adhering to the old (erroneously assumed) par, a nominal premium of 9½ per cent.

2. Paper Money. One of the evils to which paper money is liable is depreciation from excess. The market price of money, like that of every thing else, varies in the inverse ratio of its quantity. If it be scarce it will be dear; in other words, all other things will be cheap. If, on the other hand, money be in excess, it will be cheap; in other words, much of it will be given in exchange for other things. To say that prices are advancing, is equivalent to saying that money is getting cheaper. It is clear then, that the effect of issuing paper money in excess is, then to make money, both metallic and paper, cheap. Being cheap, it becomes desirable to export it; but paper money is not available for this purpose, and hence metallic money is alone exported. Bullion in the uncoined state would, under such circumstances, advance in price, but the sovereign would be still a sovereign; hence there would exist a motive to convert coin money into bullion, or to export it. Bullion however would not be exported, except when it was really cheaper than in other countries of its kind.

During the Bank restriction the depreciation reached 27½ per cent. Gold was then worth 5½, 5s. per ounce, and silver 6s. 11d. estimated in paper money. But at these nominally high prices the proportion between gold and silver was precisely the same as before the restriction, when the price of a scruple of silver gold, and bullion would not necessarily be an article of export, unless exchange was really, and not merely nominally, against us.

We have seen that the present average value of the dollar is 4½d.; when silver was at 6s. 11d. the value would be 5s. 9d. in the depreciated English money. Hence a debt due in the latter would be dishonored to the amount of 30½d., whereas now it would require 480 dollars. The dollars remained unchanged, but 100l. of 1813 was worth only 72l. 2s. in gold.

As the par of 4½d. was then, as now, retained, the depreciation was met by a heavy nominal discount of 27½ per cent. It is unnecessary to pursue these calculations to other countries: the same principles apply to all countries.

It is scarcely necessary to observe, that in the process of reparation the phenomena are reversed. A restoration of the English currency, for instance, would be similar in its effects to a depreciation of the currencies of all other countries.

3. Clipping the Coin. In some countries the practice of clipping the coin still continues, and it is likely to continue just so long as people will take clipped coin. If people would take shillings clipped into polygons, they would be so clipped in less than twenty-four hours.

The effect of clipping on the exchange is no less precisely similar to the two cases of exchange examined. If the silver coin of France were clipped to the extent of one-tenth of its weight, exchange would be affected to that extent.

Instead of requiring only 25½f. to purchase 1l. sterling on the Paris Bourse, it would require 23½f. 14 ½d. Restitution would be equivalent to clipping the coins of other countries.

Some of the continental states in which clipped coin circulates have adopted an expedient to keep up the character of their money of account. This expedient is to transact all their dealings with other nations by what they call Banco, which may be defined money as it ought to be, to distinguish it from the current or clipped money, which may be called money as it is. The merchants keep their bank accounts in money as it ought to be, paying in the clipped money, or money, as the case may be. They are charged with the depreciation, which is known by the term Agio. This is purely an arrangement of convenience.

4. Wear of Coin. The case of a worn coinage is precisely similar to that of a clipped coinage, except that it is seldom in its effects, the former gradual. Hence depreciation from wear is much more likely to deceive than that which arises from clipping. Restoration by means of a new issue reverses all the effects.

We have now examined the principal circumstances affecting the value of a currency. Fluctuations in the rate of exchange proceeding from an alteration of the value of the medium in which price is quoted are purely nominal; and so they are usually designated. They are alterations proceeding from the altered quantity of metallic states coerced, and are analogous to an alteration of the price of wheat from an alteration in the capacity of the imperial quarter.

What is usually called the real exchange is the actual market-price, determined by the same law as the price of
sugar, corn, or broad-cloth: namely, the existing proportion between supply and demand.

The demand for bills of exchange arises out of the necessity of paying for imports. The supply arises out of the practice of drawing for the amount of the crown taxes paid, and the supply and demand affect the real and nominal value of every pound's worth of goods imported there: for, exactly a pound's worth of exported goods to be drawn for—there will be no real exchange: that is, the real exchange, however much the nominal exchange may alter, will be at par.

When, however, the importations are not precisely equal to the exportations, exchange can no longer remain at par. An excess of importation would cause exchange to advance against the importing country. Let us suppose a case. In the sphere of a country actual expectations are to be advanced, and the price of wheat causes the transmission of extensive orders to the north of Europe. This would produce a sudden demand for bills of exchange—not perhaps to the extent of the orders; for in all probability goods-adapted to the markets, to whose trading rises, trade to Amsterdam is at par, as it is also at Amsterdam on Danzig. Hence the wheat importer would buy a bill on Amsterdam, and with the proceeds—would there be a bill on Danzig. But the buyer of exchange on Amsterdam cannot get into the market, buying an advance in the rate. In the way the advance becomes general.

The real exchange, however, is subject to a limit beyond which it cannot advance. This limit is the cost of transmitting the precious metals. A debtor to a foreign country—whether from interest on his debt or the transmission of bullion as well as of a bill of exchange—and he will be determined in his choice by the comparative cheapness of either mode. The cost of transmitting specie is, let us say, 2 per cent; so long as exchange continues below 2 per cent, the debtor will be willing to purchase its, but the moment the demanders demand more than that rate, the exportation of bullion will be re-sorted to, and bills of exchange will cease to be demanded. The cost of transmitting specie to that of collecting it at the port of shipment, is therefore the limit beyond which the real exchange cannot advance.

But an advance in the rate of exchange, even up to this point, cannot long be maintained. The tendency in an advance is to check importation and stimulate exportation. Articles which would just pay with exchange at par would pay a profit sufficient to induce exportation where the exporter could secure 1 or 2 per cent, more for his draft. Thus, by the stimulus to exportation, the supply on this side is increased, and the demand must run down to bring the rate of exchange down to its primitive level.

Most of the errors which prevail in relating to the subject of exchange arise out of confounding the real with the nominal exchange. For the purposes of general reasoning, it is well to know what is the average value of the exchange of the several nations with which we have commercial relations; but for practical purposes the actual par for the moment should be rigidly calculated. Unless this be done, it will be impossible that we will be liable to continual error. For further information on this subject, the reader may consult Mill's "Elements of Political Economy," chap. iii, sec. 16, p. 1-2; Ricardo's "Principles," chap. vii, "On Foreign Trade;" article Exchange in the Encyclopaedia Britannica; and Tooke's "High and Low Prices," vol. i.

EXCHANGE ROYAL.

CHEQUER COURT is a superior court of record established by William the Conqueror as part of the Aula Regis, and reduced to its present order by Edward I.

It is the lowest in rank of the four great courts which sit at Westminster Hall, although in ancient times one of the first in importance, as all cases relating to the rights of the crown were there heard and determined, and the crown taxes paid were to be received there. Perhaps the inferiority in point of precedence of this court may be attributed to its having been originally erected solely for the king's profit, which was considered an object inferior to the general administration of justice to the subjects.

Economists have exhaustively much research in ascertaining the origin of the name: some assert that it is derived from the old French word "Esquihier," a kind of abacus or table; or the German, Schatz, "treasure." The term was first used of the country, or the king's envoys. Cambyses says it was so called from the covering of the table at which the barons sat being partly coloured or chequered, and of which, when certain of the king's accounts were made up, the sums were marked and scored with counters.

In the reign of Henry VIII., the king was the cheque of the cheque, or the chief cheque, and four other barons, who are created by letters patent, and are so called from their having been formerly chosen from such as were barons of the kingdom, or parliamentary barons. (Schenk's "History of Bills of Exchange."—"A Chancery of the Exchequer, the old star chamber of the Exchequer, for the time being, the chief baron, and four other barons, who are created by letters patent, and are so called from their having been formerly chosen from such as were barons of the kingdom, or parliamentary barons. (Schenk's "History of Bills of Exchange."— are created by letters patent, and are so called from their having been formerly chosen from such as were barons of the kingdom, or parliamentary barons. (Schenk's "History of Bills of Exchange."—)

The court of exchequer was formerly held in the king's palace. Its treasury was the great deposit of records from the other courts; writs of summons to assemble the parliament were issued by its officers; and its acts and decrees, as they related to the almost universal credit connected with the king's revenue, were not controlled by any officer of the king's ordinary courts of justice.

It now consists of two divisions, one of which, the jurisdiction in all cases relating to the customs and excise, is created by special act of parliament, and subordinated to a court of common law, in which all personal actions may be brought, and a court of equity, where suits in equity may be commenced and prosecuted.

A plaintiff, when bringing an action in this court, presents his complaint to the grand jury of the county for the purpose of obtaining a special final action (2 Will. IV. cap. 39), fictitiously alleged himself to be the king's debtor, in order to give the court jurisdiction in the cause; but since the passing of that act it is no longer necessary for the plaintiff to bring an action, only to present a statement on the plea side of the court of exchequer, as that statute assimilates the practice of all the common law courts, and the operation as well as the name of the proceedings issued from them are the same.

The power to declare and settle the law, and their several duties, are regulated by the 2nd and 3rd Will. IV. cap. 110. By 3rd and 4th Will. IV. cap. 79, a great number of old offices are abolished.

When the court sits in equity the chancellor of the exchequer sits at the bar, and has the power of sitting as such. It is a great advantage in giving judgment. The last case in which the chancellor was required to sit, owing to the barons being equally divided in opinion, was that of Nasib against the East India Company, Miehemelem Term. 1738, when Sir Robert Walpole was chancellor, and his decision in a question of very considerable difficulty was said to have given great satisfaction.

An appeal lies from this court by writ of error to the justices of the county of the bench and common pleas of the exchequer chamber. The Court of Exchequer chamber was first erected in England by stat. 11 Edward III., to determine causes upon writs of error from the common law side of the court of exchequer. The judges of the three superior courts occasionally sit here to hear arguments in important criminal cases, and upon causes of great weight and difficulty, but the judges of the court below have not given their judgment.

As a court of error, the court of exchequer chamber underwent considerable alterations by the passing of the 11th Geo. IV. and 1st Will. IV. cap. 76, and its constitution is now as follows by that statute.

The Court of Exchequer in Scotland was established by the 6th Ann. cap. 26. The judges are the high treasurer of Great Britain, a chief baron, and four other barons. By a recent act (3 and 4 William IV. c. 13) the powers...
of the barons of the Scotch Exchequer as to the duties and
receivers, &c., mentioned in the act have ceased, and are
vested in the Commissioners of the Treasury; and the col-
lection and management of the assessed taxes and land-tax
of Scotland are transferred to the Commissioners for the
affairs of Taxes, but the judicial powers of the barons are
specially saved.

The Court of Exchequer in Ireland was established by
the 40th Geo. III. cap. 39, and consists of the chief justices,
chief baron, and the rest of the justices and barons, or any
minority of them.

EXCHEQUER BILLS form the principal part of the unfunded
public debt of this country. These bills are issued under the
authority of parliament for sums varying from 100l. to 1000l.,
and bear interest. They were first issued in the short
period stated, at the rate of 5 per cent. per annum has since varied greatly at different times, the con-
veniences which they afford to individuals and their advan-
tage to the public have been such as to cause their constant
issue. Their convenience to individuals lies in the fact that
in the circulation of their passage, from year to year would
be the necessity of making a formal transfer, of their bearing
interest, and of their being subject to such violent fluct-
uations as sometimes occur in the prices of the funded
debt. This comparative steadiness in value is caused by the
operation of the public revenue and the annual addition
of duties and taxes. The amount of premium that may have been paid at the time of purchase is consequently
all that the holder of an exchequer bill risks in return for
the interest which accrues during the time that it re-
 mains in his possession. The advantage to the public con-
 sists in the lower rate of interest which they carry com-
 pared with the permanent or funded debt of the nation,
 to which, however, they must in this respect bear some
certain proportion. When the price of the public funds is high, the benefit of the revenue goes entirely to the
private interest; whereas, if they can be purchased to the
amount of 15l. on 5l. 10s. 8d. per cent. and 5l. 8s. 6d.
per cent. per annum; and in the follow-

EXCISE DUTIES, the name given to taxes or duties
levied upon articles of consumption which are produced
within the kingdom. This description, which has usually
been given to them, is more concise than the name it is
own than it was formerly, when the commissioners of excise
revenue were also charged with the collection of duties
upon various articles imported from foreign countries.
Among these foreign articles were wine, spirits, tobacco,
excise and tea. Among the excise duties, the system by
which that was withdrawn from the management of the Excise
and transferred to the Board of Customs. There are still, it
is true, certain duties to which the name of excise is applied
which can hardly be called duties upon consumption,
although they are imposed in such a manner as to be paid
by auction and the sums charged for licenses to permit
parties to carry on certain trades.

Excise duties are said to have had their origin in this
country in the time of William I, when a tax was laid
upon beer, cider, and perry, of houses furnished with
work by which these duties were authorised was passed by the
long parliament in 1643. This act contains also a list of
foreign articles, and among others tobacco, wine, raisins,
currants, and loof sugar, upon which excise duties were
imposed in addition to duties of customs was not receive-
able. This act was adopted and enforced under the pro-
tectorate of Oliver Cromwell; and by the statute 12
Charles II. c. 24, the duties of excise were granted as a

For a long time this class of duties was viewed with par-
cular dislike by the people, on account of its inquisitorial
interference with various industrial pursuits, and it cer-
tainly forms a very strong ground of objection against
excise duties, that the advantage which the revenue last
year had that is held to be incompatible with the perfect freedom of
the manufacturer as to the processes which he may apply
in his works. In every highly-taxed country where con-
sumption duties form part of the public revenue it would be
impossible to avoid the abuses of this class of duties. If, taking for our example an instance which is now exercising an injurious effect in a neigh-
bouring country, it is found expedient to impose a customs duty
upon the consumption of foreign-made sugar, it is clearly
impossible to impose the same duty upon sugar of domestic production
in the same country from other branches of industry. An attempt
has lately been made to set up a beet-root sugar manufac-
tory in England but parliament having imposed an excise
duty upon the produce equal to the customs duty charged
upon colonial sugar, it does not appear probable that the
attempt can be successful, or that it can be perse-
vered in, which indeed is little to be regretted, for the
reason already stated.

Excise duties are liable to this among other very serious
objections, that the regulations under which they are collected
are made, perhaps unavoidably, to interfere with processes of
manufacture, so as to prevent the adoption of improvements
that would be beneficial first to those by which they are
acted afterwards to the community at large, which must always
be interested in their adoption, because of the greater excel-
ence or cheapness of the products which it is the object of
the experiment to attain. It will give some idea of the
extent to which this interference is injurious, if we state, on the authority of a gentleman conversant with all the details of the art of calico-printing, that upon the same premises, with the same amount of labour, double the quantity of cloth is now printed which could have been printed previous to the repeal of the duty, and to the consequent withdrawal of the excise-officers from the works. Another great objection that may be urged against excise duties is, the deduction which they offer for the commission of frauds against the revenue, an offence which, in the eyes of many persons, is of a venial kind, but which too often ultimately demoralizes those by whom it is committed. In the Seventeenth Report of the Commissioners appointed to inquire into the management and collection of the excise revenue it is stated as a striking proof of the extent to which frauds are committed by manufacturers of soap, that there are in England fifty that take out licences, for which they pay 4l. per annum, each of which makes, or rather brings to charge, less than one ton of soap per annum, from which it is obvious that the profits of such a sale would not pay for the license, the entry is made in order to cover smuggling. With regard to malt, another article of great consumption which is subject to excise duties, the commissioners state it to be their opinion, founded upon the evidence given by several respectable maltsters, that malt is sold throughout the season, and in large quantities, for a price that is insufficient to pay the expense of making it and duty, and that the duty is evaded to a great amount. A strong presumptive evidence to this effect is contained in the fact that the average number of bushels of malt brought to charge in each of the ten years from 1725 to 1734 was 26,177,230, while in the ten years from 1823 to 1834, that is, after the large part of the century, the number of bushels so brought to charge was 29,572,380; although during that time the population had been more than doubled, and the habits of the people not altered in any way that should lead to the supposition of any decrease or consumption of the products of malt.

The articles now subject to excise duty are—auctions; bricks; glass; hops; licenses; malt; paper; soap; spirits (British); vinegar.

In addition to the foregoing, excise duties were collected in 1797, under the following heads, viz.:—starch; stone bottles; sweets and mead; tea; tiles; candles; coaches; cocoa; coffee; cider; hides and skins; pepper; printed goods; salt; spirits (foreign); tobacco and snuff; wine; wire.

Of these nineteen articles the duties have been repealed upon the twelfth to which an asterisk is prefixed; the collection of duties on the remaining seven articles has been transferred to the Customs department.

The following table states the amount of payments made into the Exchequer on account of excise duties in England, the charges of collection and the rate per cent. on the collection calculated on the gross revenue in each year from 1797 to 1835.

<table>
<thead>
<tr>
<th></th>
<th>Net Receipt.</th>
<th>Charges of Management.</th>
<th>Rate per cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>£</td>
<td>£</td>
<td>£</td>
</tr>
<tr>
<td>1797</td>
<td>9,453,887</td>
<td>411,696</td>
<td>3 14 4</td>
</tr>
<tr>
<td>1798</td>
<td>9,872,052</td>
<td>409,335</td>
<td>3 10 11</td>
</tr>
<tr>
<td>1799</td>
<td>11,429,033</td>
<td>425,174</td>
<td>3 7 4</td>
</tr>
<tr>
<td>1800</td>
<td>10,198,735</td>
<td>433,292</td>
<td>3 1 1</td>
</tr>
<tr>
<td>1801</td>
<td>10,529,110</td>
<td>557,766</td>
<td>9 2 9</td>
</tr>
<tr>
<td>1802</td>
<td>13,774,158</td>
<td>520,022</td>
<td>3 7 6</td>
</tr>
<tr>
<td>1803</td>
<td>13,659,374</td>
<td>525,583</td>
<td>2 17 9</td>
</tr>
<tr>
<td>1804</td>
<td>13,445,143</td>
<td>557,470</td>
<td>3 13 10</td>
</tr>
<tr>
<td>1805</td>
<td>21,018,539</td>
<td>564,994</td>
<td>2 14 2</td>
</tr>
<tr>
<td>1806</td>
<td>21,739,067</td>
<td>579,940</td>
<td>2 9 6</td>
</tr>
<tr>
<td>1807</td>
<td>22,087,226</td>
<td>648,756</td>
<td>2 14 6</td>
</tr>
<tr>
<td>1808</td>
<td>22,933,712</td>
<td>694,853</td>
<td>3 18 2</td>
</tr>
<tr>
<td>1809</td>
<td>21,273,197</td>
<td>701,990</td>
<td>3 0 11</td>
</tr>
<tr>
<td>1810</td>
<td>23,388,772</td>
<td>737,043</td>
<td>2 18 6</td>
</tr>
<tr>
<td>1811</td>
<td>23,384,554</td>
<td>802,961</td>
<td>3 3 11</td>
</tr>
<tr>
<td>1812</td>
<td>20,061,813</td>
<td>826,493</td>
<td>13 2 7</td>
</tr>
<tr>
<td>1813</td>
<td>22,577,737</td>
<td>830,621</td>
<td>3 5 11</td>
</tr>
<tr>
<td>1814</td>
<td>23,549,676</td>
<td>860,787</td>
<td>3 0 12</td>
</tr>
<tr>
<td>1815</td>
<td>24,796,633</td>
<td>883,169</td>
<td>3 4 8</td>
</tr>
<tr>
<td>1816</td>
<td>21,533,638</td>
<td>928,659</td>
<td>3 13 2</td>
</tr>
<tr>
<td>1817</td>
<td>18,396,400</td>
<td>992,744</td>
<td>4 15 10</td>
</tr>
<tr>
<td>1818</td>
<td>21,330,746</td>
<td>953,869</td>
<td>3 19 7</td>
</tr>
<tr>
<td>1819</td>
<td>21,492,839</td>
<td>953,491</td>
<td>4 10 8</td>
</tr>
<tr>
<td>1820</td>
<td>24,742,242</td>
<td>958,124</td>
<td>3 10 7</td>
</tr>
<tr>
<td>1821</td>
<td>24,781,957</td>
<td>964,515</td>
<td>3 10 4</td>
</tr>
<tr>
<td>1822</td>
<td>24,022,441</td>
<td>950,644</td>
<td>3 10 7</td>
</tr>
<tr>
<td>1823</td>
<td>23,375,780</td>
<td>933,815</td>
<td>3 13 9</td>
</tr>
<tr>
<td>1824</td>
<td>23,498,903</td>
<td>932,845</td>
<td>3 13 10</td>
</tr>
<tr>
<td>1825</td>
<td>18,055,446</td>
<td>899,994</td>
<td>4 1 8</td>
</tr>
<tr>
<td>1826</td>
<td>16,158,649</td>
<td>857,320</td>
<td>4 12 10</td>
</tr>
<tr>
<td>1827</td>
<td>15,446,801</td>
<td>846,591</td>
<td>4 13 5</td>
</tr>
<tr>
<td>1828</td>
<td>16,718,661</td>
<td>829,162</td>
<td>4 10 4</td>
</tr>
<tr>
<td>1829</td>
<td>15,761,547</td>
<td>829,799</td>
<td>4 11 11</td>
</tr>
<tr>
<td>1830</td>
<td>14,747,976</td>
<td>840,101</td>
<td>4 16 5</td>
</tr>
<tr>
<td>1831</td>
<td>12,411,676</td>
<td>797,298</td>
<td>5 11 3</td>
</tr>
<tr>
<td>1832</td>
<td>12,909,188</td>
<td>782,863</td>
<td>5 6 2</td>
</tr>
<tr>
<td>1833</td>
<td>12,846,800</td>
<td>756,952</td>
<td>4 11 11</td>
</tr>
<tr>
<td>1834</td>
<td>11,616,193</td>
<td>740,304</td>
<td>6 8 11</td>
</tr>
<tr>
<td>1835</td>
<td>9,518,688</td>
<td>739,512</td>
<td>6 16 0</td>
</tr>
</tbody>
</table>

The gross and net receipt, charges of management, and the rate per cent. for which the gross revenue of excise in England, Scotland, and Ireland respectively, were collected, for the year 1835, were as follows:

<table>
<thead>
<tr>
<th>Gross Receipt.</th>
<th>Net Receipt.</th>
<th>Charges of Management.</th>
<th>Rate per cent. for which the Revenue was collected.</th>
</tr>
</thead>
<tbody>
<tr>
<td>£</td>
<td>£</td>
<td>£</td>
<td></td>
</tr>
<tr>
<td>England</td>
<td>10,861,182</td>
<td>10,255,486</td>
<td>279,812</td>
</tr>
<tr>
<td>Scotland</td>
<td>2,456,705</td>
<td>2,232,961</td>
<td>150,530</td>
</tr>
<tr>
<td>Ireland</td>
<td>1,911,464</td>
<td>1,906,150</td>
<td>183,049</td>
</tr>
</tbody>
</table>

The gross receipt, as stated in the foregoing abstract, was collected on the following articles subject to duties in the following proportions:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>Scotland</td>
<td>Ireland</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The estimated amount of excise duties repealed since 1824 is 6,782,000l., and of the amount of those, the management of which has been transferred to the Customs, is 11,238,300l. The rates of excise duties at present chargeable in England, Scotland, and Ireland respectively, are as follows:
The number of traders who were obliged to take out excuse licenses in 1835, or whose premises were subject to visit from the excise officers, in England, Scotland, and Ireland respectively, was:

<table>
<thead>
<tr>
<th>Category</th>
<th>England</th>
<th>Scotland</th>
<th>Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brewers of beer for sale, vis.</td>
<td>41,918</td>
<td>351</td>
<td>233</td>
</tr>
<tr>
<td>Other managers, etc.</td>
<td>14,326</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of brewers</td>
<td>41,918</td>
<td>351</td>
<td>233</td>
</tr>
<tr>
<td>Malsters</td>
<td>19,093</td>
<td>1,721</td>
<td>368</td>
</tr>
<tr>
<td>Soap-makers</td>
<td>3,233</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Brick-makers</td>
<td>5,771</td>
<td>177</td>
<td></td>
</tr>
<tr>
<td>Patent-druggists</td>
<td>4,444</td>
<td>65</td>
<td>57</td>
</tr>
<tr>
<td>Stay-makers</td>
<td>91</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>Patent-tobacco people</td>
<td>500</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Glaziers</td>
<td>116</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>Distillers</td>
<td>18</td>
<td>24</td>
<td>15</td>
</tr>
<tr>
<td>Vinegar-makers</td>
<td>29</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Refractors</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pyroxyosite acid makers</td>
<td>20</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Refractories</td>
<td>102</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>Tobacco- and snuff manufacturers</td>
<td>302</td>
<td>135</td>
<td>291</td>
</tr>
<tr>
<td>Tallow-melters</td>
<td>2,227</td>
<td>198</td>
<td></td>
</tr>
<tr>
<td>Glass-parchers</td>
<td>56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper-makers</td>
<td>29</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Cork pyrogallic acid makers</td>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seamen</td>
<td>2,145</td>
<td>227</td>
<td></td>
</tr>
<tr>
<td>Sacks-mills</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron foundry workers</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Winegrowers</td>
<td>2,095</td>
<td>58</td>
<td>93</td>
</tr>
<tr>
<td>Wines</td>
<td>1,893</td>
<td>47</td>
<td>24</td>
</tr>
<tr>
<td>Teas</td>
<td>73,819</td>
<td>15,050</td>
<td>12,253</td>
</tr>
<tr>
<td>Sugars</td>
<td>12,989</td>
<td>1,340</td>
<td>218</td>
</tr>
<tr>
<td>Vinegar</td>
<td>77,029</td>
<td>2,841</td>
<td>3,058</td>
</tr>
<tr>
<td>Bakers who have also retail</td>
<td>1,094</td>
<td>511</td>
<td>318</td>
</tr>
<tr>
<td>Retailers of spirits</td>
<td>47,384</td>
<td>16,391</td>
<td>18,257</td>
</tr>
<tr>
<td>Wine</td>
<td>18,701</td>
<td>8,357</td>
<td>7,772</td>
</tr>
<tr>
<td>Sweets</td>
<td>765</td>
<td>53</td>
<td>28</td>
</tr>
<tr>
<td>Beer-sellers</td>
<td>590</td>
<td>39</td>
<td>25</td>
</tr>
<tr>
<td>Retailers of beer, elder, &amp;c. not to be drunk on the premises</td>
<td>35,731</td>
<td>23</td>
<td>1,092</td>
</tr>
</tbody>
</table>

The management of a branch of the revenue which is collected in every part of the kingdom necessarily gives employment to a great number of officers. The numbers so employed in England, Scotland, and Ireland, and the amount of their salaries at different periods, were as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>England</th>
<th>Scotland</th>
<th>Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>1792</td>
<td>4,777</td>
<td>3,532</td>
<td>671</td>
</tr>
<tr>
<td>1815</td>
<td>9,218</td>
<td>6,772</td>
<td>1,140</td>
</tr>
<tr>
<td>1816</td>
<td>9,318</td>
<td>6,772</td>
<td>1,140</td>
</tr>
<tr>
<td>1817</td>
<td>13,599</td>
<td>10,046</td>
<td>1,504</td>
</tr>
<tr>
<td>1818</td>
<td>13,760</td>
<td>10,172</td>
<td>1,504</td>
</tr>
<tr>
<td>1819</td>
<td>14,847</td>
<td>10,246</td>
<td>1,504</td>
</tr>
<tr>
<td>1820</td>
<td>14,572</td>
<td>10,004</td>
<td>1,504</td>
</tr>
<tr>
<td>1821</td>
<td>13,760</td>
<td>10,172</td>
<td>1,504</td>
</tr>
</tbody>
</table>

EXCITANTS. [SIMULATORS.]

EXCOMMUNICATION, from Excommunication, is the highest ecclesiastical censure which can be pronounced by a spiritual judge. The person against whom it is pronounced is for the time being excluded from the communion of the church. This punishment, as well as many others, springing from ecclesiastical jurisdiction, according to some opinions, had its origin in the advice given by St. Paul when reproving the early Christians for scandalizing their profession by pronouncing laws against each other before heathen judges; and the apostle accordingly recommended them to leave all matters in dispute between them to the decision of the Ecclesia, or the congregation of the faithful. This advice was soon followed, and beaten tribunals were soon afterwards occupied by the controversies of the Christians.

The bishop and his clergy, and afterwards the bishop alone, became sole judge in these disputes; but possessing no coercive powers to enforce his decrees, they were obliged to adopt the only means of which they could avail themselves, to bring the refractory to submission, namely, by excluding them from the rites of the Church, and warning other Christians from their company and presence. A Christian thus shut out from the fold of his own brethren could not do otherwise than submit unconditionally.

This censure, although instituted by the primitive church as the means of preserving its purity, and of enforcing obedience to its just laws, was afterwards used for the prosecution of ecclesiastical power, and became the engine of the greatest oppression in those countries which were most subject to ecclesiastical rule. (Roberts's History of Charles V., vol. ii. p. 169.)

In England excommunication became at a very early period the instrument of punishment by the wishes of the bishops, and others possessing ecclesiastical jurisdiction. It was divided into the greater and the less excommunication. The latter only removed the person from a participation in the sacraments, and is what was most commonly meant by the term excommunication; the other was called anathema, and not only removed the party from the sacraments, but from the Church and all communication with the faithful, and even deprived him of Christian burial. Subjects were absolved from their allegiance to an excommunicated prince by indicating that they did not obey him. Gregory V. was the first prelate who ventured to excommunicate a reigning prince in the case of Robert, king of France, in 996. John and Henry VIII. are well-known instances in English history.

Excommunication sometimes followed immediately upon the commission of an offense, and was then called canonical, to distinguish it from that which did not depend upon an established canon, but on the sentence of a judge.

The following offenses were punished with worse than excommunication: diviners, heretics, their receivers and comforters; simoniacs; violators and plunderers of churches; those who spoiled clerks going to Rome; the plunderers of the property of a bishop who should violate the oath; those who gave aid, favour, or counsel to excommunicated persons; those who laid violent hands on clerks or religious persons, or commanded others to do so.

These punished with the less excommunication were persons committing any mortal sin, as sacrilegious persons; those who received a church from lay hands; notorious offenders; those who talked with, saluted, or sat at the same table with, or gave anything in charity to persons excommunicated by the greater excommunication, unless they were commanded so to do.

Excommunication was also pronounced for other matters which belong to ecclesiastical jurisdiction, as adultery, incontinence, fornication, &c., or for contempt of any ecclesiastical order or sentence. A sentence of excommunication was pronounced by three prelates at certain intervals, or one peremptory, containing the legal space of time, with a proper regard to the quality of the person and the nature of the offence. But, as Blackstone remarks, 'heavy as the penalty of excommunication is, considered in a simple moral point of light, it is surpassed by the number of many obstinate or profane men, who would despise the brutum fulmen of mere ecclesiastical censure, especially when pronounced by a petty surrogate in the country, for railing or contumelious words, for non-payment of fees or costs or other trivial causes.' The common law has compassionately stept in to the aid of the ecclesiastical jurisdiction, and kindly lends a supporting hand to an otherwise intolerable authority.' This was effected by the writ 'de
excommunicato capiendo, or for seining the excommunicate. But before the writ for taking the excommunicated person could be granted the continuancy and contempt of the party were to be certified by the bishop to the court of Oldest or in his order of his seal was made returnable into the King's Bench. By the statute just cited the cause of excommunication was to be stated in the writ, in order that the court might judge as to the justice of the case. The sentence of excommunication might be revoked by the judge who passed the sentence, or upon appeal the party might be absolved. Absolution generally belonged to the same person who passed the sentence, unless in some particular cases, which were referred to the pope or a bishop. (Roves' Hist. of English Law; Sulivan, Lex dispensatorium.)

By a sentence of excommunication, both greater and less, those denounced were excluded from the right of Christian burial, from bringing or maintaining actions, from becoming attorneys or jurymen, and were rendered incapable of becoming supervisors or courts at. But since the Stat. 33. I. c. 152, excommunication cannot now be pronounced in England, except in certain cases (as spiritual censures for offences of ecclesiastical cognizance); and by the 3rd section of that statute 'no person who shall be pronounced or declared excommunicate to be in the present case shall incur any civil penalty or incapacity, in consequence of such excommunication, save such imprisonment, not exceeding six months, as the court pronouncing or declaring such person excommunicate shall direct.' The proceedings in such excommunication may still be pronounced, are the same, as to the issuing and return of the writ, as they were before the act of 33 George III. By the same act (33 George III. c. 127), in all cases cognizable by the laws of England in ecclesiastical courts, when any proceeding against courts at is. But since the Stat. 33. I. c. 152, excommunication cannot now be pronounced in England, except in certain cases (as spiritual censures for offences of ecclesiastical cognizance); and by the 3rd section of that statute 'no person who shall be pronounced or declared excommunicate to be in the present case shall incur any civil penalty or incapacity, in consequence of such excommunication, save such imprisonment, not exceeding six months, as the court pronouncing or declaring such person excommunicate shall direct.' The proceedings in such excommunication may still be pronounced, are the same, as to the issuing and return of the writ, as they were before the act of 33 George III. By the same act (33 George III. c. 127), in all cases cognizable by the laws of England in ecclesiastical courts, when any proceeding against courts at is. But since the Stat. 33. I. c. 152, excommunication cannot now be pronounced in England, except in certain cases (as spiritual censures for offences of ecclesiastical cognizance); and by the 3rd section of that statute 'no person who shall be pronounced or declared excommunicate to be in the present case shall incur any civil penalty or incapacity, in consequence of such excommunication, save such imprisonment, not exceeding six months, as the court pronouncing or declaring such person excommunicate shall direct.' The proceedings in such excommunication may still be pronounced, are the same, as to the issuing and return of the writ, as they were before the act of 33 George III. By the same act (33 George III. c. 127), in all cases cognizable by the laws of England in ecclesiastical courts, when any proceeding against courts at is. But since the Stat. 33. I. c. 152, excommunication cannot now be pronounced in England, except in certain cases (as spiritual censures for offences of ecclesiastical cognizance); and by the 3rd section of that statute 'no person who shall be pronounced or declared excommunicate to be in the present case shall incur any civil penalty or incapacity, in consequence of such excommunication, save such imprisonment, not exceeding six months, as the court pronouncing or declaring such person excommunicate shall direct.' The proceedings in such excommunication may still be pronounced, are the same, as to the issuing and return of the writ, as they were before the act of 33 George III. By the same act (33 George III. c. 127), in all cases cognizable by the laws of England in ecclesiastical courts, when any proceeding against courts at is.
If a stranger takes upon himself to act as executor without any authority, as by intermeddling with the goods of the deceased, he is called an executor de son tort (of his own wrong), and is liable to all the trouble of an executor without the aid of creditors, and is liable in the first instance, as assets come to his hands; and is liable not only to an action by the rightful executor or administrator, but also to suits as executor of the deceased by his creditors and legatees. The only advantage which an executor derives from his office is the right to retain any debt due to him from the testator, as against creditors of equal degree, and this privilege is allowed him, because he cannot take any legal steps to recover payment. This, though practically a privilege, is in reality only a provision of law, and he is not prejudiced by his appointment; otherwise as a man cannot see himself, all the other creditors would, by instituting a suit against the executor, gain priority over him in respect of their debts.

Executors and administrators are in general the same, the only essential difference between them being, as before mentioned, the mode of their appointment. Their duties are to bury the deceased, to prove his will in the proper Ecclesiastical Court, to collect and get in his goods and chattels, to pay his debts in the order appointed by law, and also his legacies, if he has bequeathed any, and to dispose of the residue of his goods and chattels in the manner by the will directed, or according to the statutes for the distribution of the effects of intestates, if there should be none. He is an executor or administrator if he pays the debts and legacies liable to an action at law, and also to a suit in equity, for the payment of the debts and liabilities of their testator or intestate; and to a suit in equity and the Ecclesiastical Court for the legacies bequeathed by him, and the receipt of which he is entitled to as executor or administrator. They are liable to an action at law, and also to a suit in equity, for the payment of the debts and liabilities of their testator or intestate; and to a suit in equity and the Ecclesiastical Court for the legacies bequeathed by him, and the receipt of which he is entitled to as executor or administrator. They are liable to an action of account for the purpose of ascertaining the extent of the assets and liabilities of the deceased, and the executor or administrator may be required to render an account of the assets and liabilities before a superior, provided he has no notice of the latter and a reasonable time has elapsed after the testator's death; except in the case of debts of record due to the crown, of which the executor is bound to take notice. An executor or administrator may also be required to account against creditors of an equal degree, and he may pay any one or more debts to creditors of equal degree, although thereby he may exhaust the assets, unless a suit or action be commenced against him; and even in that case he may, by confessing judgment, enable himself to recover priority. But notwithstanding an action or suit be commenced, he may pay a creditor of a higher degree than the one proceeding against him, save only where the suit is for a general administration of the estate, when the executor should not make any further payments.

The debts being all paid, the next duty of an executor or administrator is to pay the legacies, and distribute the personal estate to the next of kin of the testator if there be any overplus; but where the testator has made a residuary bequest, he is entitled to pay legacies out of the personal estate, or any overplus, and if it is sufficient for the payment of the legacies, the executor must pay to each legatee an equal proportion of his legacy, unless the testator has directed the order of payment, in which case the legacies must be paid in the order named, and the whole loss must fall upon the last in order. Specific legatees, i.e., persons to whom a specific fund or article of property is given by will, are not liable to abatement of their legacies, but receive the fund or article whether the assets are or are not sufficient to pay the other legatees; though if the fund is changed, or the article sold, or from any other cause is not in existence at the death of the testator, the legacy fails, or in technical language, is said to be adeomed. Executors and administrators cannot be compelled to account for the value of any legacies paid out of personal estate, or any overplus, before the expiration of a year after the decease of the testator; and not even then, if notice has been acquired or there is reasonable ground to suspect the existence of debts and liabilities. Indeed, unless the assets are of ample amount, the executor or administrator should not pay within the year, even though the testator has directed it to be done; for it has been held that such a payment affords no defence against a creditor, and the testator or intestate may be bound by covenants upon which subsequent creditors may rely, or he may be under a moral obligation, and some maladministration of the trust estate may be discovered after the lapse of many years. In these and many other cases, executors and administrators should not part with the assets until all chances of adversity are over, and the parties are made secure by the parties receiving them to refund in case of need. This last course will sometimes be directed by a court of equity in a suit for a legacy; for though an executor or administrator may recover from the legatees or next of kin to whom he has handed over the assets in...
case of subsequently-discovered debts of the deceased, it is obvious that this is a very insufficient and uncertain security. Where a legatee is an infant, or the testator has directed his executors to invest any portion of his estate in the funds, or has provided for some future payment to be made, or from any other cause, an investigation by the receivers is necessary, they are, in the absence of any express direction to the contrary, bound to make such investment in the Three per Cent. Consols, that fund being considered by the Court of Chancery as the most desirable for the purpose of investment. The law on this rule is inflexible, and an executor who should disregard it would run great risk of having to pay the costs of a suit to compel him to place the money in that fund, and to make good any loss which might occur through the change of securities. All these subjects will be found in the works of Williams, and Toller 'On Executors,' and Went worth 'On Administrators.'

EXEDRA (ἐξεδρα), a name given to certain open recesses in the buildings of the ancients. There were numerous exedrae in the halls. Vitruvius says the spacious exedra of the Greek palace were furnished with seats. The exedrae were placed in the three porches of the palace. (Vitruvius, v. c. 9.) Sometimes in houses a covered hall, and of a square form, was called exedra. (Vitruvius, vi. cap. 13.) The position of the Greek house the exedrae were placed looking to the west. (Vitruv. vi. cap. x.)

EXERCIT. [Διακριτικη.] EXETER, a city and county of itself, locally, in the hundred of Wonford, in the southern division of the county of Devon, it is 16 miles south-east from Plymouth, and 174 west by south from London. Exeter is supposed to have been a settlement of the Britons before the Roman invasion. It was then called ‘Caer-Ire’ and ‘Caer-Yrall’, the former derived from its situation near the water, and the latter the castle which is built by the Romans. It was called Ica Dumniorum, to distinguish it from the Issa Silurum in Wales. From the number of coins, small bronze statues (evidently Penates), te-related pavements, and other Roman antiquities near the walls and in the neighborhood of the city, it must have been a Roman station of some importance. It is uncertain how long Exeter retained its appellation of Ica Dumniorum, but in the reign of Alfred it had acquired that of Exon-Cestre (castle on the Ex), whence its present name.

In the reign of King Stephen, Baldwin Rivers, Earl of Devon, fortified Exeter on behalf of the Empress Maude, and did not yield till reduced by famine after a long siege. In the 14th year of the reign of Henry VII by Perkin Warbeck, and again by the sable of Devonshire and Cornwall in 1459.

The city of Exeter was formerly surrounded by walls and strongly fortified. Leland, in speaking of it, says, ‘The town being larger and more spacious, but still strongly walled and maintained. There be diverse towers in the town wall by both the west and east gate. There be four gates in the town, by names of Est, West, North, and South. The East and the West Gates be now the fairest, and of one fashion of building: the South Gate hath been the strongest.’ Situated on a high eminence, on the north side of the town, are the ruins of the castle, called ‘Rougemont.’ When this castle was first erected is unknown; but it was either rebuilt or much repaired by William, who incidentally built a tower near the south gate, on which a prince, husband of Albinia his niece, in the possession of whose descendants it remained till the 14th year of the reign of Henry III., when it was taken into his own hands. It was completely dismantled during the civil war, and has never since been restored.

In the area of the castle-yard a session-house has lately been erected, which is a neat-looking building, faced with Portland stone, and contains, in addition to two good-sized courts, a grand-jury room, magistrates' chambers, and a large room on the front is a small county, election, and other meetings are held. To the north of the castle is a delightful walk, shaded by fine old elm trees, called Northerly. Nearly in the centre of Exeter is the guildhall, where the assizes for the city (which is a county of itself) are held, as well as the sessions, elections, and other business relative to the city alone. The building contains several valuable portraits, amongst others, those of Henrietta Maria, Charles the First's queen, of her daughter Henrietta duchess of Orleans, and of General Monk. The only other ancient building of any importance at Exeter is the cathedral. It is uncertain when the present edifice was begun, but probably it was soon after the see of Devon was transferred to Exeter from Crediton, which was its locality till the year 1049. At all events it was completed about the year 1220. The choir, which is the most beautiful part of the church, is divided into three bays, and the eastern part, third bay, of Exeter, who was a Norman, and came over with the Conqueror. It then assumed its present cruciform shape, but underwent numberless alterations and additions during the thirteenth and fourteenth centuries. It now consists of a nave, 76 feet in width, and 152 in length, with aisles on each side; two short transepts, formed by two Norman towers 130 feet in height; a choir of the same width as the nave, and 125 feet in length; ten chapels or oratories, and a chapter-house. The whole building from east to west is 390 feet, and from north to south 260. The western front is highly decorated with a profusion of niches and elegantly carved figures, and pre-erects one of the richest façades of any building in Europe. The towers are highly interesting to the antiquary as specimens of Norman architecture. The chapter-house is a beautiful edifice, and the monument of John and Joan, Earl of Devon, and his wife, and his soldiers, but has since been thoroughly repaired, as other parts of the building also have lately been.

In the north aisle are the splendid monuments of Sir Richard and Bishop Stapleton. The organ, with the exedrae and subsidiary chapels, is one of the largest in Europe: the large pipes are nearly three-foot three inches in height, and four feet in circumference. (For a further account of this truly magnificent building we must refer the reader to Ridout: Oliver; Britton's Cathedral Antiquities.)

The city was antiically held in demesne by the crown; its earliest charter was granted by Henry I., and confirmed by Henry II. and Richard I. The governing charter was granted by George III. in the first year of his reign, and the sessions and the houses are held by the judges of the western circuit twice a year for the county of the city at the guildhall, and twice a year for the county at the session-house. There is also a county court, and a court of requests. The town is also exceedingly fine; the vaulted roof of the nave is supported by clustered columns, surmounted by fine pointed arches; as is also that of the choir, which is separated from the nave by a screen of exquisite workmanship. The chapter-house is a beautiful edifice, and the monument of John and Joan, Earl of Devon, and his wife, and his soldiers, but has since been thoroughly repaired, as other parts of the building also have lately been.

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is a subscription library in Fore Street; and in 1813 the Devon and Exeter Institution was founded, for the promotion of arts, &c., the library of which contains about 10,000 volumes. It is situated in a new building. To the north of the city are the cavalry barracks, and very near them is the new bridewell and the county gaol, both of which are judiciously planned, and contain the governor’s residence, chapel, &c. There is also a city prison. The principal on the north side; one of the most considerable being the New Point. The trade principally consists in woollen goods and manganese; the imports are wine, hemp, tallow, &c. A branch bank has lately been established here by the Bank of England. The market day is Friday; but there is a daily sale in the Exchequer, besides, fish, fruit, &c., which is held on the third Wednesdays in February and May, the last Wednesday in July, and second Wednesday in December. There is a great horse fair held at Alphington, about one mile from Exeter.

From the 13th century the city has been founded by the citizens in the reign of Charles I.; the sons of freemen are instructed gratuitously. There are fifteen exhibitions to either of the universities of Oxford or Cambridge, six of which are of 36d. each, the others are much less. The school-room is open to the instruction and benefit of the poor; Augustinian friars founded in 1239. There are no less than ten charity schools in Exeter, independent of Sunday-schools; amongst others are St. Mary Arches’ school, founded in 1666, by W. Wootton, for the instruction on Dr. Bell’s system of the children of the poor. The Devon and Exeter Central School, founded in 1811, where about 430 boys and 270 girls are taught to read and write; and the Exeter British School, where about 130 boys and about the same number of girls are instructed, without regard to sect. Their fees are paid by subscription, and has a considerable income arising from a funded property: it now contains above 200 beds. There is a lunatic asylum admirably managed, as well as a dispensary, an eye infirmary, and an institution for the deaf and dumb. The workhouse from which the Great Northern roads in the London road; it contains a governor’s house, committee rooms, &c., and affords accommodation to several hundreds of the poor. A savings’ bank was established in 1817, from which the London roads; it contains a governor’s house, committee rooms, &c., and affords accommodation to several hundreds of the poor.

Many eminent men have been natives of Exeter; amongst the most distinguished are Josephus Icenus or Joseph of Exeter, a Latin poet of the twelfth century, Baldwin, abbot of Canterbury, Sir Thomas Bodley, founder of the Bodleian Library, Lord Chancellor, Lord Gifford, and Sir Vicary Gibbs.

EXETER OR EXON DOMESDAY, the name given to a record preserved among the muniments and charters belonging to the dean and chapter of Exeter cathedral, containing the detailed description of the lands held by the bishop, comprising the counties of Wilts, Dorset, Somerset, Devon, and Cornwall; supposed, as far as it extends, to contain an exact transcript of the original rolls or returns made by the Conqueror’s commissioners at the time of forming the Great Domesday Book; the contents of which comprised a vast number of tenants: beginning a new sheet, and those of almost every tenant a new page. The lands in the counties of Devon, Somerset, and Cornwall belonging to one tenant, and the counties together belonging to another, though not always in the same order; and, in like manner, the summaries of property in Wilts and Dorset are classed together.

The manuscript begins with the ‘Inquisito Gebili,’ or taxation of the hundred of Wiltshire; of which it contains no less than three copies, the third seeming to be a corrected edition of the other two. The taxation of the hundreds of Dorsetshire follows, and after it those of Devonshire, Cornwall, and Somersetshire. The Inquisition for each hundred is as follows:—1. The total number of hides; 2. the number held by the king and his exons in demesne, with an enumeration of those for which the tax was not paid; 3. the number of hides for which the tax was paid, and its amount; 4. the tax in arrear, and the reasons for its so remaining. Throughout, the geld or tax is computed at the rate of 6s. for every hide.

Upon collating the returns of lands which form the great body of the Exeter Survey with the Exchequer Domesday, they have been found, with a few trifling variations, to coincide; one property alone being differently disposed of in the Exeter which is omitted in the Exchequer Domesday, relating to Sotbreck in Devonshire. The Exeter manuscript, however, is not complete in its contents. There are considerable omissions of lands in Wiltshire, Dorsetshire, and Devonshire; but these have been very judiciously cut out and lost. In Cornwall every manor mentioned in the Exchequer occurs in the Exeter Domesday. One leaf of this record was accidentally discovered in private possession within these few years, and has been restored to the manuscript. In the Exchequer there is a remarkable difference between the two records. Richeston, in the Exon Domesday, fol. 101, is Chichestone in the Great Domesday, tom. i. fol. 120. Modifordis, Exon, fol. 116, is Mundford in Domesday, tom. i., fol. 87. Cortona, Exon, fol. 102 b. Ilbera, Exon, fol. 139 b., is Lilebere, Domes- day, tom. i., fol. 88. There are also many observable differences in the names of persons, as Ulwardus Wite, mentioned in the Exon Domesday, fol. 116, is Wiwardus Albus in the Great Domesday. Robert of Battle in Sussex is called Abbas de Prio in the Exon Domesday, fol. 195; but in the Exchequer Domesday, Abbas de Labat allevia. Abbas de Allenia, Exon, fol. 280, is Abatia de Abington in Domesday, Adret, Exon, fol. 285, is both Edred and Edred, Domesday, fol. 118. Wilhelmi Capra of the Exon, fol. 398, is Williemus Chievre in the Great Domesday. The names of tenants in King Edward’s time are far more numerous preserved in the Exon than in the Exchequer Domesday.

The systematic arrangement of the subject matter of the Exchequer Domesday bears unquestionably a decided preference over the Exon Domesday. occasional insertions in the margin of the Exon Survey are entered in the text in the Exon Survey, the lands of the great barons exactly in the same order as such in the Great Domesday. On the contrary, in fol. 194 of Exon, the ’Terra Ecclesiasticum quae dabis sunt Sanctis in Elesmosina,’ from all that appears on the face of the record are in Somersetshire; whereas they are really in Devonshire, and placed in the same manner as it is given in the second volume of the Great Domesday.

The reason for omitting this enumeration in the breviated entries of the first volume of the Great Survey is self-evident. The live stock was altering every day and year; the enumeration of it of the year 1085 would be of no further use than for the exact time when the survey was made. A comparison of this part of the Exeter with the second volume of the Great Survey tends greatly to corroborate the notion that the returns of the counties of Essex, Norfolk, and Suffolk, were transcribed in full from the original rolls, in the same manner as the Exeter Domesday.

The difference between the two surveys as to diction, when they agree in sense, is likewise remarkable; as for instance,"
chap. begun in 1622-3, was completed by Dr. George Hakewill, afterwards rector. The library was erected in 1785, after a design of the late Rev. W. Crowe, public officer. On the 31st December, 1848, there were 304 members upon the college books. There are two benefices in the patronage of this society, one of which, the vicarage of Kellington, in Oxfordshire, is annexed to the rectorship.

The bishop of Exeter is the visitor of this college. (Chalmers's Hist. of the Colleges of Oxford, etc.)

Guide, etc. (Oxford Unive. and City Guide, 1837.)

EXETER. [New Hampshire.]

EXHAUSTIONS, METHOD OF. [Geometry of the Greeks.]

EXHIBIT, a deed or writing proved by a witness or admitted by the parties in a suit in chancery, in the equity side of the Court of Exchequer, or in bankruptcy.

EXHIBITION. [Schools.]

EXHOUSE, and preservation of Moses; his flight into Midian; his divine mission to Pharaoh (at the age of 80; vii. 71; the miracles performed by him and his elder brother, Aaron; the ten plagues inflicted on the Egyptians; the institution of the Pasover; the departure of the Israelites from Egypt; the events preceding the conquest of the land; from Mount Sinai; and the erection of the tabernacle, or portable temple. The king, Pharaoh (a general Egyptian appellation of royalty), for whom the Israelites built the treasure cities, and by whom their male children were numbered. Unit 13th century. The first of the four ministers to the chief of the church, carnal, spiritual, and national, is Moses; his father name was Amram, the father of Aaron, and Aaron and Pharaoh, and the children of Israel and of the Egyptians.

EXODUS. THE BOOK OF, is the second of the Penta- tetarch, or Five Books of Moses, and derives its name from the principal event recorded in it, namely the departure of the Israelites from the land of Egypt, which, in the Greek Septuagint translation, is expressed by the word exodus (ἐξοδος), that is, the going out. In the original Hebrew it is called נָצָר (natsar), meaning "to be taken away," or "to be led out." (See the NIV margin note.)

The book records the slavery and cruelty endured by the descendants of Israel (Jacob) under the kings of Egypt; the bonds of the Israelites, and the promise of deliverance; the plagues sent to Pharaoh; the exodus from Egypt; the covenant made at Mount Sinai; the building of the tabernacle; the journeyings of the Israelites in the wilderness; their murmurrings against God and Moses; their repudiation of the Egyptian worship of the calf under the direction of Aaron; and their eventual entrance into Canaan. (See the Note 2.)

EXODUS, book of. [Bible.]

EXODUS, EXPLANATION OF, in 1605, a small division of Thymeleaceous plants. [Theo-lax.]
and where Moses died (Gen. xxxiv.), and, 'as things cannot be historically related,' as Mr. Horne observes, 'until they have actually taken place,' it is evident that, if Moses is the author, he must have written it immediately before his death in the battle (xiii. 18). In the second place he knew that, 1. Bishop critical and chronological a great difference of opinion exists as to what date should be assigned to the departure of the Jews from Egypt, and as to the book of Exodus being written by Moses. In chronological works the exodus forms the fourth grand epoch in the ancient history of the world: thus. 1. The creation of Adam. 2. The Deluge of Noah. 3. The call of Abraham (his emigration from Chaldea into Canaan). 4. The departure of the Israelites from Egypt. This last event, according to the Hebrew text of the Book of Exodus, took place a.c. 1440, but according to the Samaritan text, which is the primitive Hebrew (Dr. A. Clarke) it occurred 267 years earlier, that is, a.c. 1738. The learned Perron ('Canon Chronologique,' in 'Défence de l'Antiquité des Tems,' 4to, 1691) adopting the former view, that of Bishop Usher ('Annales Vict. et Nov. Test.') prefers that of the Hebrew text. Dr. Andrews, in his 'Heb. Dict. and Chronol.' 1823, puts the exodus a.c. 1677. (See Dr. Hales's 'Analysis of Chronology;' Sir John Marsham's 'Chronicon Erythraeum,' Ed.; Simon's 'Chronology of the Old Testament;' and the obituary of the New Systema Chronol., Götingen, 1778; R. C. Beysenga, 'Bibliae Zeitschreibung,' Leips.; Walker's 'Analysis of Time,' 1796; Remarks on the Bible Chronology, 1687; Criteria for determining the accuracy of Scripture Chronology,' iv. 21.) In the plan of a Hebrew version, Moses, according to St. Justin, Tatian, Clemens Alexandrinus, Tertullian, Julius Africanus, and other Christian Fathers, as well as Josephus, Justus, Manethon, Philo, Mendes, Apion of Alexandria, Porphry, and others, is named as the writer. In the chronicles of the Christian fathers the chronologists place from 270 to 450 years earlier than the birth of Moses according to the Hebrew text. (Du Pin, 'Bibl. Univer.; Du Fresnoy, Chronol.') In the chronicle of Eusebius (Hist. Eccl. ii. 10) we learn that the Hebrew writers made contemporaneous with Coreses, who became king of Athens (Arrian, Marb.) 11 years before the birth of Moses (a.d. 1677), and, according to Perron, 130 years after the death of Moses. (Heb. text.)

There is no reason, therefore, that the production of Moses has been the occasion of many learned critical, both Christians and Jews, as Aben Ezra, Maimonides, Le Clerc, Dr. Midgicoton, Newton; and in Germany it is generally prevalent among the philosophical theologians of the rational school of philosophy, so as to make the higher German rationalism, makes the following statement in the preface to his new translation of the Bible from the Hebrew in 3 vols. 4to. — From intrinsic evidence three things to me seem indubitable. 1. The Pentateuch in its present form was written in the time of Moses. 2. It was written by Moses or his immediate disciples. 3. Moses, most probably at Jerusalem. 3. It could not be written before the reign of David, nor after that of Hese- kiah. I would refer it to the reign of Solomon.' That is, about a c. 900, in or near the age of Homer and 500 years after the time of Homer. (Ibid. vol. ii. p. 245.) Dr. Adam Clarke, in his Commentary, being 3,263,000. They are said to have been 'more and mightier' than the Egyptians, 'very mighty' (ix. 20), to have gone out with their 'armies' (xix. 51) 'harnessed,' that is, accoutered with arms, 'with other' (ix. 18), 'with flocks, and herds, and very much cattle' (xix. 38), but as they are also said to have been slaves to the Egyptians, who 'made them serve with rigour and hard bondage, in mortar, brick, and all manner of service in the field' (i. 14)—to have been led out of their nearest way in Canaan, lest, on seeing war with the Philistines, they should repent, and return to Egypt (xiii. 17), and to have been 'sore afraid' at the sight of the Egyptians' marching after them (xiv. 10), some commentators understand the word as meaning, to make not harnessed, but slung together five in a string. Concerning the crimi- nality of the Israelite women in borrowing and appropriating jewels and raiment of the Egyptians by the divine direction (iii. 21, 22, and xi. 2), and God's hardening the hearts of the Egyptians to receive no manifest sign against them, see Núcar, Systems of Exorcism, and movable vespé- ture Difficulties, compiled by W. Carpenter, p. 35, &c.

In xvi. 15 it is stated that the Israelites, when they first saw the manna, said one to another, 'It is manna, for they knew not what it was;' and in xxxviii. 8 of the English translation, it is said that it was made of the looking-glasses of the women who assembled at the door of the tabernacle. These inconsistencies are avoided by Dr. Geddes; and he observes that the word ἱππαρχος, translated looking-glasses, occurs in a number of other passages in no other connexion than that of the antient metallic mirrors. The ten miraculous plagues inflicted on the Egyptians are described in the following places: —. Water turned into blood, xiv. 14—25. 2. The land covered with frogs, v. 1—5. 3. The dust of the earth turned into lice, p. 4—6. 4. Swarms of flies, v. 20—3. 5. The murrain and death of all the cattle. 6. Ashes produce boils and blains on man and beasts, ix. 8—12. 7. The storms of devastating hail, ix. 12—20. 8. All the land covered with locusts, x. 1—20. 9. The swarms of beetles, which might be felt, x. 21—27. 10. The death of all the first born of man and beast, xi. 5—7 and xii. 29, 30. The learned writer in the 'Universal History,' vol. 3, p. 374, speaks of the manner in which the Pharaoh and his courtiers were permitted to exhibit the power of the devil for the sake of exposing his comparative impotence; thus, although 'they did in like manner with their enchantments,' (vii. and viii.) in making their rods become serpents, in turning the Nile into blood, and causing the water to be (yet) it could not, as Aaron did, turn the dust of the earth into lice (viii. 18). Jacob Bryant in his 'Treatise on the Ten Plagues,' 1780, 1810, explains their adaptation to the peculiar character, habits, and notions of the Egyptian genius in the nearest perfection of their suffering and misery. The latter half of the 40 chapters of Exodus are occupied in announcing the civil, moral, and ceremonial law, and in describing the numerous articles of furniture, utensils, and sacerdotal raiment, for the ceremonial of sacrificial law, xii. 21 in the tabernacles, or movable temple, erected as a tent in the desert. The value of the gold appropriated to the vessels and ornaments of the ady- tum, or holy place, is stated in xxxviii. 24 at 29 talents and 750 shekels of gold. Each of the former being 5464fr. 5s. 8d. The latter, however, amount to £159,793. 11e. 3d, that is, nearly 160,000l.

Many learned men, in observing the similarity of the Mosaic and Egyptian ritual and religious institutions as described in various ancient writings, have assigned a greater antiquity to the latter, and the idea of the former were a mere imitation. Dr. Geddes asserts that Moses made a selection and judicious composition from the ancient Egyptian institutions. (See especially Spen- ter, 'De Legibus Hebraeorum;' Sir John Marsham's 'Chronol. Chronicon Erythreorum Vaticanorum Epigraphorum;' Hackett, 'Hist. Etruriae,' ii. 379; Ikennis, 'Dissertatio de Instituti et Ceremoniis Legis.') Plutarch ('De Inde') and other ancient authors prove that Jehovah or Jao was the sacred name of God among the Egyptian priests; and that it was not known to the Israelites until the time of Moses. The whole is repeated in Exod. vi. 3. The 'I AM' of chap. iii. 14 is compared with the Egyptian inscription on the ponsification of the universe, 'I am all that is.' (See Plutarch, 'Deus in Tri Interitus.' Aaron's auricular breast-plate (xxviii. 15—30) is thought
to be identical with that of the Egyptian chief judge, as described by Diodorus Siculus i. e. c. 2, sec. 26.

The learned Huet, Vossius, and others give curious parallels of the birth, life, and deeds of Moses with the primitive Egyptian Buechus, but this is not more strange than the statement of Orosius, who says in his "Homily on Exodus" that Pharaoh is the devil, his daughter the church, and the two midwives (i. 3) are "Old and New Testament." (See "The Schools of Dalme, Rosenmuller, Schulz, Bauer, and Eichhorn," English Translation, by Ainsworth, Hopkins, and Bishop Calhoun; Dr. A. Clarke's "Bible; Horne's Introduction, and list in Wyl's "Bibliaele.""

EXOGENS, the largest primary class in the vegetable kingdom, is in consequence of their woody matter being augmented by additions to the outside of that which is first formed near the centre. As long as they continue to grow they add new wood to the outside of that formed in the previous year, in which respect they differ essentially from Endogenes, whose wood is constrained by successive augmentations from the inside. (Exogens)

All the trees of cold climates, and the principal part of those in hot latitudes, are exogenous. In many cases they are easily recognized by the wood of each different year forming a visible line, so that a section of their wood exhibits a number of concentric circles; but there are so many exceptions to this rule as to render it necessary to consider this character as by no means essential to their classification. The growth of these trees will be best compared with that of an endogen, if we pursue the same mode of illustration as in the article which treats of the latter form. We will therefore proceed from an explanation of the general mode of growth in a common Exogen to such results which may here to offer upon deviations from it.

In an Exogen of ordinary structure the embryo consists of a cellular basis, in which there is usually no trace of woody or vascular tissue; but as soon as germination commences fine ligneous cords are seen proceeding from the cotyledons and radiating from each of them in a composite spiral to the young stem, meeting in the centre of the embryo, and forming a thread-like axis for the root. As the parts grow the ligneous cords are increased in thickness and number, and having been introduced among the cellular basis of the embryo, are separated from each other by a portion of the cellular substance, which continues to augment both in length and breadth as the woody cords lengthen. By degrees the plumule or rudimentary stem becomes organized, and having lengthened a little, forms upon its surface one, two, three, or more leaves, which gradually expand into thin plates of cellular substance traversed by ligneous cords or veins converging at the point of origin of the leaves. If at that time the interior of the young plant is again examined, it will be found that more ligneous cords have been added from the lateral veins of the seed leaves upon the cuticle where they have formed a junction with the first wood, and have served to thicken the woody matter developed upon the first growth. Those ligneous cords which proceed from the base of the leaves do not unite in the centre of the new stem, there forming a spiral or spiral-like structure being thrown around the outside, and leave a small space of cellular tissue in the middle; they themselves being collected into a hollow cylinder, and not uniting in the middle until they reach that point where the wood and the leaf bases begin to form the solid centre of the root. Subsequently the stem goes on lengthening and forming new leaves: from each leaf there may be again traced a formation of woody matter disposed cylindrically as before, and uniting with that preceding, until the circle of cellular substance is being thrown around the middle; and the solid woody centre of the root proceeds in its growth in a corresponding ratio, lengthening as the stem lengthens, and increasing in diameter as the leaves unfold and new woody matter is produced; the result of which is that the young Embogen at the end of its first year's growth has a root with a solid wood axis, and a stem with a hollow wood axis surrounding cellular tissue, the whole being covered in by a cellular integument. But as the woody cords are merely plunged into a cellular basis, the latter passes between them in a radiating manner, connecting the centre with the circumference by straight s-siggles, often imperceptible to the naked eye, but always present. The following diagram illustrates this —

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* In the article "Exogens" the reader is requested to make the following correction in the early part of the fourth paragraph: for (Ex A, p. 92) read (A), and twenty lines farther on, for (Ex A) read (A).

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Here we have the origin of pith in the central cellular tissue of the stem, of wood in the woody axis, of bark in the cellular integument, and of medullary processes in the radiating passages of cellular tissue connecting the centre with the circumference.

The woody axis is not however quite homogeneous at this time. That part which is next the centre contains great numbers of vessels of different kinds, particularly damped vessels; the part next the circumference is altogether destitute of vessels, and consists of woody tissue exclusively; of these two parts that with the vessels belongs to the wood, properly so called, and serves as a mould on which future wood is added; the other belongs to the bark, separates under the form of liber, and in like manner serves as a mould upon which future liber is disposed.

At the commencement of a second year's growth the liber separates spontaneously from the true wood, a viscid substance called cambium is secreted between them, and the stem again lengthens, forming new leaves over its surface. The ligneous cords in the leaves are prolonged into the stem, forming a cambium, and adhering in part to the wood and in part to the liber of the previous year, the former again having vessels intermingled with them, the latter having none. The cellular tissue that connected the wood and liber is softened by the cambium, and divided there horizontally where it grows perpendicularly, extending to make room for them, and consequently interposed between the woody cords of which they consist, forming in fact a new set of medullary processes terminating on the one hand in those of the first year's wood, and on the other in those of the first year's liber. This addition of new matter takes place equally in the stem and in the root, the latter extending and dividing at its points, and receiving the ends of the woody cords as they diverge from the main body. The following diagram illustrates this, and shows, when compared with the last, what difference there is in the appearance of the stem of an Exogen one and two years old.

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And thus year after year, the Exogen goes on, forming zone upon zone of wood, which is permanent, and zone within zone of liber, which perishes as the stem increases in diameter. [Bark]

If this account is compared with that already given of Endogenes, it must be obvious that the stem of these two great classes is formed from the very beginning in an essentially different manner; in Endogenes, the primary column of pith: their woody areas are never collected into a cylinder, through the sides of which the cellular tissue passes in the form of medullary processes; and the woody matter of their bark, so to call their cortical integument, is in the Exogen essentially separable from it: not to speak of important anatomical differences, or of the concentric arrangement eventually assumed by the wood of Endogenes. The only points in which the growth of the stem of Exogenes corresponds with that of Endogenes are the following: in both classes the woody
mattered is connected with the leaves; in both a cellular
substance is the basis of the whole structure, and extends
horizontally wherever it is necessary to do so; and in cer-
tain Exogens woody areas, stated to be like those of Endo-
genae, are found in the pith. These cases unprofitably belong
to anomalous forms, but nevertheless may be noticed here,
in consequence of their direct connection with this branch of
the subject. One case is that of Zamia; but as that
genus now belongs to the new class of Gymnosperms and
not to the class of Exogenae, it need not be considered here.
The other cases are Piper, Nyctaginaceae plants, and some
others. Professor Schultz states (Naturalien System des
Pflanzenreichs, p. 320, &c.) that in Piper, Mirabilis, and
Boerhavia, the central part of the stem consists of cellular
tissue, which is solid, or in some species, vessels and woody
tissue are placed either without order, or (in Boerhavia) in
a cruciate manner as in tree-forns, and that on the outside of
this the woody bundles are arranged circularly into a cylin-
der. A similar statement has long previously been made
by Mirbel, who ascribes to Mirabilis and some Umbelliferae
plants longitudinal vessels in the pith (Edlen de Physiol.
Veget., t. 112), and by Professor Meyer, who finds the pith
of Mirabilis longiflora and dichotoma, Boerhavia scandens,
and Oxytropus Cervantesii abounding in many large bundles
of spiral vessels within the woody radiated zone. (De Haut-
tuytia atque Saurureis, p. 46). This, if correctly de-
scribed, only shows that in Exogens a portion of the
central tissue is placed at first in a confused manner,
and later in a definite circular disposition till afterwards,
that it does assume it eventually as admitted. We find in Piper nigrolum and Lonchitis that from
the beginning the woody bundles are placed circularly, but
they are separated by a good deal of cellular tissue, and do not
assume in the first zone the wedge-like or triangular form
which is most common in Exogens, and which they always
seems to have at last taken on. In Boerhavia reanda, a specimen of
which is now before us, we find the wood regularly disposed
in two zones, and instead of spiral vessels a very singular
structure in the pith, which is filled with distalmost passage-
geways of lax soft spheroidal cellular tissue surrounded by many,
harder, and more cubical cellular tissue which passes off into
the medullary processes. It is in such plants as Piper incarnum that the organization of Exogens most nearly
approaches that of Endogenae; but in Euphorbias the whole
race of Pipers forms a sort of transition from Exogens
to Araceous Endogenae; and secondly, it is probable that
when they are most endogenous in appearance they are
not really so in regard to the final development of their
woody tissue.

Let it however be admitted that in certain cases Exogens
are, in the centre of their stem, organized less regularly
than usual; this will offer no argument in favour of their
analogy with Endogenae. In all such cases it will be found
that they apparently assume their typical configuration.
We are acquainted with some striking proofs of this.
Among twining plants of tropical countries, we occasionally
find instances like the following—

Beneath a most irregularly compressed and lobed bark
there lies a mass of wood, apparently so confused and ir-
regular in its arrangement in the centre, that nothing sym-
metrical can be made out by the most acute observer; but it
will be seen that towards the circumference it distinctly
assumes the radiated appearance of an Exogen. In other
cases, where the structure is sufficiently regular, this cir-
cumstance is still more distinctly illustrated.

It is however more commonly at the centre that we look
for typical structure, and at the circumference that we find
irregularity; as if Exogens usually commenced their growth
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according to the plan to which nature has subjected them,
and only deviated from it under the influence of unknown

causes coming into operation and controlling their develop-
ment after they have advanced to a certain stage in their
growth. Thus in the singular instances shown in cuts D, E, F, and G, the principal part of the stem is so con-
fused and irregular as to look more like an Endogen than
an Exogen, and a fragment, might easily be mistaken for
the former; nevertheless in a young and tolerably regular
shoot (D), the radiated appearance is sufficiently well
marked; and in two others, irregular and distorted as they
are (E and G), the central pith is visible, although far out
of the centre; and in the fourth (F) the centre has not
only pith, but a radiated structure that is quite regular.

By far the most singular case of this sort is in an un-
known twining plant in our possession from the Malayan
Archipelago, of which the cuts H and I are representations.
In old stems of this plant a section exhibits a most irregular
combination of wood, looking like palm wood, broken up
into lobed cords lying amongst still more irregular cellular

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 avail our
Irregularity in the structure of exogenous wood is usually owing either to a confused disposition of the tissue at some particular period of the growth, or to some derangement of the medullary processes, or to the absence of concentric circles, or to the formation of a deep zone of cellular tissue alternately with each zone of wood; or, finally, to the production of wood within the bark instead of beneath it. The first cause has been already sufficiently illustrated.

The sinuosity and partial obliteration of the medullary processes is a principal cause of the anomalous appearances at figs. D, E, F, G, where they are reduced to fine lines only visible beneath a microscope, and not radiating from the centre, but disposed in no certain manner, sometimes even transversely, owing to the excessive disturbance of the wood itself. In fig. I, the singularity of structure is owing in part to the excessive irregularity with which the wood has been developed, and in part to the looseness and irregular shape of the medullary rays, which seem huddled as it were round the woody cords; the latter are moreover extremely variable in size, some of them being as much as half an inch in diameter, and others so small as to consist of no more than a single vessel with its usual coating of woody tissue.

The absence of concentric circles is an extremely frequent occurrence in the wood of tropical countries, and it is almost certain that many families of Exogens never form them visibly under any circumstances. We say visibly, because in fact they must be annually formed in all cases, although we do not see them. The reason why Exogens have their wood marked by concentric circles is, that the ligneous tissue formed at the end of a season is more compact than that formed at the beginning, and hence, as the two are in juxtaposition, the difference in their density distinctly separates the one from the other. But if, from any cause,—whether proper to plants as species or owing to the external influence of an equable climate—the tissue of wood formed at all seasons is exactly alike, no zone will be visible, although in fact the formation of the wood is exogenous in the most regular manner. Such cases are seen at figs. K, L, S, and elsewhere in the illustrations of the present article.

It is not a little remarkable however that while the wood in some cases has no trace of zones, the bark should show them most distinctly, as in the instance of fig. K.

When a deep zone of cellular substance is formed between each zone of wood, a curious banded appearance is produced, as in the singular Indian climber marked N M O P Q, where extremely excentrical growth is combined with this peculiarity. At N we have the stem two years old, the second zone passing pretty regularly round the first and cut off from it by a broad deep band. At M the specimen is of the same age, but the second zone is formed on one side only.

At O the specimen is two years old, with the first zone perfect, but the second broken up into a number of unequal irregular pieces, and it would seem as if a third growth had commenced on one side (to the left of the cut). At P the growth is of three zones, both the second and third being much lobed, and the third only extending three quarters round the second. Finally, at Q, where the irregularity is the greatest, there is a growth of four zones, the first symmetrical, the second very much deeper on one side than the other, the third half surrounding the second, and the fourth formed only along two ridges on the third.

If it happens that, in addition to the presence of a thick cellular layer between each zone, the medullary processes are also very thick, an appearance still different from the last is produced, as at fig. R.

That wood is sometimes formed in the bark itself has been long since shown by Mirbel, in the case of Calycanthus floridus, where four additional woody columns appear equidistant in the bark, without any separate siphon, but radiating from their first line of origin. We are now acquainted with many such cases. In fig. T are the commencement of four such columns at a on one side; but in that specimen no further indication of such a structure is visible; but at fig. U, which is the same plant at a more advanced stage of growth, four such columns on one side and one on the other have acquired considerable size, and each radiates towards the circumference of the stem. As in the Calycanthus, so in these and in all the other instances of the same kind, which these cuts represent (see F, K, and S), the woody columns of the bark are destitute of pith.

Perhaps what we have called the separation of zones of
wood at NMOPQR, by thick layers of cellular tissue, are rather to be considered as other instances of wood formed in bark, but in a regular and uniform manner. We are

woody matter in a circular manner round pith, its augmentation by external additions, and the universal presence of medullary processes which give the wood a radiated character. With endogenous vegetation it agrees principally in the existence of two systems of growth; one original, cellular, and capable of extending and increasing in all directions; the other perpendicular, capable of augmentation in a longitudinal direction only, and developed subsequent to the first.

In both Exogens and Endogens therefore, the one system, which we have elsewhere called the fibro-vascular, but which may also be termed the woody, lies across the other, by which it is held together, as the threads of the warp, in linen are held together by the woof, as the writer of this has long since pointed out in another place. (Introduction to Botany, book ii., chap. 5.) This appears to be the circumstance upon which the real explanation of all the phenomena of growth in stems must necessarily turn. We find it is adopted by M. Gaudichaud in his theory of the development of stems, of which a brief notice has been published in the 'Annales des Sciences,' new series, vol. v., p. 24; and Mirbel, the reporter in the places referred to, calls it 'la pierre angulaire de la théorie.' Connected with this, however, are two other facts that require also to be rightly understood; the one, that buds are emanations of the horizontal cellular system; and the other, that roots are elongations of the descending woody system. Unless these are coupled with the first-named fact there must be no solidity in the theory of growth now about to be explained.

Keeping in view all the phenomena above referred to, it will be obvious that the origin of wood is to be sought in the action of leaves, or of buds which are collections of leaves; and the theory of the formation of wood may be thus expressed:

1. Wood is a collection of thick-scaled tubular tissue, united in different ways in different species of plants. It is usually combined with vascular tissue, but does not necessarily include that kind of tissue.

2. It is always mixed with cellular tissue; through which it passes, and which in Exogens is arranged in the form of radiating plates.

3. It proceeds downwards from the leaves to the roots; either in parallel series, as in Exogens, or in curving and intersecting lines, as in Endogens.

4. It has the power of lengthening at its lower extremity as soon as it has once been generated, without any further impulse from the leaf from which it emanated. (This undoubtedly happens by the formation of new woody tubes at the points of those previously created.)

5. It is, in fact, the nutrient system of the leaves, and may be regarded as their roots.

6. The quantity of wood in a given plant will therefore bear a direct proportion to the quantity of leaves, or to their size and vigour.

7. In general its development takes place beneath the bark or cortical integument; but it may be found within the bark itself, in which case it continues to follow the order of development proper to it in its ordinary situation.

The woody part of bark is also derived from the leaves, and may be in like manner considered a state of their roots; but the office of its tubes is excrementitious rather than nutrient.

This view of the nature of wood is much the same as that first brought to the notice of modern botanists by Du Petit Thouars, an ingenious French physiologist, who, during many years, sustained the opinion in opposition to all his countrymen. It did not however originate with him, for it had been previously taken by others, who did not persuade like himself in maintaining it against the prejudices of their day, and who, moreover, did not possess the skill and extensive acquaintance with vegetable organization requisite to sustain a theory to which so many specious objections could readily be offered. The great error committed by Du Petit Thouars, in which it is probable that the slow progress of his opinions is really to be found, was his mixing up notorious errors with the truths of his theory. He insisted, for example, that the moment leaves begin to grow, wood is formed 'with the rapidity of lightning'; in continuous threads passing from the extremities of branches to the roots; this was anatomically untrue; for the woody tissue consists of tubes adhering end to end, and not continuous; and the rapidity assigned to their development was altogether imaginary. He next insisted that new roots could not
be developed till new leaves made their appearance this
was disproved by the well-known fact that newly planted
deciduous trees produce roots before their leaves appear. It
may be doubted moreover whether lie ever understood that
buds originate exclusively from cellular tissue, and roots
exclusively from fibro-vascular tissue; a fact, without at-
tending to which, there is no possibility of explaining many
common phenomena, but about which we conceive there is
no sort of doubt.

It is not altogether a matter of theory that wood is formed
of the roots of leaves imbedded in cellular tissue in a
finite manner, according to the species: on the contrary,
there are many curious facts to corroborate the supposition.
The leaves of Citrathus punicus, and many other plants,
particularly Generacia, emit roots when cut off the stem
to which they belong, and completely separated from the
bud that is axillary to them. A knowledge of some such
fact probably led to the absurd speculation, insisted upon
by Bradley in the beginning of the last century, of forming
plantations by sticking leaves in the ground. Du Petit
Thouars found that the young leaves of Dracaena in the
Isle of France root between the rind and old wood, forming
rays of which the axis of the new shoot is the centre.
The case of Pandanus we have adverted to elsewhere
(Introd. Bot., ed. 2nd, p. 262); and in the article Endogens
of this Cyclopaedia we have given a much more striking
instance from Barbarea. In that plant the cuts (which it
should have been stated are representations magnified
about three times) show that when undoubted roots pro-
ceeding from leaves are consolidated by passing down one
above the other over the surface of the stem, precisely the
appearance of palm-wood is produced. This we regard as
conclusive as to the true nature of endogenous wood: and
it would be unphilosophical to suppose that the wood of one
great class of the vegetable kingdom is formed upon one
plan, and of another class upon a totally different plan.

It must be highly satisfactory to those who have embraced
the opinions of Du Petit Thouars, as modified by the writer
of this and by others, to find how nearly they accord with
what Mirbel represents to be the ideas of Gaudichaud upon
the same subject. M. Gaudichaud is one of the very few
physiologists who has studied this question with reference to
tropical forms of vegetation. Most others have drawn their
ideas exclusively from common European trees; in doing
which, with all respect be it spoken, they appear to us to
have begun at the wrong end. This distinguished botanist
and traveller, in an unpublished memoir for which the
Montyon prize was awarded by the French Academy in 1835,
is represented as having collected a great mass of admirable
observations upon the embryo, the germination, the mode
of growth, the stem of a considerable variety of plants, and
to have particularly adverted to the important phenomena
of barking, striking from cuttings, grafting, pruning, and
other horticultural operations; from all which he has de-
duced a theory of growth which M. Mirbel states to be sub-
stantially the same as that above explained. Among other
curious facts, he mentions that he possesses a specimen of
a cutting of Cissus hydrophora, with a bud upon it from
whose base proceed a woody network which partially in-
vests the lower portion of the old wood, and afterwards
escapes on all sides as root. (Ann. Sc. N. S. v. 29.)

We have in the first instance stated in what manner wood
is formed according to our own views of the subject. It is
now requisite that we should add the views of those who
differ from us. That wood derives its origin directly from
the leaves in any way whatever, is denied by some, who be-
lieve that it is a superficial deposit from the previously
formed wood. But as those who entertain this opinion do
not explain how the first wood originated, that theory need
not be discussed. Mirbel seems to consider that both wood
and the woody part of bark are independent formations
created out of the cambium; but there is no cambium when
the first wood of Exogens is generated, and that substance
never makes its appearance at all in Endogens, which se-
Exo simply lengths at its point, without having to break through the coat of the embryo; on this account Exogens have been named exorhizal.

The result of this examination is, that the great class of Exogens has five petals, and, in some measure, independent characters, by which its limits are settled.

1. The wood is exogenous.
2. The veins of the leaves are netted.
3. The fructification is formed upon a quinary or quaternary type.
4. The embryo is dicotyledonous.
5. The germination is exorhizal.

Hence Exogens have received two other names in allusion to such characters; they are commonly called Dicotyledones, and Exorhiza is another but less common appellation. Moreover, they are the Phanerocotyledones of Agardh, the Anthophyta and Carposphyta of Oken's school, the Dichogama of Schultz, the Phylloblastae of Reichenbach; not to mention other names still more obscure.

In consequence of imperfect development, and the abortion or multiplication of parts, many deviations occur from the above characters. But as in Endogens, so in these, there is not in consequence any real difficulty in distinguishing Exogens from other plants. Suppose the stem to be so slightly netted, or in Podostemaceae or the aquatic Haloragaceae, or to arrive at a state in which the exogenous arrangement is perceptible, we have the dicotyledonous embryo, and the typical number of the floral organs to guide us. Let the leaves appear as scales, as in Lathraea, Orobanche, and the stamens still there be in the number of five, it is well understood. If the fructification is absolutely ternary as in Menispermacae, the organization of the stem, leaves, and embryo, reveals the true nature of such plants. Or if the embryo is undivided, as in Cuscus, and at the same time the veins of the leaves deficient, that is to say, with an exogenous arrangement of woody matter, then the number of parts in the flower remains to prevent our falling into error. It is therefore always to be remembered, that the limits of this great class are not exclusively determined by a single character, but by a combination of features, a part of which may be occasionally exceptional or undiscernible.

Like all other natural assemblages, Exogens have many analogies with other parts of the vegetable kingdom. We can therefore already estimate the Pietatiso family of this class representing distinctly the Pietatiso order, or at least the Lemna among Exogens. In speaking of the latter class, (vol. i., p. 398) other cases have been noticed, and we now add that Piperaceae are distinct analogies here to the Araceae, Erythrophyllum, Endogens, to Glumaceae, and possibly Menispermacae to Sinilaceae.

Whatever uses there may be in the vegetable kingdom: to be found in this class, which comprehends four-fifths of the natural orders, and probably not much less than the whole of the Turcicae and even of the aquatic Haloragaceae, and exclusive produce, and if corn has no direct analogy in Exogens, at least a substitute for it is furnished by the potato and the cassava. To speak therefore of its useful products would be, in fact, to explain the utility of plants to man, and this we shall do in a more appropriate place.

[Plants.]

Considering the very great numbers of Exogens,—they may be rated at 50 or 60,000 at a low computation,—it is not surprising that it should be here that the system of the botanist evidently comes into his great and imaginary scene that forms the subject of the preceding cut.

The differences between Exogens and Endogens, thus strongly marked in the stem, leaves, and flowers, are connected with others in the embray. In Exogens of the common kind this organ has two lobes, held together by a minute central body, the upper end of which, between the lobes, is the plume or rudimentary stem, the lower the radicle or rudimentary root; the lobes themselves, or cotyledons, are rudimentary leaves. This structure is readily seen. On the other hand, little is to be found in these plants, as in the garden-crest. But in all these cases the deviations are obviously reconcilable with the typical character of being dicotyledonous.

When the embryo of an Exogen germinates, the radicle
Apetalous; and 4th, Dictinuous plants. The three first of these lie again subdivided according as their stamens or their corollas grow under the ovary (hypogynous), upon the calyx (perigynous), or upon the ovary (epigynous); then the monopetalous epigynous group was subdivided into plants having united stamens and those having them distinct; the result being 11 classes, which were placed by Jussieu in the following order:—

<table>
<thead>
<tr>
<th>Class</th>
<th>Stamens epigynous</th>
<th>Hypogynous</th>
<th>Perigynous</th>
<th>Epigynous</th>
<th>Stamens united</th>
<th>Distinct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apetalous</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Monopetalous</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
</tr>
</tbody>
</table>

This was, however, so artificial a distribution, that botanists soon found it as unsatisfactory as it was simple. Various changes have therefore been recommended from time to time, some of which are the following:—

In 1813, De Candolle, dropping the names of all Jussieu's classes, and abolishing many of them, proposed to arrange as follows the families of Exogens with which he was at that time acquainted.

<table>
<thead>
<tr>
<th>Class</th>
<th>Stamens epigynous</th>
<th>Hypogynous</th>
<th>Perigynous</th>
<th>Epigynous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polypetalous</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Monopetalous</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Apetalous</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
</tbody>
</table>

Thus the classes were reduced from eleven to five, which was a defect; but those which remained were supposed to be more natural, which would have been an advantage. Five years afterwards, in his 'Regni Vegetabilis Systema Naturae,' he added the names inclosed within brackets, and he broke up the Thalamiform into five cohorts, but without stating what orders he arranged them under. We do not find that he ever pursued the subject further. Since that period this great botanist has occupied himself with the special study of the natural orders, and the public has derived no advantage from his general views, which is much to be regretted.

In 1825, Professor Agardh of Lund, now bishop of Carlbad, proposed a great change in the subdivision of Exogens, retaining the principles of primary division recognized by Jussieu and De Candolle, but forming them into twenty subdivisions, or families, of various characters, of which the orders themselves are circumscribed. This, we believe, is the first step of any consequence towards putting Exogens into a more natural grouping than that of Jussieu: in many respects the subdivisions are, as far as they go, unobjectionable; but they have excited scarcely any attention among systematic botanists. The necessity, however, of some better method of subdivision than that of Jussieu and De Candolle has become evident to everybody; and attempts have been made to effect this by Drs. Bartling, Schultz, Von Martin, and others on the continent, and by the author of the present article; not to mention certain transcendent German writers, whose views, as we do not understand them, we will not attempt to explain.

In our own arrangement the class is first broken into the Polypetalous, Monopetalous, and Incomplete subclasses; the latter are next distributed in groups; and finally, the groups themselves have a subdivision of alliances, beneath which the orders are disposed in numbers varying from 1 to 8 or more, the general result being 17 groups and 82 alliances. The following table will show upon what principle the groups and alliances have been constructed. It will be remarked that the terminations of the names express their value; the groups or highest combinations end in ae, the alliances, or combinations of a lower kind, in oes; the orders in ace; the subclasses in ece.

**Table of Alliances and Orders.**

**Subclass 1. Polypetalous.**

- **Group 1.** **Albiminose.**
  - Alliance 1. Ranales. Herbaceous plants: either with the carpels more or less distinct, or if that is not the case with parietal placenta. Ranunculaceae, Podophyllum, Papaveraceae, Fumariaceae, Nympheaceae, Hydropteris, Nelumbionae, Cephalotaceae, Doreaceae.

**Group 2. Erychnoideae.**


**Group 3. Parietoideae.**

  - Calyx very imperfect. Rectemorhyose.

**Subclass 2. Incomplete (or Apetalae).**

- Calyx altogether absent. Achlamydoideae.
- Calyx very imperfect. Rectemorhyose.

The orders are disposed under their several alliances in the following sequence.

Alliance 2. Violales. Embryo straight. Stamens definite; none sterile. Violaceae, Sauvageiaceae, Samy-
daceae, Morinaceae, Frankeniaceae.

Alliance 3. Passiflorales. Embryo straight. Stamens definite; the sterile ones in a separate ring. Passif-
loraceae, Papaveraeae, Floutrieaeae, Malesherbiaceae, Turneraceae.


Group 4. CALYCOSEAE.

Alliance 1. Guttales. Stamens indefinite. Albumen none. Petals and sepals equal in number. Clusiaceae or Guttiferae, Cuscutaceae, Rhizophoraceae, Margra-
viaceae, Caricaceae, Leguminosae.

Alliance 2. Thecales. Stamens indefinite. Petals and sepals unsymmetrical, passing one into the other. Terstomiaceae.

Alliance 3. Acerales. Stamens definite. Flowers unsymmetrical. Arecaceae, Sapindaceae, Millingtoniae-
cae, Eucalyptheae, Polygalaceae, Vochysiaceae.

Alliance 4. Cistales. Flowers symmetrical. Albumen present. Elatiaceae, Linaceae, Hugoniaceae, Chi-
lenaceae, Cistaceae, Rauvolfieae.

Group 5. SYNOCHORAE.

Alliance 1. Malavales. Calyx valvale. Carpels 4 or more. Stamens monadelphous more or less. Ster-
culidaceae, Malvaceae, Elaeocarpaceae, Dipteraceae, Tilaeaceae, Lythraceae (?).


Alliance 5. Silveles. Embryo rolled about albumen; or joints of stem tufted; or leaves minute and scale-like. Silvaceae, Alisaceae, Tamariciaceae (?), Illecebracae.

Group 6. GYNOCHORAE.

Alliance 1. Rutales. Styles single, or leaves marked with pellucid dots. Ochnaceae, Simarubaceae, Rutaceae, Zygophyllaceae, Xanthoxylaceae.

Alliance 2. Geraniaceae. Styles distinct. Oracy withent. Geraniaceae, Monimiaceae, Vio-


Alliance 5. Silveles. Embryo rolled about albumen; or joints of stem tufted; or leaves minute and scale-like. Silvaceae, Alisaceae, Tamariciaceae (?), Illecebracae.

Group 7. APACHOPOREAE.

Alliance 1. Rosales. Albumen wholly absent. Rosaceae, Paeoniaceae, Amygdalaceae, Sanguisorbaeae, Fabaceae or Lo-
guminosae, Capparidaceae, Mimosae, Conneraceae, Caryophyllacea, Caltanthaceae.

Alliance 2. Sapales. Carpels two, diverging at the end, many-seeded. Albumen present. Buergeri-
aceae, Campanulaceae, Saxifragaceae.


Sub-class 2. Incompletes.

Group 1. RECTUMBYLOSEAE.

Alliance 1. Acanthales. Capsules. Carpels two or more, combined. Trees or shrubs. Corylaceae or Cupulli-
ferae, Betulaceae, Scrophulariaceae.


Alliance 4. Datiscales. Carpels several. Seeds numerous. Leaves alternate. Datisaceae, Leiste-
naeae.

Group 2. ACHLAMYDOSEAE.

Alliance 1. Piperales. Carpels solitary or distinct. Flowers in spikes. Embryo minute, in the base of fleshy albumen. Churanthaceae, Saururaceae, Pip-
acea.

Alliance 2. Salicales. Flowers amplexicaul. Fruit mostly many-seeded; when one-seeded, in globose heads. Salicaceae, Platanacaeae, Balsaminaceae.


Group 3. TURBERFEOSEAE.


araeae.


Alliance 5. Pinnacles. Carpels several. Calyx imbricated or valvate. Penicillusae.

Group 4. COLUMNIFERAE.


Group 5. CURCUMACEAE.


Alliance 4. Scelariales. Tube of calyx hardened. Sel-
anthaceae, Nyctaginaceae.


Sub-class 3. Monopetalae.

Group 1. POLYCARPOSEAE.


Alliance 2. Eriales. Anthers porous. Carpels four, five, or more. Pyrolaceae, Monotropaceae, Eriicaeae, Vaccinaceae, Ericaceae.

Alliance 3. Primulales. Anthers opening longitudi-


Group 3. AGROPOSEAE.

Alliance 1. Asterales or Composite. Anthers syngeo-


Group 3. AGROPOSEAE.

Alliance 3. Labiales. Fruit nucamentose. Flowers with petals or scales. Labiatae, Geraniaceae, Myoporaceae, Moraceae, Stilbaceae.

Group 5. Dicarpaeae.

We shall not be restrained by false delicacy from criticising this arrangement freely, with reference to its merits as well as its demerits. We will therefore at once say, that in several respects it is a decided advance in the grouping of the orders. By abandoning the artificial distinction of perigynous and hypogynous insertion, many orders naturally allied are brought into contact. The great mass of Polyetalaeae Exogens is examined with tolerable precision; a great many of the alliances are, as far as we can discover, unobjectionable. There can state, for reasons of years' personal use, that the scheme is of great utility to students, in consequence of the power it gives them of combining the orders. The albuminose group in particular, although incompletely made out, may be regarded as an important step forward. The group may be regarded as a mere residuum of the nutrient mucilage in which the embryo was originally developed, rather than a store of food provided for the young plant when it enters upon its first stage of growth. Among the former the presence or absence of albumen is of little or no consequence; Fagaceae for example, and other equally well defined groups, possess it in some species, and want it in others. But in the orders collected in the albuminose group, its presence and its great disproportion to the embryo are identified with the reproduction of the species, and there is no instance known of its absence, except in Nelumbiaceae, in which, if they really belong to the group, it may be supposed that the usual function of the albumen is performed by the excessively thickened cotyledons.

But, on the other hand, this system has defects in abundance; so many indeed, that we should say they outweighed its advantages, if they were not fully participated in by all other similar schemes; from a respect for which we should think, they would have been subjected to a great change. The minor blemishes may be named the artificial collocation of the genera in some of the alliances, as, for example, the Passion, the Stelina, the Ephorbiaceae, and the Primula. In the next place, the alliances are excessively multiplied; it is in the case of the Cinchonaleae, Caryaleae, and Stilfia, of the Chenopodiaceae, Petiveria, and Scelaria, or of the Gerania and the Figurcal; this however is a fault on the right side. Of much more consequence is the indefinite character of the Parietaceous and Gynobaseae groups. The first depends on the circumstance which sometimes does and not in the ovary of the same plant, and which may be destroyed by either the contraction or extension, in a slight degree, of the dissepiments; moreover, the orders collected under it, although to a certain extent naturally combined, yet in other instances, as Bixaceae, Turneraeae, Morganaceae, and the whole Cruciferae, agree less with each other than with other parts of the system. The Gynobaseae group is much more natural; that indeed is its merit; but the gynobasic character, strongly marked as it is in the Rumex, the Rumex, and the Rumex, it may be confessed, too feeble to deserve to be considered of more than very subordinate importance; in fact, many of the Sycarpaeae group are gynobasic—Malva, for example. Then, among Monopetalaeae, the Dicarpaeae and Nucamentoseae groups are too much distinguished, and could not have been combined; each however is natural as far as it goes.

The great vice of the arrangement however is that which it owes to the adoption of the old practice of considering Polypetalaeae, Monopetalaeae, and Apetalaeae, fundamental divisions. Pectinaceae, Asclepiadaceae, Anacardiaceae, the present time, has adopted them; so that their value has become a matter of prejudice, which it will be no easy task to remove from the minds of those who have all their lives been accustomed to look at botanical classifications in one and the same light. We will never see the truth, for firstly, that these divisions are essentially bad; and secondly, that a great advantage will be derived from their rejection. The Monopetalaeae sub-class depends entirely upon the circumstance of the petals adhering to each other by their edge; it has no accessory characters whatever to sustain it. Now the partial adhesion of contiguous organs is of no greater than ordinal importance when it takes place in other parts of the fructification, and is often not of so much use. The sepals adhere or remain separate in the very same extent, even in the petals, sides, and in a few other cases. The stamens adhere into a tube, and this sometimes gives a character to certain orders, but more often is a mere distinction of genera, as in Euphorbiaceae, Iridaceae, Aristolochiaeae, &c. When the carpels unite and form a multiple Monopetalaeae, Primulaeae, Ericaceae, Myristicaceae, &c. However, it has not been employed by us as a distinction of the portion of the groups Polyetalaeae. But we are persuaded that we have assigned it its true value, and that it is only one degree better than an ordinal distinction. It is therefore improbable that the adhesion of the petals, organs not even essential to the plant, has been adopted as a new character, but one of the great functions of impregnation and reproduction being interfered with, should be of greater importance. The more petalous corolla is not considered of any value in Endogenaeae even as an ordinal character, and nothing can justify its adoption. The more constant and unvarying existence of that character throughout certain natural orders more nearly related to each other than to anything else. It will be found however upon strict inquiry, firstly, that the character is anything but constant except in a portion of the Monopetalaeae sub-class; and secondly, that it combines dissimilar orders, separating those widely from their true affinities.

That the Monopetalaeae character is not constant hard requires proof, so notorious is its instability. Fyrolaceae, Myrtaceae, Primulaceae, Ericaeaeae, Myristicaceae, Oenotheraeaeae, Olescaeae, and the other agree, offer instance of the polyetalaceous structure; and some Primulaceae, Of
With regard to the Apetala sub-class, it is even more objectionable than the Monopetalous. There is no end to the instances of Polypetalous orders being Apetala; and in Thymelaeas, Menispermaceae, Polygonaceae, and a few others, the denial of the presence of petals in particular genera is a mere arbitrary use of words. Many Apetala appear, in fact, to be imperfect forms of Polypetalous groups, and will naturally arrange themselves in the same series with what may be supposed to be their more perfect types. Pteridaceae seem a degraded state of Annonales, Pene-
males of Onagales, Daphnialue and their allies of Rhin-
tras. But a large proportion of the Apetala orders un-
doubtedly require to be located separately. They have dis-
tinct sexes and a peculiar habit, and must be considered a quite distinct group. As Junipa order was originally stated to have been established an "Abiunnumous group." The remainder consists of orders in which some have the sexes in distinct flowers, others combined with hermaphrodite flowers. We know of no character intimately connected with the reproduction in which these orders may be separated, and it would seem, indeed, if we were not for the frequent occurrence of poly-
gamous flowers throughout hermaphrodite orders, we should assign it a higher place than even the Aluminae character; but the constant tendency of hermaphrodite flowers to be-
come polygamous makes it a secondary character, only, especially since, if it were taken as a primary one, it would have the unnatural effect of separating Myristicaceae and Schizandraeae from Ano-
alne. For this reason a modified form may be adopted, into which nothing should be admitted except plants with a strong tendency to hermaphroditism. The hermaphrodite orders may be separated into those with the calyx, corolla, and stamens confluent at the base with each other and with the ovary, that is, having an inferior ovary, and those in which those parts are distinct, either altogether or at least from each other: the former will constitute an Epigynous group. Finally, the remainder of the orders may be divided into those with a monopetalous corolla combined with an ovary upon or within the calyx, and those, both of the latter, to petalous, have the ovary simple or complex (Polycarpus).

The following table will put this in a clearer point of view.

Aluminae extremely abundant; embryo minute.

1. Aluminae.

Aluminae absent, or in small quantity.

Sexes in the same flower.

2. Epigynose.

Ovary inferior.

Flowers, whether monopetalous, with a biseriary ovary.

3. Polyarpous.

Flowers monopetalous, with a bicarpellary ovary.

4. Dicarpynose.

Sexes in different flowers.

5. Dicarpynose.

Each of these groups form a series by itself, the se-
quencing of which is important to be natural, and to ex-
clude lateral analogies with other groups. Possibly each group will comprehend within itself a maximum, a medium, and a minimum type of structure, the second being typical of the group, the third of the improved form, and the last of a degraded form. This at least may be traced in the classes of Exogens, Endogens, and Aerogens; it frequently occurs in natural orders, is not uncommon in genera, and therefore may be expected in groups. It is scarcely possible to undertake a more difficult task than that of disentangling and settling the perplexed and complicated web of natural affinities. Every order may be compared with so many other orders in one respect or another, and the value of characters is, as far as we yet know, so very unsettled, that the experienced botanist is perpetually embarrassed at determining the fundamental question of which orders have more rela-
tion to one another than to anything else. Viewed in one direction, the subject has an aspect, from another position it often seems quite changed. We have no certain test by

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which affinity and analogy can be distinguished; and moreover, it is a most difficult thing to divest the mind of the prejudices that inevitably result from a long habit of thinking erroneously.

Nevertheless, in spite of all such obstacles, Truth is surely to be found; and when found, she will prove most richly worth the labour bestowed in searching for her. One great and immediate advantage that may be expected from a discovery of the true method of arranging oxogens according to their real affinities will be a great simplification of the subject; and the extent to which this seems to be effected by the plan now proposed is much in favour of its being at least an approach to a discovery of the secret we are in search of. We will not here undertake to re-arrange all the orders already named according to the method now suggested; but the following table will serve to show that each of the five groups now proposed does exhibit distinct lateral analogies between its own series of orders and those of the groups standing next it.


That those groups are all perfect in themselves, or nearly so, is sufficiently proved by Albuminaeae, the sequence of whose orders may be expressed as follows; the orders included in the diagram being marked with *. 1 Anonales. Magnoliaceae Winteraceae Dilleniaceae Berberidaceae *Anonaceae Monimiaceae 2 Ranales. Nympheaceae

Ranales. Hydroptillio, Nelumbiaceae Ranunculaceae Podophyllaceae Fumariaceae 3 Primulales. 4 Gentianales. 5 Loganiaceae.
lives should beware of tampering with such important organs by means of any of the numerous nostrums vended to the public. To treat satisfactorily the diseases of the lungs it is necessary to know their structure, and the relations they have to the other parts of the body. The bronchia (for air-passages) and air-cells (for the lungs) are lined by a mucous membrane, and have of consequence a relation of sympathy with the skin and intestinal canal more close than with any other part of the system. A vicious discharge or secretion is thrown off by the internal (pneumogastic) or external surface (i.e., the skin), and any considerable diminution of this discharge on the part of either is in some degree compensated for by augmented secretion of the other. Hence when the insensible perspiration of the skin is suddenly checked by exposure to cold, a double duty is thrown upon the internal membrane, sometimes of the intestines, sometimes of the respiratory tubes, the lungs, when catarrh (common cold), or pneumonia may ensue. This fact enables us both to comprehend the cause of some of the diseases in which expectorants are proper, and the mode of aiding the cure.

A certain exhalation from the internal surface of the lungs and air-passages constantly goes on in a state of health—any considerable diminution or augmentation of this secretion may require the assistance of medicines to raise it to the proper quantity in the one instance, or to evacuate it in the other. The supervening of certain amounts of physiological truth could be conveyed to the vulgar. The 'esoteric' writings and doctrines were reserved for those who were far enough advanced to understand them, and to form an opinion on the prevalent and most tenable amongst the masses of the people. It is important to bear in mind this distinction between 'esoteric' and 'esoteric' doctrines in forming our judgment of the character and writings of the ancient philosophers. [ARISTOTLE, p. 334.]

**EXPECTATION OF LIFE.** A term applied to the mean or average duration of the life of individuals of any given age. [LIFE, MEAN DURATION OF.]

**EXPECTORANTS** (from *ex*, out of, and *pectus*, the chest, the breast) are medicines, which, by certain conditions in the system, will, either by promoting or repressing the secretion of the air-passages and of the lungs, facilitate its expansion. The articles which bear this name differ considerably as to the means by which this end is accomplished. They may be for the inhalation or the ingestion, such as mucilage, gum-resins, or balsams, of a stimulating quality, or other substances of medicinal properties; vapoours also are expectorants, and may be either simple, as that of warm water, or medicated with different ungratifying ingredients. Vapours reach the organs to be affected, and are therefore the only direct expectorants; the others being taken into the stomach must operate by sympathy or some other obscure agency.

From the differences in the nature of the substances regarded as expectorants it is clear that the conditions of the system, the pathological condition of the lungs, and the stage of the complaint. Great care is necessary in selecting the particular agent suited to each case, and in no set of diseases are greater errors committed by unprofessional persons than by injudicious employment of these agents, than in those of the lungs, from common colds to the most serious and fatal affections of these vital organs. The slightest difference of many of the common maladies of the throat and lungs affords a basis of distinction, which is generally though most erroneously regarded as an affection of the lungs themselves, while it is truly an affection of the whole constitution, have led to a degree of interference with the treatment of diseases of these organs not attempted in any other cases, as the multitude of popular remedies for coughs, colds, and consumptions, attest.

Those who regard their health and wish to prolong their...
EXPLANATORY. [Morphophysica.]

EXPOSER; EXPONENTS; NOTATION OF. In the algebraical expression $a^x$ is called the exponent of $a$. If we were strictly to preserve the most antient meaning of the term, $x$ would be called the exponent of the whole symbol $a^x$; but it is usual to call $x$ the exponent of $a$, and $a$ the exponent of $x$.

From the time of Descartes it has been usual to employ exponents in abbreviation of repeated symbols of multiplication: but this was only the beginning of a series of extensions which have made the theory of exponents a fundamental part of algebra. Beginning with the simple substitution of $a^m$ instead of $a \times a \times a$, etc., we have a succession of new symbols suggested by the processes of algebra, namely, that $a^0$ should stand for $a$, $a^{-1}$ for the reciprocal of $a$, and $a^{-n}$ for the $n$th root of the $n$th power of $a$. These conventions being made, the common algebraical theory of exponents is complete; and the student will find in works on algebra an account of the manner in which the necessity for these extensions appears. The theory of logarithms follows naturally from this notation and the binomial theorem.

Looking at the notation of exponents in another point of view, we see that $a^1$, or $a$, signifying the performance of a complete operation on the unit, $a^0$, or $a_0$, signifies the repetition of the same operation upon itself; $a^{1/2}$ denotes the repetition of the same operation upon $a^1$, and so on. Hence by analogy, whenever, in the higher parts of analysis, $\alpha \beta$ signifies an operation performed upon $\alpha$, the sign $\alpha^{\beta}$ signifies the repetition of the operation upon $\alpha$. Thus if $\alpha^{\beta}$ signifies $1 + 2\alpha$, then $\alpha^{2} = 1 + 2\alpha + 3\alpha = 3 + 4\alpha$.

It appears by reasoning analogous to that which establishes the meaning of exponents in algebra, that $\alpha^{2}$ must stand for $\alpha^2$ itself. Also $\alpha^{-1}$ must signify the operation inverse to (or which destroys the effect of) $\alpha$; thus if $\alpha^{2}$ signifies $\alpha^2$, $\alpha^{-2}$ must signify $\alpha^2$. Also $\alpha^{-2}$ signifies an operation which performed $n$ times in succession, gives the same result as $\alpha^n$ performed $m$ times.

The Differential Calculus and the Calculus of Differences furnish striking examples of the notation of exponents. As soon as the student arrives at the higher parts of these subjects, he should pay particular attention to the structure of the notation, and in particular to the meaning of those theorems in which the symbols of operation are separated from those of quantity.

EXTRACTS [EXTRACTS AND EXPORTS.]

EXTENT (Lat. extensio) is a writ of execution (sometimes called an extendi facias), which is directed to the sheriff against the body, lands, goods, or the lands only, of a debtor; and it is also used as signifying the act of the sheriff or officer upon the writ itself.

The king may grant a writ to a person entitled to this writ, either in chief or in aid for the purpose of obtaining satisfaction of debts originally due to him or assigned to the crown. The writ of extent in chief is an adverse proceeding by the king for the recovery of his own debt, and in which he is the real plaintiff. This writ is issued out of the equity side of the Court of Exchequer; and the sheriff, for the purpose of executing it, may break open the defendant's doors, when purposely closed, either to arrest him or seize his goods. If however the defendant cannot be found, or is not meant to be arrested, the sheriff summons a jury to inquire as to the debtor's lands and tenements, goods and chattels; and after the inquiry is made, the lands then become bound to the crown until the debt is satisfied. The writ of extent in aid is also sued out at the instance and for the benefit of the crown against the debtor of a crown debtor: in this proceeding the king is the nominal plaintiff only. This writ is in effect an extent in the second degree, and in order to obtain it an extent pro forma must be obtained against the debtor, in which an inquiry is taken; and if it be thereupon found that another person is indebted to him, the Court of Exchequer, on an affidavit to that effect, and also to the effect that the crown debt is in danger, will grant a flat or warrant for obtaining the extent in aid. The body of the defendant in may be strict in being taken in execution as well as his lands, tenements, goods, and chattels, &c.; but where there are effects sufficient to satisfy the debt, the court seems generally disposed to give the defendant his discharge.

On the return of the writ of extent in chief or in aid to the court from whence they are issued, an order is endorsed on the back of it, 'that if no one shall appear and claim the property of the goods, &c., therein involved in the reverse return on or before that day se'nnight, a writ of venditioni exponas shall issue to sell the same.' If the produce of the goods sold be not sufficient to pay the debt, the court will make an order for the sale of the debtor's lands under the 25th George III., c. 33.

There are various means of resisting the execution of the above writs, on the ground of informality or want of title in the crown; which may be referred to in the second volume of Mr. Todd's work on the practice of the superior courts.

The writ of extent for the subject is founded upon a recognition at common law or by statute, or upon a judgment in an action of debt against an heir, on the obligation of his ancestor. It is very similar in its effects and mode of extension to the other writs of extent already specified.

When lands are delivered over to a creditor upon an extent, a reasonable but not the real value is set upon them; and the effect is the same as if the creditor took a lease of the lands until his debt is satisfied. The whole during which the creditor will hold the lands will of course be determined by a comparison of the value set on the lands with the amount of the debt. (Coke on Littleton: Todd's Practice: Blackstone's Commentaries.)

EXTRACTS [EXTRACTS AND EXPORTS.]

EXTRACTIONS are medicinal preparations of vegetable principles, obtained in various ways. Sometimes they are merely the juices expressed from the fresh plants, brought by careful evaporation to the concentration of honey, and then more properly denominated impregnated jujubees. Sometimes the principle is obtained from a fresh or dried plant extracted by some menstruum in which they are soluble, such as water, proof spirit, or vinegar, and afterwards evaporated, as in the former case. According to the nature of the menstruum employed the extract may be termed aqua or acceous. The object proposed in such preparations is, to ensure the preservation of the active principles of the plant by removing the fluid in which they are dissolved, or the materials with which they are associated, that have a greater tendency to fermentation or putrefaction; to bring the valuable portion into the smallest possible compass; and to facilitate the administration of them by thus rendering them capable of being made into pills, &c.

The preparation of extracts requires the greatest care. The plants must be in every respect of the best quality, as regards the place of their growth, season when collected, &c., and the evaporation must be conducted rapidly, yet at a low temperature. Orfila found that the excellence of the preparations of this kind was always in the reverse ratio of the temperature employed to form them. Mr. Barry effected a great improvement in the mode of preparing extracts by evaporating in vacuo. During the preparation, and especially towards the end of the operation, the operator must be most particular to prevent burning or decomposition of any portion of the mass. Extracts may also be formed from dried plants, banks, roots, &c., by reducing them to fine powder and evaporating it for 24 or 48 hours in sixteen times its weight of proof spirit. That which is thus extracted, but in some cases it is proper to employ warm. The extract of eucalyptus, prepared with cold water, is less powerful than that prepared with warm.
Extracts are simple or compound, according as they are prepared from one plant or from several different kinds. A well-prepared extract should possess a great degree of the odour, and especially the taste, of the plant from which it is derived. It is usually distributed by stomach, and on the plant and in the preparation a taste, and it should have a proper and uniform consistence. It is necessary to preserve extracts in a dry situation: to assist in keeping watery extracts, it is customary to sprinkle a little alcohol over the surface before covering them up; but water-extracts, if made with well-defined proportions of the plant, rarely require this precaution. It is proper to examine the condition of all extracts very frequently, both during very warm and very wet weather: any portion which seems spoiled should be immediately thrown out.

Forming, from the beneficial mode of their preparation, extracts were the most uncertain and useless form of vegetable remedies; but since competent practical and scientific chemists have given their attention to the subject, they are now, in many instances, the most valuable communications which chemistry has made to practical medicine.

Extravasation (extra, without, ex, a vessel), in medicine, signifies the escape of any of the fluids from its natural reservoir or canal into some neighbouring cavity or tissue. The accidents of this kind are less comprehensive, as it does not include the case of fluids pouring out by secretion, such as dropsies, or any of the products of inflammation. It is most commonly employed in the sense of a sprain or strain, or of a wound; and we shall therefore confine what we have to say to the cases of brief notice of the principal varieties of these accidents, referring the reader for more complete information to other parts of the work.

Extravasations of blood are always serious and often fatal when the larger vessels and more important organs are concerned in them. Thus if blood escape in consequence of the rupture of an aneurism of the aorta into the bag which encloses the heart, the circulation is immediately arrested, and death occurs in a few minutes. Sometimes the blood is said to be "an extravasation of blood into or within the pericardium." [Aneurism.] Blood is sometimes driven with great force from a ruptured or wounded artery into the loose spongy substance consisting of connected cells which surrounds and separates the various organs, and is found in great abundance in every part of the body. This is called 'extravasation of blood into the cellular tissue' of the part. In such cases, if the vessel be a large one, the extravasation may be so considerable that it must produce a partial or even a complete obstruction to the contiguous parts; and it may be fatal from the amount of the haemorrhage, or from pressure upon some vital organ, or from mortification. This is a frequent source of danger in gunshot wounds. Fractures also are generally accompanied by extravasation, and it is one of the causes which, however, are soon absorbed, and are not often attended with serious consequences, except in fractures of the skull: in that case they compress the brain, and produce the symptoms of apoplexy. [Head, Injuries of; etc.] The thrombus, or swelling beneath the skin, so frequently observed after bleeding from the arm, is also formed by extravasation of blood into the cellular tissue. It arises from the puncture in the skin not corresponding with the opening in the vein, or not being sufficiently large. It soon disappears, and is of little importance. Contusions are likewise followed by extravasation of blood into the cellular tissue, and it arises from the rupture of small vessels; and this is the reason of the dark colour assumed by the bruised parts, which often extends to a considerable distance from the situation of the superficial instance of a black eye. This superficial extravasation is generally called ecchymosis, a word of the same import.

Spontaneous extravasations of blood, allied to those last mentioned, frequently take place in the progress of various diseases, of which they may be causes or symptoms. The spots which appear under the skin and beneath the membranes which line the internal cavities and tubes, in plague, typhus fever, scrofula, and inflammatory affections of the sympathetic kind; and these as well as the discolourations after contusions are included in the general term ecchymosis; they are also known by various other names, as olives (wheels), pleotiches, and purpurae. They are frequently accompanied with bleeding from the mucous membranes of the intestines and bladder, and of the nose; and they often occur, in the lower extremities especially, when the liver is enlarged, or otherwise diseased. They are supposed in general to indicate a want of tone in the system, and are likely to be the effects of a morbid condition of the blood; but they arise in some instances from a plethoric habit, and require bleeding for their cure.

One of the most common causes of apoplexy is an extravasation of blood in the substance of the brain, or between its membranes. Frequently it results from the rupture of many minute arteries. It happens for the most part suddenly, when the vessels of the head are preternaturally distended, but yet not without some premonitory signs; and as the affection occurs most frequently at an advanced period of life, when the circulation is more accelerated than before, the disease is probably that the rupture is often preceded by some morbid change which renders the capillary vessels more than usually fragile. [Apoplexy.] The term apoplexy has been extended by modern pathologists to similar symptoms, from the simultaneous rupture of many minute arteries. It happens for the most part suddenly, when the venous system of the abdomen is loaded with blood, and from other causes; and it frequently happens in the lungs when their circulation is either obstructed or too forcibly generated in various parts of the lungs, and is known as phthisical apoplexy. This is a common cause which is more frequently seen in the early stage of consumption, when the body is yet full of blood, and the substance of the lungs is rendered brittle and inelastic by the deposit of tuberculous matter. [Pneumonia.] When it occurs in the lungs, it is called haemorrhage of the lungs, or splitting of blood. In this, as in many extravagations of the same kind, it is probable that the blood is effused rather in consequence of a rent, or breach of continuity in the structure of the lungs, than from what is included in the common notion of the breaking of a blood-vessel. The presence of extravasated blood does not in itself produce much irritation, and the coagulum is soon absorbed when the quantity is not very great, and the vital powers and other means of maintaining the health are not depressed; but if the quantity is considerable, the absorption is much quickened by a bandage put on after the immediate effects of the injury have subsided, as in sprains and bruises of the limbs: friction and embrocations have the same effect.

Extravasations of urine may take place in consequence of rupture of the bladder or urinary passages from ulceration, mechanical injuries, or any cause that produces tension to a great degree. If the fluid escape into the cavity of the abdomen, the result is uniformly and speedily fatal, unless the urine escapes and is evacuated. If the escape be into the boudoir of the neck of the bladder or the urethra, the accident is still a very serious one, though it generally admits of cure if the nature of it be immediately recognized. The fluid, which is highly deleterious, must be promptly evacuate by the natural discharge; and others say he had no claim to repute, except as a colourist; others again found his whole fame upon his discovery of the art of painting in
oil; and it was concluded by most, till lately, chiefly on the authority of Sir Joshua Reynolds, that Raspe the antiquary, in a treatise on the question, had deprived him even of this last remnant of his renown. Raspe certainly proved that he did not make the discovery; but he surmised that it was such a discovery which he made, and brought it into general use. This was effected by his discovering the means of giving consistency to colours without drying them in the sun, and of adding to them a clearness and brilliancy by a water-proof varnish. After having long resided in the rich and flourishing city of Bruges, the two brothers moved about 1429 to Ghent, where their greatest and most renowned work, the adornment of the Laub, was painted between 1436 and 1442. They are sometimes called for Iodocus Vyt's, a rich citizen of Ghent, while others affirm that it was by order of Philip, Duke of Burgundy, count of Flanders, who came to the government in 1429. It is certain however that John Van Eyck was long attached to the brilliant court of Philip. This often described picture contains no fewer than 330 figures. It is with folding-doors, filling in all twelve panels. It was so highly prized that it was shown only on particular occasions. Philip II, king of Spain, thought of removing it to Madrid, but this was prevented by the wise counsel of Michael Coxis of Malines. This copy has in its days found its way back to the Netherlands, and thence, as it should seem, to Berlin. The fate of the original is remarkable, and much to be regretted. It remained entire till the French occupied Bruges, when they tore their eyes to see so rich a prize. The clergy of the cathedral of St. Bavon succeeded however in concealing eight of the twelve panels, so that only four were taken to Paris, whereas they were brought back in 1915. The clergy have since sold the others, which are now in the Royal Museum at Berlin, where they are united with a part of the copy made by Coxis for Philip II. Hubert Van Eyck died in 1426. John is generally said to have died in 1441, but the date of his death is uncertain. (Hedrici, &c.)

The organs appropriated to the sense of sight are distributed very extensively, yet with that frugality which always regulates the operations of nature in the construction of animals. All the active species which live in the light are furnished with them; the rest are disqualified to possess as well as to profit by them, by their limited powers of locomotion, or by constant residence in the dark. In conformity with this rule, to which there are few, if any, exceptions, the mammals are associated with the lower types of animal development, and are sometimes absent in the highest. Some related animals, most of the articulated tribes, and many of the mollusca, have manifest organs of vision, and some of them are of the most curious and artificial construction; on the other hand, the univalves, annelids, etc., both sessile and free, belonging to the highest order of that class, the mammals are blind. They have eyes, it is true; but those of the mole are not larger than the head of a pin, and are unprovided with optic nerves; and the equally imperfect eye of the shrew is covered with skin, from which hair grows as on the rest of the body. Hence, even in the absence of further evidence, we might conclude that if these animals have any perception of light, it can only be sufficient to distinguish light from darkness. It is by any accretion to the eye, the more open to the day than they emerge to the day. But it is more probable that they do not see at all; and that these rudimentary organs, like the male nipple, exist only in conformity with the general model of vertebrate construction.

The functions of the eye, as well as the presence of that organ, may be inferred with more certainty from the circumstances of an animal, than from the place it occupies in any zoological scale: in fact, no part has a closer relation to the habits and mode of existence. The eye may be simple, single or multiply fixed or movable; it may be encased in a hard transparent shell; or lie deeply imbedded within the protection of a bony socket; or project from the surface of the head at the extremity of a sensitive and retractile horn: it may be adapted for near or distant, oblique or direct vision; for seeing in a strong or a weak light, in a dense or in a rare medium; or it may be formed so as to accommodate itself to each of these conditions in its turn: and these peculiarities will all be found examined to be in strict accordance with the exigencies of the animal. Mere difference in bodily size, and the proportionate reduction or increase in the bulk of the eye, is sufficient to constitute a remarkable peculiarity. A more precise examination will suggest the explanation when such discrepancies are observed to exist in animals otherwise alike.

Yet with all the varieties in configuration to which we have alluded, it is rather in form than in substance that the eyes of animals differ from each other. The organ has always a common purpose, and is essentially the same in all cases: that is, we find an assemblage of the same fundamental parts, generally arranged in the same order, even when our powers of observation are measured by the microscope. The parts are lost in extreme tenuity of texture and the transparence which results from it. And although there are refinements in the structure of the organ of which we do not know the purpose, and certain delicate adjustments in the exercise of the faculty of which we do not know the instruments, yet upon the whole we can deduce the principle upon which the eye is constructed, and assign the uses of its several parts with great certainty from our knowledge of optical and physiological laws.

In the preceeding chapter we have given a few introductory remarks on the organs in general, we now proceed to the most interesting of its vari"
temple and the back of the upper jaw; it is called the foramen lacerum inferius, or spheno-maxillary fissure, and gives passage to a branch from the fifth pair of nerves, which piercing the bone, passes beneath the floor of the orbit, and emerges through a foramen posterior to the lower edge of the orbit, about a third part from the inner angle of the eye. The other slit, which is called the spheno-nasal fissure, or foramen lacerum superius, opens into the cavity of the head, and transmits another branch of the fifth pair, which crossing within the orbit, along the roof, comes out through an opposite notch in its upper margin, and is distributed upon the forehead and upper lid. These branches of the fifth pair, called the supra and infra-orbital nerves, are the most frequent seats of that excruciating affection the tic-douloureux. Though the spheno-nasal fissure are likewise transmitted the ophthalamic veins, and all the other nerves except the optic destined to the eye and its appendages. A third opening, which is circular, called the foramen opticum, of the size of a large quill, and leading also from the cavity of the skull, gives passage through the sphenoid bone to the ophthalamic artery and the optic nerve. It is directed obliquely outwards and forwards, and is situated at the apex or back part of the orbit, in the angle between the nasal side and the roof. In the same angle, close to the margin, that is just within the corner of the eye near the nose, there is a deep groove leading into the lachrymal canal, to which we shall have occasion to recur hereafter.

Optic nerves.—The optic nerves arising at the back part of the brain, with which they have extensive and important connections, not only where they seem to originate, in the corpora quadrigemina, but throughout the whole of the first part of their course within the cranium, pass horizontally forward above the floor of that cavity, converging toward the eye, and therefore interpenetrate and are therefore also united. It is probable that they not merely meet, but cross each other, the greater part, if not the whole, of the nerve from the right side of the brain going to the left eye, and vice versa. It has been ingeniously supposed by Dr. Wol- lason, that these two optic nerves are the cause of the singular phenomena of disordered and healthy vision, that this decussation or crossing takes place only with respect to those parts of each nerve which lie towards the other; so that each supplies the outer half of one eye and the inner half of the other. This be conceived would explain, among other things, the correspondence between the homologous points of the two eyes, which may be defined as those points which see the same object at the same time. It is scarcely possible to verify such speculations by dissec-
tion, but the nature of the facts make it highly probable that the nerves pass through the optic foramen, become invested in a tough, flexible, and fibrous sheath, which is a tubular production of the strong membrane called the dura mater which lines the cavity of the skull. The outer part of this sheath is reflected off as the nerve enters the orbit, and expanding, adheres to the bony surface of that cavity throughout, becoming its peristome. The nerves, continuing to diverge, reach the eye-ball after a somewhat inch in course of light on the same surface would be partly removed if the seat of perception were placed at the bottom of a cavity capable of being turned to each eye or each part of the same object in succession, inasmuch as this would prevent the interference of rays proceeding from parts not actually under contemplation; but an indistinctness would still remain in proportion to the magnitude of the field of view, only remediable by narrowing the cavity to a mere capillary tube, upon the inconve-
nience of which we need not enlarge. Let us consider what would be the effect of a very simple addition to the cavity. We will suppose it to be closed in front by a dark screen, perforated with a small central hole as in the section represented in fig. 1. In this case pencils of rays crossing each other from A and B, the top and bottom of an object, would impinge at 1 and 2 upon different parts of the retina, but the advantages of a large and a small field of view would be combined, a distributed impression of the object would be produced, and its several parts would be seen separately and in their proper relative situations. The effect may be easily shown by holding a card, pierced with a smooth circular hole, near a taper, and throwing the spectrum upon a wall at a little distance. Such a screen is termed the iris.
But still the rays from each point of the object would be diffused over a space, instead of being collected upon a separate point of the surface, and the impressions of contiguous pencils would in some degree overlap and confuse each other. This inconvenience might be lessened by contracting the opening, but another cause of indistinctness would then be introduced in the diminished admission of light.

Both evils might be avoided if a lens of a proper construction were fixed behind the screen (as in fig. 2). Pencils diverging from single points of the object would thus be admitted through the opening, which we will call the pupil, and would be made to converge to single points on the surface, and the impression would now be an exact counterpart of the original. A being distant seen in its true place and direction from a, and B from b.

But additional provisions would be necessary to bring this arrangement to the requisite degree of perfection. In the first place the retina must be adjusted to correspond in shape with the focal distance of the lens. This purpose might be accomplished, if the walls of the cavity were composed of flexible materials, by interposing a transparent fluid between the lens and the retina, which, by its uniform distension, would constrain the latter to take and retain the form of a portion of a sphere.

Again, although the diagram has been otherwise drawn for an obvious reason, our arrangement hitherto supposes the object to be very small, and to be seen directly in front of the eye; but if oblique as well as direct pencils are to be brought to a focus, that the lateral vision may be also distinct, a second refracting body, of a proper form, must be placed in front of the lens. This may be done very conveniently, with the further advantage of completing the cavity, by adding a transparent portion to its walls in front of the screen, to be likewise distended with fluid in order to keep it in the shape of a segment of a sphere (fig. 3).

It is also desirable that the back of the screen and the interior of the cavity should be blackened, that the rays may be extinguished after impact upon the retina, lest any internal reflection should interfere with the impressions on other parts. The expediency of this provision is always kept in view in the construction of optical instruments, and may be made evident by looking at a bright object through a polished metal tube. The colouring matter is called the pigmentum nigrum, or, simply, the pigment.

The only remaining article to secure the perfection of the arrangement just mentioned in this synopsis of its most essential provisions, is to endow the pupil with the faculty of contraction and enlargement according to the quantity of light. If it were of a constant size, more light would be concentrated upon the retina from a bright or a near object than from one comparatively distant or faintly illuminated; and as the sensibility of the retina must remain the same, the disproportion would occasion dimness of sight in one case and dazzling in the other, and might even impair the nerve.

We have thus imagined all the parts to be built up in succession that are of primary importance (as far as we know) in the construction of an organ of distinct vision, and the figure to which we have arrived might pass as a tolerably correct diagram of the human eye.

The laws of light and sensation require that there should be a general type in the structure of these parts, and a mutual relation among them as to density, form, and position. But this does not preclude much variety; a difference of position, for instance, may be, and frequently is, compensated by a corresponding difference in form or density either of the same or other parts. Hence the problem of distinct vision has many solutions, each perfect in its kind.

In fact nothing can be more diversified in unimportant particulars, or more uniform in those which are essential, than the interior constitution of the eye in different animals: it is never precisely the same in any two species, however closely they may be allied; but we constantly find the retina, the lens, and the pigments, and generally the iris, enclosed in some kind of capsule, transparent in front, and partly occupied by complementary fluids. To this there are some exceptions, which however we believe to be only apparent. Thus the larvae of many insects, the cercopites, and other microscopic animals, and some of the more or less transparent, which are undoubtedly eyes, and are thought by some to be little more than expansions of an optic nerve beneath a thin coloured membrane to absorb the light, and in some unknown way to distribute its impressions. But when observation fails us, our presumptions with respect to natural phenomena should be guided by analogy and accord with known principles; and as nothing that we know of light enables us to conceive how so inartificial a construction as this can account for the acute vision obviously enjoyed by some of these animals, we are disposed to adopt another view of such coloured points, and to consider them as a congeries of extremely minute but perfectly formed eyes of the usual construction, of which the pigment is visible and the abscission of the myriads of simple eyes observed under the microscope to be grouped together in the compound organs of the perfect insect and other articulated animals, as the scorpion and crab, afford strong analogical grounds for this opinion.

We now resume our account of the anatomical structure of the human eye.

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Globe.—The globe, or eyeball, contains the parts immediately concerned in vision. It consists of very unequal portions of two spheres of a different size, which have a common circular intersection in a transverse vertical plane, much nearer the front than the back of the eye. The iris, or coloured screen, perforated centrally by the pupil, nearly occupies the situation of this imaginary plane, but is, strictly speaking, behind it. The posterior and larger portion is circumscribed by the sclerotic membrane, except in front, where it may be considered as bounded by the iris: it is rather less than an inch in diameter, and constitutes about five-sixths of the surface of the globe. (fig. 4, a.) The included space is occupied by the choroid membrane and retina, the vitreous and crystalline humours, the ciliary body and processes, and a small part of the aqueous humour. The anterior portion, which forms about a quarter of a sphere, is the thickest part of an inch in thickness, (fig. 6, a), and occupies the remaining sixth part of the surface of the globe, contains the rest of the aqueous humour, and is bounded in front by the transparent and slightly prominent disc set in the sclerotic like a watch-glass in its metallic rim, and known as the cornea from its horny texture. Its transverse chord, or the diameter of the circle of union be-
When the cornea and scleotic is nine-twentieths, or nearly half an inch in length.

The globe derives its firmness to the touch from the disturbance of the contained fluids: its capability to bear that disturbance, which insures the permanence of its shape, is due to the flexible but strong and inelastic outer covering or tunic, consisting as we have said of the sclerotic and cornea.

**Cornea.** (Fig. 5, b.) The cornea is somewhat thicker than the sclerotic except at the back of the eye, is equally tough though rather more flexible, and of a much closer and more even texture. Its inner surface is concave, and nearly parallel to its outer surface; it is however rather thicker in the middle than elsewhere, and the general statement that it has no share in effecting the convergence of incident rays on account of the parallelism of its surfaces is therefore not quite correct. It is covered externally, as we have already mentioned, by the conjunctiva, and internally by a delicate elastic membrane. The bulk of the tunic, or cornea proper, consists of several layers which slide upon each other when the membrane is rubbed between the finger and thumb, and are separated in the natural state by a limpid fluid, which is required to transmit light.

This fluid gives plumpness to the outer surface, which is represented by some authorities to be not exactly spherical, but of that kind which would be formed by the revolution of an ellipse of small excentricity about its long axis.

**Choroid or Choroidal membrane.** (Fig. 5, a., Fig. 6.) The choroid is considered as an internal tunic of the eye, the first of which is the choroid, or, more properly, choroidal membrane, so called from some resemblance in the flocculence of its outer surface to the chorion, or external investment of the ovum. This is a thin soft dark-brown structure in contact with or lining nearly the whole concave surface of the sclerotic. It may be said to originate around the entrance of the optic nerve, which passes through it before it expands into the retina; and it terminates in the posterior margin of the ciliary ligament or circle (fig. 5, a.); a flattened band of grey matter, about the seventh part of an inch in breadth, attached to the sclerotic internally near its junction with the cornea. In these situations the two membranes adhere with some firmness; they are nowhere connected by vessels which pierce the outer and ramify upon the inner membrane, and by the filaments of a fine intermediate cellular tissue. But the connexion is so slight that it may be readily broken by gentle inflation with a blow-pipe introduced into a puncture in the sclerotic, without injury to the delicate texture of the choroid. The choroid consists almost entirely of a multitude of minute vessels, curiously interlaced, and communicating freely with each other. It is supplied with blood by 15 or 20 branches of the ophthalmic artery, which pierce the sclerotic round the entrance of the nerve, and are at first distributed externally on the posterior part of the sphere; but they finally pass inwards, and terminate in a close and uniform vascular expansion over the whole concave surface. This is called the tunica albuginea, a white, transparent, round, and flocculent; the inner surface, upon which the retinæ are expanded, is delicately smooth and even. Both are abundantly covered with the pigment, which is secreted by every part of the choroid, and pervades its loose and porous texture.

**Pigment.—** In man this matter is of a deep brown colour; in most other animals it is black, and hence very commonly called the pigmentum nigrom. It appears under

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the microscope to consist of hexagonal particles arranged side by side like the cells of a honeycomb. It adheres very loosely, so that when the surfaces covered with it are drawn to and fro in water, it becomes diffused, and may be washed off. The choroid thus treated is found to be of the same whitish or grey colour which characterizes the cuticle of the visceral parts, chiefly of the choroid, but the cellular tissue on its external surface, and the inside of the sclerotic, are deeply stained by the pigment, which shows through, and occasions the bluish tint of the white of the eye in persons of delicate complexion. Thus, the inner surface of the choroid, the pigment is retained by an expansion finer than a spider's web, yet of close texture, which may be called after its discovery the membrane of Dalrymple. By this means the transparency of the retina is preserved. It is probable that this membrane of the pigment is of a serous kind, and, as it is reflected at the optic and ciliary margins of the choroid, and passes over the whole posterior surface of the retina,—thus doubly defended from absolute contact with the pigment. The choroid is not the only part which secures this coloring matter an abundance upon the back of the iris, on the surfaces of the ciliary processes, and in fact wherever it is wanted to facilitate vision.

**Ludicordium.** In many animals, especially the nocturnal and carnivorous tribes, the pigment is deficient at the bottom of the eye, and the surface of the choroid in that situation presents a brilliant colour and almost metallic lustre. This is called the tapetum (tapestry of divers colours) and consists of layers of cells of different colours, sometimes changeable like shot silk, and sometimes of a silvery whiteness. The tint occupies various portions of the surface; it is most brilliant immediately opposite the pupil, and passes gradually into the dark line of the pigment. There is no vestige of a tapetum in the human eye; the use of it is not well known. It probably causes the animal to see better in the dusk and less clearly in the day, by reflecting the rays a second time through the retina. This reflection from a very effective concave mirror produces a much more brilliant light, by which conduces to illuminate the pupil, and is the cause of the well-known glare of the eyes of cats and other animals seen in an obscure light from that particular distance at which the emerging rays are most completely brought to a focus upon the eye of another.

**Retina.** The optic nerve, having entered the interior of the globe through the sclerotic and choroidal membranes, forms the optic papilla, a small disc, union of union of several portions, and thence spreads out in the form of a fine transparent membrane over the whole concave surface of the choroid, embracing the translucent body called the vitreous humour. Towards the choroid it appears to consist of a mere circular pulp not well differentiated from the granular matter of the brain, but it is undoubtedly most elaborately and minutely organized. Analogy would lead us to suppose it to have a fibrous arrangement, and recent observations of great neatness with the microscope appear to lead to the same conclusion. The vitreous humour has the structure of a most delicate vascular web, consisting of innumerable ramifications of the central artery (which, as we have already mentioned, accompanies it into the interior of the globe) and of its numerous branches. Its name may have been derived from the net-work formed by the visible branches of these vessels; at least it is not otherwise applicable to the structure of the membrane. The distribution of the central artery may be made visible to a microscope by the angle of a drop of the pigment first suggested by Parkinson. One eye being steadily directed to a surface of some uniform dark or neutral tint, such as a wall painted of a leaden colour, and the other eye closed by the hand, the flame of a small wax taper is to be slowly waved round and round, so as to pass but at every turn at a little distance in front of the eye. The central artery will gradually come into view, at first obscurely, and afterwards more clearly. The experiment succeeds best after the experience of several trials on successive nights. The transparency of the eye might be brought on by a bounding net-work of vessels: the lines are dark, with bright edges on a faintly illuminated ground. There are other modes of making the experiment, which show the appearance more distinctly, but they are less simple. We shall offer an explanation of this experiment in treating on the physiology of vision. The retina terminates anteriorly in a thin scalloped edge, fitting into corresponding irregularities called the ora serrata in the posterior margin of the ciliary body. Behind this edge lie the internal portions of the eye, and there is a bright yellow spot, fading gradually off at the edges, and having a black point in the centre precisely where the axis of direct vision intersects the back of the eye. (Fig. 5. n.) This central point was believed by its discoverer, Scemminger, to be an actual deposit of the substance of the retina; and it is generally called in consequence the fovea centralis of Scemminger. But it is now known to be merely a central absence of the yellow colour of that part of the retina rendered conspicuous by the pigment seen through the ordinary transparent vessels. These appearances are lost very shortly after death, and are replaced by a minute fold, into which the retina gathers itself, reaching from the place of the central point to the prominence which marks the union of the divided portions of the nerve.* The use of this yellow spot and central point, and of the tendency of the retina to assume a folded shape in this situation, is not understood. It has been suggested that the group of appearances is a rudiment of the yellow dye of the retina and optic nerve in birds, on which we shall give some account in a future part of the article. They are not unusual only in the eyes of man, the quadrupeds, and some lizards.

We have already described sufficiently the serous membrane which lines the posterior surface of the retina, supposed to be a recombination of the retina pigment on the opposite surface of the choroid. What may be the truth as to this supposition, there is no doubt of the existence of the retinal membrane, which was discovered by Dr. Jacob of Dublin, and has been named after him.

**Vitreous Humour.** (Fig. 5. e and 7. d.) The part next in order to be described is the vitreous humour, behind which the retina is disposed. It is a transparent fluid of semiglutinous consistence and high refractive power, constituting about five eighths of the interior of the globe. It contains fluid differing in no great degree from water, contained in a cellular structure called the hyaloid membrane (tissue, glass), from its perfect translucency. The tunica cells are connected together; for if the external part be punctured, the fluid is blown out, and drawn away. This cellular structure is so delicate and fragile that it is almost impossible to obtain it separately; but the membranous portions are rendered slightly opaque by strong spirit or diluted acids, and may thus be made evident. It is condensed into a membrane of firmer consistence upon the surface, which serves the general purpose of a containing capsule for the vitreous humour, and is strong enough to cause it to preserve its shape in some degree when the stronger tunic of the eye are removed. There is a narrow tubular dimple of some depth in the vitreous humour opposite the entrance of the optic nerve, lined by a trumpet-shaped production into it of the retinal membrane, called the hyaloid canal. (Fig. 1.) It serves to transmit a branch of the retinal artery and a associated veins for the nourishment of the capsule of the
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Lens in the fornix, and perhaps also of the hyaloid membrane, and of the substance of the lens itself. There can be no doubt that the vitreous humour is secreted by the surfaces of the hyaloid cells, but this focal artery is the only vestige of a vascular arrangement yet discovered in the part.

Fig. 8.

Magnified view of the lens, showing its laminated and fibrous structure, and the direction of its planes of cleavage.

Lens, or Crystalline Humour. (Figs. 5, f; 7, a; 8.) The crystalline (spheroideo), or crystalline, is imbedded in a deep depression in the front of the vitreous humour, a little nearer the nasal than the temporal side of the globe. It has the form and function of a double convex lens. The surfaces may be considered as portions of two unequal spheres, the anterior being considerably flatter than the posterior. The diameter of the sphere of which the former is a segment is about twice that of the latter, or the difference of an inch. The thickness of the lens, measured in the axis of vision, is about the sixth part of an inch, and its transverse diameter is about twice that length. (Fig. 4, c, d, e.) In retractive power it is superior to the other transparent coats of the eye, but, for this, the optical force is not only prevented but the lens is in a state of tension, and occupies the space between the lens and the cornea. The iris divides this space into two unequal portions called the anterior and posterior chambers of the eye, and so closely approaches the lens that the margin of the pupil the two surfaces are separated by a mere film of aqueous humour. The cavity is lined throughout by a serous membrane which secretes and permits the fluid, and prevents it from acting injuriously upon subjacent parts of importance. At least a membrane of this kind may be peeled off in some animals; its existence in the human eye is a matter of inference. The aqueous humour is a product of the ciliary body, and may be regarded as the serous fluid secreted by the ciliary processes, and in some measure as a series of small cavities into which the aqueous humour is carried. The aqueous humour is a very important part of the eye, and is the fluid which supplies the lens with the nourishment necessary for its growth and development.

Aqueous humour. This fluid, in no respect distinguishable from water except in holding a minute proportion of several salts, ingredients in solution, occupies the space between the lens and the cornea. The iris divides this space into two unequal portions called the anterior and posterior chambers of the eye, and so closely approaches the lens that the margin of the pupil the two surfaces are separated by a mere film of aqueous humour. The cavity is lined throughout by a serous membrane which secretes and permits the fluid, and prevents it from acting injuriously upon subjacent parts of importance. At least a membrane of this kind may be peeled off in some animals; its existence in the human eye is a matter of inference. The aqueous humour is a product of the ciliary body, and may be regarded as the serous fluid secreted by the ciliary processes, and in some measure as a series of small cavities into which the aqueous humour is carried.

Iris. (Fig. 5, h; 9, b.) In speaking of the choroid we have already adverted to the flattened ring called the ciliary ligament (Fig. 5, f) which connects it in front with the sclerotic. The iris arises from the anterior margin of this ring, and is extended, as we have seen, across the aqueous humour in the form of a thin partition with a round aperture, or pupil, of variable size in the centre, or a little nearer the inner side, the function of which, we need hardly repeat, is to regulate the quantity of light admitted into the eye, by contracting when it is in excess, and dilating when it falls short of the due amount.

Fig. 9.

Magnified view of a vertical section of the globe, showing the ciliary body and processes with the uvea, as seen from behind when the lens is removed.

a. Pupil; b, uvea, or back part of the iris; c, processes of the ciliary body; d, ora serrata of the ciliary body, to which a few shreds of the vascular web of the retina is attached.

The external appearance of the iris is too familiar to need a particular description. It is covered in front with a glistering polished membrane. The brilliancy of the eye depends in a great measure upon the light reflected by this surface, and is lost when its lustre is impaired by inflammation. The posterior surface of the iris is called the uvea. (Fig. 9, b.) It is thickly coated with pigment, which is prevented from diffusing itself in the aqueous humour by a membrane like that of Dairymple on the choroid. Such a provision is particularly needed here on account of the quick movements of the part in a watery fluid. The colouring matter of the iris has much analogy with the pigment. Like that substance, it forms
no part of the texture it pervades; and when the outer membranes are removed by maceration in water, it may be washed away. Both have a relation in quantity as well as in depth of tint to the complexion and colour of the hair. In the negro, the latter is of a dark hue that it can scarcely be distinguished from the pupil; while in the white rabbit and other albinos, including the human variety, where the pigment is entirely wanting from some original malformation, the substance of the iris is transparent, and reflects only the inner surface of the circular membranes, which are dazzled by a strong light, and probably see better than others in the dusk. The iris, if minutely injected, appears, like the choroid, to be composed almost entirely of vessels. It is principally supplied by the two branches of the ciliary arteries (fig. 2), the branches of the scleral arteries, half an inch from the optic nerve on either side; and passing between that membrane and the choroid, divide near the edge and in the substance of the ciliary ligament, and are wholly distributed to the iris. The branches of the ciliary arteries give rise to two different coats of the iris; an outer or ciliary circle on the inner surface, one near the outer or ciliary margin, the other not far from the pupil. But though the iris resembles the choroid in vascularity, it differs essentially from it in other respects. It is richly supplied with veins, which pass, as the ciliary veins, from the iris toward the angle of the eye, and as veins upon much the same manner as the arteries, and are the medium of its sympathy with the retina, and the source of its irritability. It also possesses a peculiar contractile power, thought by some to reside in fibres which they call its muscle fibres, which are disposed irregularly in the iris, in the anterior part and at the edge, and in a radiated form behind. (Fig. 3, b.) The former of these layers is supposed to contract and the latter to dilate the pupil. But this fibrous appearance may be deceptive, and is attributed by some to the inner layer of the iris, and to streaks and minute folds in the membrana itself.

Pupil. (Fig. 3, c.) The pupil of the human eye is bounded by a sharp well-defined circular edge. In other animals its shape is subject to many varieties which may often be explained by a reference to their habits and circumstances. In fish it is generally crescentic or imperfectly quadrangular. In herbivorous animals, which often continue to browse during the night, it is oblong and obliquely transverse. The iris is more or less distinct in the horse, and many rapacious quadrupeds, both aquatic and terrestrial, the pupil, though round and large at night, is a mere vertical slit when seen by day, especially in the smaller species of each genus, as in the common cat. It is curious that the pupil of the various species of deer, and in some of the larger four-footed reptiles, the pupil again becomes circular. In all birds, we believe, the pupil is round; and it may be observed that, with few exceptions, they all sleep after night-fall. In the few nocturnal species, as owls, the pupil is very large and oval, and these birds always shun the day. The long narrow pupil in fact a provision for a greater variation in size than the circular form permits, and is generally found in those animals which roam at night and also see well by day. When absent in sound sleep or in the organ is commonly sufficient to secure the admission of a sufficient quantity of light after sunset without this provision. In the fetus the pupil is closed by a vascular film called the membrana papillaris, one function of which is precisely that of the centering of a bridge, to support and extend it, during the process of its construction. A tubular film of the same kind has been lately discovered by Müller stretched between the margin of the pupil and the ciliary body, which are accessory processes.

Ciliary body and processes. (Fig. 3, 1; 9, c.) Upon the compressed anterior surface of the vitreous humour where it curves inwards from the sclerotic towards the lens rests the ciliary body, a thin, dark, annular band, about the fifth part the width of the iris, consisting of flatly converging plates, which encircle but do not reach the circumference of the lens. The posterior aspect is concave, and adheres loosely over the rounded vitreous humour; the front is convex, and is firmly attached to the whole breadth of the ciliary ligament, and to a small portion of the back of the iris near its junction with the ligament. It appears to be a continuation of the inner layer of the choroid, or the onyx or Ruysh, but is rather thicker, and resembles it in appearance. The membrana is almost imperceptible in the vascular region. The medullary tissue of the retina terminates, as we have seen, at the indented posterior margin (ora serrata) of this membranous band. The ciliary body is everywhere thickly coated and pervaded with pigment, except at the extremities of about seventy minute unattached papillae which fringe the inner margin, and are directed towards the lens like the floriets of a margrill round its central disc. These are the ciliary processes. (Fig. 5, A; 9, c.) They are separated from the uvea by the fluid of the posterior chamber, and are received behind into corresponding impressions of the lens. Such were the observations of Panizza.

Zone of Zinn.—If the ciliary body be carefully peeled off, and the thick radiated masses of pigment it leaves behind be washed away, a thin, transparent, and puckered membranous mass remains. This membrane is thrown off from the inner margin of the retina nearly to the capsule of the lens, which appears to be something more than the mere external surface of the hyaloid membrane. This is called the zone of Zinn, from the anatomist who first drew attention to it. The hyaloid papilla is the same, and is a point of attachment of the vitreous humour to the base of the choroid, and is set off from the vitreous by a kind of diaphragm, or small black dots, which may be seen at the back of the eye, and which extend over the whole fundus.

Canal of Petit (Fig. 5, b; 5, m.) If the transparent membrane between the zone of Zinn and the margin of the lens be slightly punctured, and the point of a small blow-pipe be gently introduced, a canal may be inflated extending all round the equator and radiating in regular intervals resembling a string of small glass beads laid in a circle. This is the canal of Petit. Whether the hyaloid membrane here separates into two layers, or whether the membrane of the vitreous humour lies upon the retina in a certain state without adhering, or how otherwise this canal is formed, it is not easy to say. In the natural state of parts it is empty and flaccid. When it is inflated the fine white triangular tips of the ciliary processes are seen to be retracted. The points are most separated when the points are loose and floating, and are not attached, as was formerly supposed, to the capsule of the lens.

Dr. Brewster has stated an opinion that the ciliary body is a muscular organ calculated to effect certain changes of curvature in the surface of the lens, on its question, which seem to be required by the laws of refraction to account for the adjustment of the eye to different distances. Dr. Thomas Young was no less confident that the true solution of this optical enigma was to be found in the imagined circular movements of the lens itself. Both have high authorities, but neither opinion appears to have gained any ground.

Appendages of the Globe.—The eye-ball, of which we have thus described the contents, is lodged in the cavity of the orbit. The orbit is a bony hollow, or an ossified sac, which completely surrounds the eye-ball, and is formed by the bones of the face and the skull, and is open in the front, where the protection of bone is wanting, the two movable and muscular eye-lids supply a sufficient defence, and contribute, by their gentle and constant pressure, to keep the eye in that state of equilibrium between opposite forces upon which the steadiness and rapid motions in a great measure depend. The space in the socket not occupied by the globe and its appendages is completely filled by a cushion of soft fat contained in elastic capsules, which are divided into several parts, the several parts, while it keeps them separate, and affords them all, as well as the globe itself, a suitable and uniform support. Varieties in the quantity of this substance, in the capacity of the orbit, and in the development of the lids, do not admit of any very close scrutiny of the eye-ball, in the extreme case of apparent size observed in the eyes of different persons, for the globe itself is merely of the size in all.

Muscles of the Eye-ball.—The movements of the globe are effected by six muscles arising from the bony surface of the orbit, and inserted into different parts of the sclerotic. Four are called recti, that is straight or direct muscles; the fifth and sixth are the obliqui superior and inferior, so called from the obliquity of their insertion, and their respective positions above and below the globe. The fifth, or superior oblique, is also called the trochlear, from the trochlea or pulley through which the tendon passes.
The recti (Fig. 10, a, b, c, d) are four flat ribbon-like muscles, each about half an inch broad, which arise together from the inner border of each eye, and each is inserted into the globe at the exit from the skull. They end in broad, thin, glistening tendons, attached to the sclerotic at four equidistant points, about a quarter of an inch from the edge of the cornea, above, below, and on either side. Hence they are designated as the superior, inferior, internal, and external straight muscles. We have already explained how the outer surfaces of their tendons are blended, and form the tunica albuginea. Each turns the pupil towards its insertion; and it is easy to see how by their single actions, or by a proper combination of two of that are contiguous, the pupil may be turned in any required direction. The rectus externus, from its position on the diverging side of the orbit, is necessarily the longest of a point (m), in the diaphragm nerve, and lying not only in common with the rest from the edge of the optic foramen, but also from the edge of the sphenoidal fissure, and arches over several nerves which enter the orbit by that passage (p). The superior oblique or trochlear (e) is a small muscle, and which arises from the upper nasal side of the rectus internus (c), and ends in a smooth round tendon. The pulley (k) through which this tendon passes is a small loop of cartilage fixed to the roof of the orbit towards the nasal side, just within the margin. In this situation the tendons are enveloped in a lubricated tunica and exsustent. The rectus externus, when at rest, is the one that is in use. It is slender and elongated, and changes its position in the orbit by means of the muscles that attach it to the border of the orbit and to the eye. The action of the muscles is in a straight line, and is produced by the contraction of the muscle fibers. The fibers of the muscle are arranged in parallel bundles, and are attached to the bone by tendons. The muscles are supplied by the ophthalmic nerve, which passes through the foramen ovale and the superior orbital fissure. The rectus externus is the only muscle that moves the eye in a horizontal direction. It is inserted into the sclerotic of the eye, and is supplied by the ophthalmic nerve. The rectus externus is a large muscle, and is inserted into the sclerotic of the eye by means of the tendons. It is supplied by the ophthalmic nerve, which passes through the foramen ovale and the superior orbital fissure. The rectus externus is the only muscle that moves the eye in a horizontal direction. It is inserted into the sclerotic of the eye, and is supplied by the ophthalmic nerve. 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fissure of the eyelids, the disposition of which is well shown in the annexed figure. (Fig. 12.) The office of the muscles of the lids, as it appears when dissected. 

a. The single at the inner angle, or corner of the eye; b. the outer canthal 

descendent tendon of the levator muscle, which extends to the lateral orbit. 

The lid is roofed by the conjunctiva, which is continuous with the cornea. (Fig. 13.) The anterior chamber is divided from the posterior chamber by the iris, which occupies the pupillary aperture. The posterior chamber communicates with the vitreous cavity, and has a very thin wall, the ciliary body, which is contained in the orbit. (Fig. 14.) The ciliary body is composed of the ciliary processes, which are connected with the choroid. The choroid is a connective tissue, which contains the blood vessels of the vitreous cavity, and is continuous with the retina. The vitreous cavity is a gelatinous mass, which fills the eyeball. It is continuous with the aqueous humor, which is a transparent fluid, contained in the anterior chamber. The lens is a transparent body, which is suspended by the ciliary body, and is movable. The pupil is a circular opening, which allows the light to pass into the eye. The iris is a circular membrane, which is divided into a central and a peripheral part. The central part is colored, and is called the iris. The peripheral part is transparent, and is called the pupillary membrane. The retina is a thin membrane, which is attached to the inner surface of the choroid. It contains the photoreceptors, which are responsible for the perception of light. The optic nerve is a bundle of nerve fibers, which carries the visual information to the brain. The temporal lobe is a part of the brain, which is responsible for the perception of sound. The eyeball is a spherical structure, which contains the lens, the cornea, and the vitreous cavity. The cornea is a transparent tissue, which covers the entire eyeball, except for the pupil. The lens is a transparent body, which is suspended by the ciliary body, and is movable. The vitreous cavity is a gelatinous mass, which fills the eyeball. It is continuous with the aqueous humor, which is a transparent fluid, contained in the anterior chamber. The optic nerve is a bundle of nerve fibers, which carries the visual information to the brain. The temporal lobe is a part of the brain, which is responsible for the perception of sound. The eyeball is a spherical structure, which contains the lens, the cornea, and the vitreous cavity. The cornea is a transparent tissue, which covers the entire eyeball, except for the pupil. The lens is a transparent body, which is suspended by the ciliary body, and is movable. The vitreous cavity is a gelatinous mass, which fills the eyeball. It is continuous with the aqueous humor, which is a transparent fluid, contained in the anterior chamber. The optic nerve is a bundle of nerve fibers, which carries the visual information to the brain. The temporal lobe is a part of the brain, which is responsible for the perception of sound. The eyeball is a spherical structure, which contains the lens, the cornea, and the vitreous cavity. The cornea is a transparent tissue, which covers the entire eyeball, except for the pupil. The lens is a transparent body, which is suspended by the ciliary body, and is movable. The vitreous cavity is a gelatinous mass, which fills the eyeball. It is continuous with the aqueous humor, which is a transparent fluid, contained in the anterior chamber. The optic nerve is a bundle of nerve fibers, which carries the visual information to the brain. The temporal lobe is a part of the brain, which is responsible for the perception of sound.
and their function is to absorb the fluids presented to them, and convey them by two converging canals (Fig. 14, a) to the lacrymal sac (Fig. 14, c), which they empty by a common orifice. (Fig. 14, d). This lacrymal sac is connected with the tonsils of the eye, by the nasolacrimal ducts, and contains a cavernous bag about as large as a kidney-bean lodged in a groove in the lacrymal bone, behind the tendon of the orbicular muscle. The lacrymal sac entering a vertical channel in the bone at the end of the groove is narrowed into the lacrymal canal (Fig. 14, d), and passes downward to the inferior rectus or chamber of the nose which it enters on the outer side by a slit in the mucous lining. It is not exactly understood in what way the puncta absorb—whether by capillary attraction or by some vital force of suction. The side of the lacrymal sac is connected with the tenons of the orbicularis, which may aid in producing the effect by suddenly drawing its membranous surfaces apart. We all know the effect of repeated winking when the eyes are filled with tears.

**Nervous and vascular constitution of the eye.**—Enough has been said as to general information as to some extent of the blood-vessels distributed to the eyeball, and it is not necessary to mention those which supply the appendages. With respect therefore to vascular arrangements we have only to add, that although there are abundant proofs of the existence of an active absorption within the globe, no lymphatic vessels especially destined to that function have been hitherto found in it. The optic or second cerebral nerve has been already described. All the straight muscles, with the exception of the rectus externus, the inferior oblique, and the levator palpebrae, are supplied by the third nerve. The fourth is wholly distributed to the trochlearis, and the sixth to the rectus externus. The orbicular muscle is supplied, like most of those of the face, by the *pterygo* duralis of the seventh pair. All these, except the optic, are muscular or motor nerves. The fifth nerve supplies the whole organ in common with many other parts with ordinary sensation. Any account of the intricate nervous construction of the iris would be here quite out of place. The third and sixth nerves are mainly concerned in it. Thus of the ten cerebral nerves, the second, third, fourth, and sixth are wholly, and the fifth and seventh partially distributed to the organ of vision; a fact which may give some idea of the elaborate organization and varied exigencies of the parts which compose it.

**Comparative Anatomy of the Eye.**—The eyes of insects and many other articolated animals, often consist (as we have mentioned before) of myriads of simple eyes grouped in one compound organ. The eye of the lobster is said to contain at least 5,000, of such organs, which are placed one on each side of the head. The horns, rounded, naked, and transparent part seen externally represents the cornea. Its surface, when viewed by the microscope displays as many hexagonal facets as the organ contains simple eyes. Beetle eye-facet is appr. of 5,000, on the face, the corneal cone constitutes the lens. These cones are arranged side by side with their acute angles directed inward to the terminations of as many fibres of an optic nerve. A choroid pigment is spread beneath, and often separates the lens into a series of concentric laminae. The aqueous and vitreous humours are also frequently present. When the eyes are simple, as in the spiders, there are generally several, from two to twelve, placed on different parts of the head and thorax. The lens is of the usual spherical shape, hard, and deeply reacting to light. In fish and other aquatic animals the lens is dense, hard, and spherical, to make up in refractive power for the density of the medium through which light reaches the eye. On the other hand the cornea is flat, and there is little aqueous humour. Such provision would be of no value; for as the refractive power of water is the same as that of aqueous humour, rays penetrating the surface, however shaped, would pass on in the direction of their entrance. Fish are unprovided with cilia, and the eyeball has but little independent motion. The eye of a red trout is a beautiful example of the optic nerve between the layers of the choroid, the use of which is unknown. It is called the choroid gland. The ciliary body and processes are generally absent; but there is a rudiment in the piceous fish of that part called the pecten. Birds.

The eyeballs of quadrupeds and other mammals resemble the human organ in structure, and differ from it, not essentially, in form. This is not the case with the appendages. One of the most remarkable additions commonly found to the parts we have described is that of a strong retractor muscle in the shape of a hollow cone attached at the apex to the bottom of the orbit, and by the marginal base to the sclerotic, which it embraces, lying under the recti muscles. Its use is to draw back the eye in the orbit; a gesture which gives a very peculiar expression of hollowness to the organ in beasts of prey.

We subjoin the following account of the eye of the common owl (strix bubo), chiefly for the purpose of explaining the pecten and the curious mechanism of the third eyelid, or nictitating membrane, in birds.

**Fig. 15.**

Horizontal section of the eye of an owl (strix bubo).

a, Bone plate in the sclerotic; b, ciliary body; c, pecten.

**Fig. 16.**

Head of the same bird. A portion of the bony margin of the orbit having been removed, the eyeball is turned forward so as to show the recti and other muscles.

The general shape of the organ represented in the annexed figures resembles a bell. This arises from the disposition of a series of quadrangular bony scales (fig. 15, a) within the substance of the sclerotic, concave on their outer aspect, and overlapping and accurately fitted to each other. The rigidity thus communicated to the external case which contains the fluid media prevents their pressure from distending the eye into a spherical shape. The ciliary body (fig. 15, b) extends over the whole of this portion of the surface. A curious membrane called the pecten or comb (fig. 15, c), from resemblance to that implement, projects through the choroid into the vitreous humour, and in some birds is attached to the side of the lens. In the owl it is comparatively short. It resembles a quadrangular piece of chow folded backwards and forwards upon itself like the paper of a lady's fan. Of its use little is known. The foramen of Soemmerring, described in the account of the human retina, is thought to be a rudiment of the pecten. In birds the retina has generally the yellow colour seen only partially in man round the central spot miscalled a foramen.

At the back of the globe there are two muscles which originate from its curved surface, and are applied to its curved surface round the entrance of the optic nerve (fig. 17, a). The larger represents more than half of what is completed would be a broad circular ring (fig. 17, b). It is called the Quadratus. Attached by its wider edge near the margin of this part of the sclerotic, its fibres converge to the narrower edge, and terminate in a narrow tendon (fig. 17, c), perforated through its whole length like the hem of an apron. The second smaller muscle, called the pyramidalis from its shape (fig. 17, d), at an opposite part of the circumference. Its fibres converge, and are fixed into a long round tendon (fig. 17 and 18, e), which passes through the loop or hem (c) of the Quadratus, and hence turning over the edge of the broad part of the sclerotic, is continued along the
Apparent direction of objects seen obliquely.—A body in motion, as a ball, striking the surface of another, impresses it in a line perpendicular to the surface of the point of contact. This rule appears to hold good with respect to the action of light upon the retina. Indeed if impressions of any kind be made upon it, the sensation is that of light, and the direction suggested is of a line joining the center of the point of contact with the point impressed—i.e., in other words, a line perpendicular to it. This may be shown in several ways: if we excite the nerve by pressing back upon the eyelash with the finger nail, especially if the eye be closed or light otherwise extirpated, the ray of light appearing to be seen in a diametrically opposite quarter.

Effect Vision.—If the sclerotic and choroid be carefully removed under water from the back of an eye, an inverted picture of any object held before the cornea is seen upon the retina. How can this be accounted for? An answer to this question raised in the age of philosophical barbarism, how is it that we see objects erect when the image on the retina is inverted? The question is an idle one, which is perhaps hardly worth answering. The mind judges of the apparent place of objects by the relation of the impressions made upon the retina, not by the part of it which may happen to be affected by these impressions. The shadow of the central artery is an example of an impression necessarily received always upon the same part; yet the appearance of the retina proves that the shadow will be found to vary with every movement of the eye.

Single Vision.—Another question, not so trivial as the last, has been raised with respect to single vision with two eyes, as the impression must be twofold. But perhaps it will not be found that we have a double vision, but a double vision of the same object, or rather of the same point, for the question resolves itself into that. Let the two supposed images approach each other, still remaining double, till they are in contact. Another step in the line of reasoning. The truth is, that both eyes see the object in the same place; and as two images, no more than two material substances, can occupy the same place at the same time, the impressions coincide and are single.

Disorders of the Eye.—We shall content ourselves in speaking of the diseases of the eyes, with a few remarks which may serve as an index to the separate articles upon the most important of those diseases.

Blindness may be produced by various degrees by injury or disease of the retina, as by lightning. Such affections are technically known as amaurosis, but will be mentioned under the more familiar title of GUTTA SERENA. The sight may also be lost by anything which destroys the trans-parency of the reflecting media. [Cataract. GYLCOMA; LEUCOMA.] Closure of the pupil is of course attended with loss of vision. It arises from diseases of the iris and may sometimes be remedied by an operation. Information with respect to inflammations and other diseases of the iris, lenticular humor, etc., may be obtained from the article PUPIL, ARTIFICIAL; RHUMMATISM; SYMPHYSIS. Inflammatory and ulcerative affections of the conjunctiva, whether of the eye or lid, are called Ophthalmia. The diseases of the lacrimal organs, and a peculiar paralytic affection of the muscle which elevates the upper eyelid will be mentioned respectively under the heads of Fistula LACHRYMALIS and Pโตส. Almost all affection of the eye, whether they result from injury or spontaneously, are liable to be extended from one eye to the other, so close is the sympathy between these organs. When the disease has spread in this manner, or by any means evacuated, which may arise either from accident or disease, or operations which disease sometimes renders necessary, the sclerotic shrinks into a tubercle at the bottom of the eye, which produces of course a very unsightly effect, as well as no little inconvenience. It is common in those cases to resort to the introduction of what is called an artificial eye, consisting of a smooth shell of glass or enamel, suited in size and shape to the circumstances of the case, and coloured in exact imitation of the remaining organ. It is difficult then to distingudio it from a natural eye, and the illusion is much more complete from the circumstance that the muscles, still attached to the shrunk sclerotic, are capable of moving the artificial eye in correspondence with the other to an extent which would hardly be believed.

EYE (in Optics.) [Light; Optics.]
EYE, in horticulture, the name technically given to the egg of a plant.

EYE. (SYRACUSE.)

EYEMOUTH. [BERWICKSHIRE.]

EYLAU, more properly PREUSSISCH-EYLAU (Prussian Eylau), is a circle in the Prussian administrative circle of Königsberg, having an area of about 460 square miles, which is badly watered. It is well watered, and contains good pasture land and productive fisheries on its western boundary, the Frische Haff. Population about 37,000.

Preussisch-Eylau, the chief town, built in 1336, is situated on the Pomer, in 34° 29' N. lat. and 20° 35' E. long. It has a fine university and a castle, with suburban buildings, and contains 2150 inhabitants, who manufacture woolen clothes, hats, leather, &c. The name it bears has been given to it in order to distinguish it from Deutsch-Eylau, a town in the Prussian administrative circle of Mecklenwerder. An obtuse engagement at Preussisch-Eylau between the French forces under Napoleon and the Russian under Bennigsen on the 7th and 8th February, 1807. After the combat had last 30,000 in killed and 50,000 in wounded, they withdrew their troops from the field.

EYRE (from the old French eyre, a journey), the court of the justices itinerant who were regularly established, if not first appointed by the parliament of Northampton, a.d. 1176—22 Hen. II.—with a delegated power from the king's great seal to arrest and imprison all persons, hostile to the crown, within the circuit of the county, and with their assent. They were first appointed to make their circuit round the kingdom once in seven years, but by Magna Charta. c. 12, it was provided that they should be sent into every county once a year. Their jurisdiction and mode of procedure have been long superseded by the modern justices of assize. There was also a court so called which was held before the chief justices of the several forests, under the old Forest Laws. These courts were instituted a.d. 1184 by Hen. II., and the King's justices and the veres were present, but the定制 of assize, that was held under the reign of Charles I., before the Earl of Holland, the rigorous proceedings at which are reported by Sir William Jones (Jones, i. 266). Charles I. endeavoured to make these odius forest laws a source of revenue, independant of the parliament; and though, after the Restoration, another Court of Eyre was held before the Earl of Oxford (North's Life of Lord Guildford, 45), it was merely pro forma, and since the Revolution, 1688, they have fallen into total disuse. There are still two officers appointed by letters patent (4 Inst. 291), who are called Chief Justices in Eyre, the one south, the other north, of Trent, whose duties perform some trifling and harmless functions connected with the royal forests in their respective districts, and who, for all other offices themselves are sinecures.

EZKIEL. (JEZEBEL.)

Ezekiel, the name of a prophet, who composed a canonical book of the Old Testament, divided, in our English version, into 48 chapters, and placed next after Jeremiah's Book of Lamentations, and before the book of Daniel, but the last of the place in the Hebrew and Misrah versions. Ezekiel, and is one of the prophets called ' The Greater,' a distinction which relates to the comparative magnitude and importance of their books. He was a priest, the son of Buzi (i. 3), and, according to the account of his life ascribed (erroneously) to Ephesians, he was born at a place called Sarees. In the first Babylonian captivity he was carried away by Nebuchadnezzar into Mesopotamia, with the Kings Jehoniah and Jehoiachim, and all the principal inhabitants of Jerusalem, who were stationed at Tel-abbib (iii. 11), and relate that his captive companions with him to the Chaboras of Tolyemo, which flows into the east side of the Euphrates at Carchemish, about 300 miles north-west of Babylon. He is stated to have commenced his prophesying in the fifth year of his captivity (i. 2), about n.c. 596, and the last prophecy of the book of Ezekiel is, until the fourteenth year after the destruction of Jerusalem by Nebuchadnezzar. The pseudo-Ephesians says that Ezekiel, on account of his aversion to adopt the Chaldean idolatry, was put to death by the Jewish prince or commander of the city. Rabbi Benjamin of Tudela states that his tomb is between the Euphrates and the Cebear, in a vault built by King Jehoiachim, and that within it the Jews keep a lamp perpetually burning. The same writer assures, with equal appearance of traditional falsehood, that the Jews possess the book of Ezekiel in the original autograph, which they read every year on the great day of expiation. Greatly inconsistent with such venera-

P. C., No. 613.
stated, contain the prophet's visions of the temple and city of Jerusalem—their dimensions, structure, embellishment, removal, destruction, and the allotment of the land of Judah among the several tribes on their return from captivity. The subject matter of Ezekiel is, for the most part, identical with that of his contemporary Jeremiah, and much similarity is observa-
able in both. The entire prophecy is divided into two main divisions: that of Nebuchadnezzar forms the principal theme of each; but Ezekiel views them chiefly as affecting Israel, while Jerem-
iah describes them with especial reference to Judah. Indeed, Ezekiel views them chiefly as affecting Israel, while Jerem-
iah describes them with especial reference to Judah.

Bohdei Lainm with vehement indignation against the de-
structive acts of the prophet, and against the "tying down" or removal of the prophecies which might otherwise have been elaborately shown by Mr. Granville Peinn that God is to be recognized in the person of the Emperor Napoleon, and Magnus in the people or nation of France. His treatise on the subject, entitled "The Prophecy of Ezekiel, con-
firming Greece, the last tyant of the church," St. Petersburg, pub-
lished in 1815, is a production replete with curious learning and argumentative ingenuity.

(Commentaries of) Bang, Doelerrad, Hezel, Michaelis: Dattic, Prophetae Minoris, 1755; Dr. Seiler, Ueber die Hexahymnen und ihre Erklarung, 1753; Vorbich eis neue aus dem Hebräischen ubersetzt, 1757; Bishop Newcomen's Improved Version, Metrical Arrange-
ment, and Explanation of Ezekiel, 4to, 1758; Vehement Lectures Academy of Ezekiel, 2 vols., 1757; Ezekiel, by Doctor Yau. Agur, Les Prophecies nouveaux traduites sur l'Hébreu, avec ses Explications et Notes Critiques, 10 vols., 1822; Notes, New Translation of the Prophecies, 1835, 4to, 1827; Bishop Louth's, Commentary on Prophecies, 1839; Gerehdi's Exposition of Prophecies, 4to, 1843; Peet's, Commentary on Ezekiel, 4 to, 1856; Prideaux's Commentary, vol. 1, 1709; Bishop Louth's, Prophecies: Dr. Gill's Exposition of the Prophecies, 2 vols, ed. 1757; Bishop Louth's, Commentary on Prophecies, 1839; Gerehdi's Exposition of Prophecies, 3 vols., 1843. The Commen-
tary on Ezekiel is by two Spanish Jesuits, Prudis and Vallalagine, in 3 vols., 1420.}

EZKIEL [DRAMATIC ART AND LITERATURE]

Ezra, the book of, is a canonical book of the Old Testa-
mament, the second book of Chronicles, and before the book of Nehemiah, and, in the English version, divided into ten chapters. By Jews and Christians it has generally been attributed to the priest whose name it bears, chiefly because throughout chapters viii. and ix. the actions and words of the priest are used; Ezra, as the author, have written the two books of Chronicles and the book of Esther. It is remarkable that the first two verses of Ezra and a part of the third form the conclusion of the second Book of Chronicles. [Chronicles] Ezra, Ezra, or Ezra the priest, is a priest or scribe, a scribe of the church. His genealogy up to Aaron is given in chapter 1:5. In verses 6 and 11 he is said to have been a priest and ready scribe of the words of the law of Moses, and to have been an able and important agent in the Jewish events of his age and nation. The prophets Hagai and Zechariah were contemporary with Ezra. (Compare Hagg. i. 12, Zech. iii. 4, and Ezra x.) There are four books of Ezra so called; namely, the canonical one bearing his name, the book of Nehemiah, which is by the priest and by the Greek and Roman churches is considered as the second book of Ezra, and two books of Ezra or Ezra in the Apocrypha. The first of the two apocryphal books contains the substance of the canonical one, with many circumstances.

The first six chapters of the canonical book are regarded as the book of Ezra, or Ezra the priest, in the second temple, in the sixth year of the reign of Darius Hystapore, and there is a chain of fifty-eight years. The events recorded in the whole ten chapters of the canonical book of Ezra embrace a period of ninety-one years, that is, from the select Zyriaces in the fifth year of his reign, b.c. 538, for the return of the captive Jews to Jerusalem, to the termi-
nation of Ezra's government by the mission of Nehemiah to Jerusalem from Artaxerxes Longimanus, in the twenty-third year of his reign, B.C. 445. As Daniel's seventy pro-
phetic weeks commence at the going forth of the edict of Cyrus (B.C. 537), Artaxerxes to Ezra, these events have been the subject of much critical investiga-
tion among biblical critics.

The contents of the first six chapters are briefly as follow. Chap. i. gives an account of the proclamation of Cyrus con-
cerning the rebuilding of Jerusalem and the temple. Chap. ii. relates the
journey of the exiles to go from Babylon to Jerusalem to rebuild the temple;
and of the restoration of their property, sacred vessels and
vessels; and of presents made by the Chaldeans of money and
various provisions. Chap. iii. states the numbers of each of the families coming from Babylon in multitudes which re-
turned to Judea with Zerubbabel, and the number of their
beasts of burden. All this account, excepting some of the
numbers, is repeated word for word in the seventh chapter
of Nehemiah, beginning at ver. 6. In ver. 64 and 65 of Ezra the
numbers and fathers who were the subjects of 42360, which appears not to agree with the preceding par-
ticulars, since the addition of these produces only 39,818,
that is, a deficiency of 12,542. The numbers given in
Nehemiah occasionally differ very widely from those in Ezra;
and it would be hazardous to draw any decisive
conclusion from this, as the whole account is repeated in the
second Apocryphon of Ezra (46: 45, 46, 47, 48), in which version this opinion is put: Behold, Lord,
says Ezra, 'I will go as thou hast commanded me, and re-
prove the people. The world is set in darkness, and that
which dwell therein have no light, for thy law is burned;
and therefore no manner of things are done in it; but if I have found grace before thee, send the Holy Ghost
into me, and I shall write all things that have been done in
the world since the beginning, which were written in the
law; And God said, Go, prepare to write swiftly, and when
thou hast done this thing, write, and let all things that are
written in the law be done. The learned Dr. Prideaux (Con-
nection, p. 260, fol.) remarks, that 'in the time of King Josiah (B.C. 640), through the impuity of the two preceding reigns of Manasseh and Ammon (a period
of sixty years), the book of the law was destroyed and lost;
and that, besides the copy of it which Hilkiah, the high-priest,
accidentally found in the Temple (2 Kings xxii. 8, 9, 10, 11: 2
Chron. xxxiv. 14, 15, 16, 17, 18), there was then no other to be had;
but in the days of Josiah, who saw the book and knew it,
the copy was burnt by fire, and the law was not seen again
seen before; and if this pious king and the high-

priest were without it, it cannot be thought that any one
else had it.' If this were the authentic copy laid up before the
Lord in the Temple, it was burned, as believed by all
Jews and Christians. In the reign of Darius the Achaemenid,
fifty-two years afterwards, by Nebuchadnezzar. Dr. Pri-
deaux takes it to be implied in several passages which
he cites that, from the copy accidentally found by the high-


priest Hilkiah, some transcriptions were made previous to
the destruction of Jerusalem, and that one of these copies Ezra
formed his improved edition of the sacred text.

In common with most other modern divines, he rejects the
opinion of the fathers respecting the restoration of the
Scriptures by a new revelation to Ezra, observing (p. 261)
that 'it would very much shock the faith of many should it
be held that the sacred writings ope their present
being to such a revival; it being obvious for sceptical
persons to object that he who is said thus to have revived
them forged the whole.' All, he continues, that Ezr-


a - he got to do with the earlier writings as hecould, and out of them all he set forth a corrected
edition, in which he took care of the following particulars:

1. He corrected all the errors introduced into these
books by the copyists or mistake of the scribes;
by comparing them, he found out the true reading, and set
all to rights.

2. He collected together all the books of which the
written copies Ezra did then consist, disposed them
in proper order, and settled the canon of scripture up to
that time.' The Jewish writers state that the council
was decided by a congress of 120 elders under the presidency
of Ezra; but since they mention as members of it, not only the
contemporaries of Ezra, as Daniel, Shadrach, Meshach, and
Abednego, but the high-priest Simon the Just, who
lived 240 years after the time of Ezra, it is evident that a
number of those who successively arranged and rectified
the canonical books. Ezra divided all the books of
which the sacred Scriptures did then consist, disposed them
in three parts; the law, that is, the Pentateuch; the
prophets, containing all the historical and prophetic books;
and the hagiography and the compositions of the apocry-
phal books, included in the two other divisions. (Josephus, Antiq. Apion.) He divided the Pentateuch into 54
sections, one of which was read every Sabbath; and, according to
the Jewish authorities, he also the Targums, or versions, and
of the various readings and suggested corrections inserted in the margins of
the books of the Hebrew copies. These, called Keri Cethib (that which
is read and that which is written), appear however in the
books, thus attributed to Ezra himself. (On these particulars
the remarks of Prideaux; Buxtorf, Vindiciae Veri-
tatis Hebraicae, par. ii. c. 4; Walton's Prolegomeni, vol. ii. p. 18; and Dr. Gill's Essay on the Hebrew Language.)

Most biblical critics state that Ezra changed the ancient
names of places for those by which those places were
known

U 2
F.

F is a labio-dental aspirate bearing the same relation to the other labio-dental aspirate V which the letters called tenet p, h, f, bear to the median, b, d. It occupies the sixth place in the English as in the Latin alphabet, thus corresponding with the digamma of the old Greek alphabet, and the va of the Hebrew. In power and form it is likewise closely related to those two letters. [ALPHABET.]

The letter F is interchangeably with the other aspirates ch and th, and also with the labial letters p and b.

1. In Latin corresponds to h in Spanish, as Latin form., beautiful; Spanish hermoso; Latin feminina, female; Spanish hermosa; Latin fugere, fly; Spanish hair.

Other examples may readily be found in a Spanish Dictionary such as the Latin of Rome and the Sabine dialect of that language.

2. In Latin corresponds to th in Greek, as Latin fara, a wild beast; Greek ἀρα; Latin fera; Greek ἄρα, as seen in furturátum, the celebrated intercalated day by which Rome is reckoned. The delta of the Greek language itself consists in such as αρά and αρά; φαρά and φάρα; φάρα and φαρά. This however seems to depend on the proximity of the letters f and r. (Car L.)

3. In Latin corresponds to b in German and English, as fang, brech'en, to break; frater, brother, brother; jag, beche, hec, &c.

4. In English and German to p in Latin, as pelli, fell, M dop, fellonem, &c.; ped, fuss, foot; pug, nas, head, to eat, to bite, &c.

5. In music, is the fourth note, or degree, of the diatonic scale, answering to the a of the Italians and French. It was originally used as the base clef, to which it gives a name: but while serving as a sign, time has gradually altered its position. The Romans called this letter F. This letter is also an abbreviation of the Italian word Forte, strong or loud. The double F signifies the superlative of Forte—Fortissimo.

FABUS MAXIMUS and the FABII FAMILY. The Fabii were a numerous and powerful gens or patrician house of ancient Rome, which became subdivided into several families or branches distinguished by their respective component parts of the name. Such as Fabius Maximus, Fabii Ambusti, Fabii Vibulanus, &c. They were of Sabine origin, and settled on the Quirinal from the time of the earliest kings. After the expulsion of the Tarquinius, the Fabii as one of the older houses exercised considerable influence in the state. Caesar foresaw being Quazar of the Fabii, V. Valerius, impeached Scipio Cæsaris. He was made by Rome 268, 468 a.c., and had him executed. It has been noted as a remarkable fact, that for seven consecutive years from that time, one of the two annual consulships was filled by three brothers Fabii in rotation. Fabius, having left the Levant, has partially investigated this period of Roman history, and speculated on the long continued nature of office by the Fabii as connected with the struggle between the patricians and the plebeians, and the attempts of the former to monopolize the elections. (Livy, xii. 8.) See also Niebuhr's History of the Fabii.) One of the three brothers, Quintus Fabius Vibulanus, fell in battle against the Veientes, in the year 274 B.C. In the following year, under the consulship of Caso Fabius and Titus Virginianus, the whole house of the Fabii proposed to leave Rome and settle on the borders of the territory of Veii, in order to take the war against the Veientes entirely into their hands. After performing solemn sacrifices, they left Rome in a body, musterings 500 men, besides their families, clients, and freedmen, and encamped at the place where the Fabii afterwards settled themselves, and maintained for nearly two years a harassing warfare against the Veientes and other people of Etruria. At last in one of their predatory incursions they fell into an ambush, and fighting desperately, were all extirpated. (Livy, xiii. 48.) See Niebuhr's History of the Veientine War.) One only of the house, Quintus Fabius Vibulanus, who had remained at Rome, escaped, and became the parent stock of all the subsequent Fabii. He was repeatedly consul, and was afterwards one of the decemviri with Appius Claudius for two consecutive years, in which office he disgrace himself by his conclave with the opposition of his colleague, which caused the fall of the decemvirs. In subsequent years we find several Fabii filling the consulship, until we come to M. Fabius Ambustus, who was consul in the year 393 of Rome, and again several times after. He fought against the Herniae and the Tarquinians, and left several sons, one of whom, known by the name of Quintus Fabius Maximus Rullianus, attacked and defeated the Sammites (429 of Rome) in the absence and against the orders of his commanding officer, the Dictator Papius, who would have brought him to punishment for disobedience, but was prevented by the intercession of Fabius and others. Fabius Maximus was five times consul, and dictator twice. He triumphed over the Sammites, Marsi, Gauls, and Tusci. His son, Quintus Fabius Gurgis, was three consul, and was the grandfather of Quintus Fabius Maximus Varroclusius, one of the most illustrious generals of Rome. This latter, after he had triumphed over the Ligurians, after the Thrasymenean defeat he was named Prodictator by the unanimous voice of the people, and was intrusted with the salvation of the Republic. The system which he adopted to check the advance of Hannibal was of no use. By successions Hannibal's movements, marches, and counter-marches, always choosing good defensive positions, he harassed his antagonist, who could never draw him into ground favourable for his attack, while Fabius watched every opportunity of availing himself of every error or neglect which the enemy committed in part of the field of battle.

This mode of warfare, which was new to the Romans, acquired for Fabius the name of Cunctator, or 'temporizer,' and was censured by the young, the rash, and the ignorant; but it probably was the means of saving Rome from ruin. The city was saved by Fabius, who, with a small army, having imprudently engaged Hannibal, was saved from total destruction by the timely assistance of the dictator. In the following year however, 356 of Rome, Fabius being recalled to Rome, the command of the army was intrusted to the consul T. Varro, who rushed imprudently to battle, when the defeat of Cannae made manifest the wisdom of the dictator's previous caution. Fabius was made consul in the next year, and was again employed in keeping Hannibal in check. In 343 of Rome, being consul for the fifth time, he re-took Tarcentum by stratagem, after which he narrowly escaped being caught himself in a snare by Hannibal near Metapountum. (Livy, xxvii. 15, 16.) When some years after the question was discussed in the senate of sending P. Scipio and an army into Africa, Fabius opposed it, saying that Italy ought first to be saved. Hannibal. Fabius died some time after at a very advanced age. His son, called likewise Quintus Fabius Maximus, who had also been consul, died before him. His grandson Quintus Fabius Maximus Servillanus, being a consul, fought against Vindex in Spain, and concluded with him an honorable peace. (Livy, Epitome, 54.) He was afterwards consul repeatedly, and also censor. He wrote Annals, which are quoted by Macrobius. (Saturn. i. 16.) His brother by the name of Quintus Fabius M. of Rome Ambilianus, son of Paulus Ambilius (Livy, xlv. 41), was consul in 699 of Rome, and was the father of Fabius, called Allobrogicus, who subdued not only the Allobroges, but also the people of Southern Gaul, which he reduced into a Roman province, called from the time of his province, 'Gallia exterior.' Quintus Fabius Maximus, a grandson of Fabius Maximus Servillanus, served in Spain under Julius Caesar, and was made consul in the year 709 of Rome. Two of his sons or nephews, Paulus Fabius Maximus and Quintus Fabius Maximus, were also a Fabius consul under Tiberius. Paullinavius and others have reckoned that during a period of about five centuries, from the time of the first Fabius, who is mentioned as consul, to the reign of Tiberius, 48 consulships, 7 dictatorships, 8 censorship, 7 augurships, besides the offices of the master of the horse and military tribunes with consular power, were filled by individuals of the Fabian house. It also could boast of thirteen triumphs and two ovations. (Augustinus de Familia Romanarum.)
FABRIUS PICTOR, the historian, was descended from Marcus Fabius Ambustus, the consul, Caius Fabius, one of the twelve Ambusti, was called the Elder because in 294 B.C. he presided over the temple of the goddess of health, which painting existedtil the reign of Claudius, when the temple was burnt. (Polyb, xxy. c. 4.) The surname of Pictor was continued to his children, one of whom, Caius Fabius Pictor, was a friend with Quintus Fabius and was the father of the historian. Quintus Fabius Pictor, the historian, lived in the time of the second Punic war, according to the testimony of Livy, who says, in speaking of the battle of the Thrice-vanished lake, that he followed in thanksgiving of the council of Fabius Pictor, who was contemporary with that memorable event. Fabius appears, from the testimony of Dionysius and Cicero, to have written both in Greek and in Latin. Of the extracts from or references to his 'Annals,' which have been transmitted to us, some are of the histories of Italy before the beginning of Rome, others the subsequent fasti, or history of the Romans. He was the first who compiled a history of his country from the records of the pontiffs, and from popular tradition. He is spoken of with praise by Livy, who evidently borrows largely from him, and by Cicero, Pliny, Appian, and others. Polybius however censures his obvious partiality for the Romans, and his unfairness towards the Carthaginians, in his account of the second Punic war. His 'Annals' are lost, with the exception of some fragments, which have been preserved by Diodorus and are preserved in the collections of Antonius Augustinus, Antverp, 1595, Antonius Riccius, Venice, 1568, and others. The well-known imitator, Antonia da Viterbo, published a small work on the origin of Rome, under the name of Fabius Pictor, but which, because composed a few years after Fabius Pictor was sent by the senate to Delphi after the battle of Cannae, to consult the Oracle about the ultimate result of the war. He must be considered with Servius Fabius Pictor, who lived in the time of Cato the Elder, and who is praised by Cicero, on account of his knowledge of paraenesis, literature, and antiquity. (Vossius, De Historiis Latinis; Fabricius, Bibliotheca Latina.)

FABLE. Fable in Latin, in its general sense means a fictitious narrative, but it also means more particularly a specific narrative in Latin, which is an imitation of its ancient tale inculcating a moral truth or precept. As such it is divided into two sorts, the parable and the apologue. The former narrates some incident, which, although it may not have happened exactly as the narrator supposes, yet could have happened at any time, being nothing impossible or improbable in it. Of this description are many of the parables contained in the Scriptures, and especially in the New Testament, it being a favourite mode with our Saviour of illustrating his precepts by short stories. What he was for the master who, before setting out on a long journey, intrusted certain talents or sums of money to each of his three servants, he did not mean that such a fact had occurred at any particular time, though it might have occurred, but that those who failed to carry out the wishes of the master were found wanting. He pointed with regard to the mental or spiritual talents he had given men with, and which he expects them to cultivate and render useful in proportion to their capacities. The second species of moral fable, called apologue relates fables which are evidently untrue, and cannot have happened; such as animals, or even inanimate things, speaking, but which serve as comparisons for the actions of men. Such was the well-known apologue of Memenius Agrippa, addressed to the plebs of Rome, who had revolted against the authority of Servius Tullius, in which he pictured the limbs of the human body having once revolted against the belly. (Livy, ii. 32.) Most of the fables which are called Æsopian are apologues, although some are of the parable kind; for example, that of Æsop and the vine who threw a sackcloth over his root. The apologue is one of the oldest forms of composition, being well calculated to strike the minds of men in a rude state. Homer's War of the Mice and the Frogs is a composition of the nature of the apologue; only being extended to a considerable length, and including a succession of incidents, it is classed among the heroromic poems, whilst the apologue, or fable properly so called, points out only one particular incident from which it draws a moral. In the same manner, in modern times, the 'Animal Parliament,' or 'Court and Parliament of Beasts' of Casti must be classed among the mock epic poems, although it may be said to consist of a series of apologies, each pointing to some particular error, or abuse, in the state of society, as a certain fable of Æsop, which describes the old and simpler mythological fables of the gods and heroes among the ancients were originally intended by the early patriarchs or priests to illustrate by allegory the attributes of the Creator, the phenomena of nature, and the progress of the human mind. These fables are a mixture of the moral, and believed the fiction in its literal sense.

The oldest collection of fables in any European language is in Greek prose: the fables are attributed to Æsop, but much doubt exists as to the real author or authors of the same. (See Æsop.) For many hundred years the Iliad was attributed to an immortal version of Æsopian fables, only a few of which have come down to us. (Baya.) The fables called the fables of Bidpai (Biblia) are derived from a collection in the Sanscrit language, and Lokman is said to have written fables in Arabic; but several of these are apocalyptic, and others are like some of those attributed to Æsop, and it has been supposed that Lokman and Æsop were one and the same person. (Lokman.)

Among the Latins, Phædrus, who lived under Tiberius, is the most celebrated; he professes to have taken his subjects from Æsop. The MS. of Phædrus was not discovered before the end of the sixteenth century. Avianus, or Avius, who supposing the two names to mean the same individual lived under the elder Theodosius, wrote a collection of fables several of which are like those of Æsop, and with a Dissertation on the Identity of Avianus and Averus.) Faenor of Cremona, who lived about the middle of the sixteenth century, made a collection of Æsopian fables, which he turned into Latin verse, and which were published at Venice in 1573. He was an eminently learned man, and a great humanist, as having found a MS. of Phædrus in some library, and borrowed his subjects from it.

In the modern languages, among the original writers of fables or apologues, La Fontaine has been generally considered the principal, and is accounted by some the most correct composition; and indeed he may be fairly placed above all writers of this class. Among the English, Gay and Moore have written fables. The Germans have had Lessing, Gellert, and others; and the Spaniards have Ysarte and Saenz de Tejada. (See the fables of a Haitian垛e, in the sixteenth and seventeenth centuries, wrote chiefly translations or paraphrases from the Greek and Latin fabulists. In the eighteenth century Pignotti, a native of Tuscany, wrote original fables in verse, which were published at Pisa in 1724, and have been often reprinted since. Bertola also wrote fables (Pavia, 1788), with an essay on fables. Luigi Fiaccari published, under the name of C. blossom, a collection of fables (Florence, 1807). Fabretti spent most of his time in searching the ruins which are scattered about Rome and its neigh- boring country, and in the study of the old city itself. He explored catacombs, columbaria, sepulchres, and other subterraneous receptacles; and gathered an abundant harvest of antiquities, and chiefly of inscriptions, which he ranged in a collection at his house at Urbino, which collection has been since transferred to the ducal palace of the same town. It is related that the horse upon which he rode for many years in his perambulations through the Campagna, and which his friends had nicknamed Marco Polo, became so accustomed to his master's hunting after the style of the ancient horsemen of the Umbrian mount, that it met with any. Fabretti wrote I. Inscriptionum Antiquarum Expositio, fol., 1699: 2. De Colombari Tran. fol., 1683; an elaborate work, in which he illustrated with much erudition and judgment the sculptures of that kind which are found in Italy. Fabretti printed the image of a rose, and the lion table which is in the Capitoline Museum. 3. De Aquis et Aquaeductibus Veteris Romae, 4to, 1680, reprinted with notes and additions in 1788. Fabretti rendered great services to archaeology by his system of illustrating one monument by the help of another. He acquainted himself with James Gronovius about the interpretation of some passages of classical writers, in which both resorted to discardable securiitates. Fabretti died at Rome in January, 1708, at the age of eighty. He may be considered as the predecessor of Bichini, Bottari, and other archaeologists who illustrated the antiquities of Rome during the eighteenth century.
FABRIO/NO. [MACRO/THA]
FABRIC/CIUS, CAITIUS, surnamed Luciusius, was consul for the first time in the year 471 of Rome, 283 a.c., when he triumphed over the Boii and the Etruscans. After the defeat of the Romans under the consul Levenius by Pyrrhus (n.c. 281), Fabricius was sent by the senate as leg- enid of the legions to request aid from the Etruscans, according to others, to propose terms of peace. Pyrrhus is said to have endeavoured to bribe him by large offers, which Fabricius, poor as he was, rejected with scorn, to the great admiration of the king. Fabricius being again consul (n.c. 277) was sent to Pyrrhus, who was then encamped near Tarentum. The physician to the king is said to have come secretly to the Roman camp, and to have proposed to Fabricius to poison his master for a bribe. At which the consul, indignant, had him put in fetters and sent him to Pyrrhus, who, however, showed him a great deal of integrity made a great impression. Pyrrhus soon after sailed for Sicily, where he was called by the Syracusians, then hard pressed by the Carthaginians. Fabricius having defeated the Samnites, Lucanians, and Bruttsi, who had joined Pyrrhus against Rome, triumphed over those people. Pyrrhus, afterwards returning to Italy, was finally defeated and driven away by M. Curio Dentatus (n.c. 276). Two years after, Fabricius being consul for the third time, with Claudius Crina for his colleague, legates came from king Pyrrhus to the Roman senate, and demanded the return of the several instances are related of the extreme frugality and simplicity of the manners of Fabricius, which are conformable to what is recorded of the austerity of Roman life previous to the Punic wars. When censor, he dismissed from the duties of the college ten freedmen, who possessed ten pounds' weight of silver plate. Fabricius died poor, and the senate was obliged to make provision for his daughters. (Plutarch, Life of Pyrrhus; Livy, Epitome 898.1, and epitome agnissias.)

FABRICIUS, JOANNES ALBERTUS, born at Leipzig in 1667, early distinguished himself by his proficiency in classical literature, and his penetration and judgment, assisted by an excellent memory. Having finished his studies at Leipzig, he went to Hamburg, where I. M. Fontane was his tutor, and afterwards appointed professor in the college of Hamburg, where he remained to the end of his life, having refused several advantageous offers made to him by the landgrave of Hess-Cassel and others. He was the author of many elaborate works, the principal of which are:—I. 'Bibliotheca Graeca,' 14 vols. 4to, Hamburg, 1705-29. A new edition, with considerable improvements, was published by Harles, Hamburg, 1789-1809. The 'Bibliotheca Graeca' is a most valuable work; it contains notices of all the Greek authors, from the earliest times to the end of the Byzantine empire, with lists of their works and remarks on them. II. 'Bibliotheca Latina,' 3 vols. 4to, 1709-21. Ernesti published a new and much improved edition of the same at Leipzig, 1773. The 'Bibliotheca Latina' is inferior in research and copiousness to the 'Bibliotheca Graeca,' but is still a useful work, especially in the new form given to it by Ernesti. III. 'Bibliotheca Latina Ecclesiastica,' fol., Hamburg, 1718. IV. 'Bibliotheca Latina medii et infimior Aetatis, cum Supplemento Codicis latini,' 12 vols. 4to, 1729. V. 'Memoriae Hamburgenses, 7 vols. 4to; to which Reimar, the son-in-law of Fabricius, added an eighth volume in 1745. VI. 'Codex Apocryphi Novi Testamenti,' 2 vols. 8vo, 1719; being a Collection of the best versions of the apocryphal books which appeared in the early ages of Christianity. VII. 'Bibliographia Antiquaria,' 4to, 1760; being notices of the authors who have written upon Hebrew, Greek, Roman, and ecclesiastical antiquities. VIII. 'Disquisitio de Scripturis veterum,' 2 vols. 8vo., 1741. IX. 'Hydrotheologia,' written in German, and translated into French under the title 'Théologie de l'Eau, ou Essai sur la Bonté, la Sagacité, et la Théologie des anciens,' 2 vols. 4to, 1744. X. 'Codex pseudographiarum Veteris Testamenti,' being a counterpart of his work on the Apocrypha of the New Testament. XI. 'Conspicua Thauri Litterarum Italianus,' 8vo, 1749, or notices of the principal publications of the Historians of Italy, as well as of other writers who have illustrated the antiquities, geography, &c., of that country, including the great works of Burmannus and Gravinius, with an account of the Italian literary journals existing or which had existed before the time of Fabricius, of the Italian academies, and a catalogue of Italian bibliographers and biographers classed according to the particular towns which they have illustrated. XII. 'Imp. Caes. Augusti Tertulianis Fragmenta,' with 'Nicolaes Damascus De Institutione Animae,' 4to, 1727. XIII. 'Salutari Luc Evangelii, sive Notitia Propagatorum per Orbem totum Sacrorum;' accedit Epistolae quaedam ineditae Juliani Impatoris, Gregori Hesbensei Theologos, nee in Index geographicos Ecspiopatricum Orbis Christiani,' 4to, 1731; a work which contains useful information for students of ecclesiastical history. XIV. 'Centifolium Lutheranism, sive Notitia Literaria Scriptorum omnis generis de Martino Lutheri, a Theologo Emblematum, necnon Index geographicus.' 2 vols. 8vo. 1730. XV. 'Centuria Fabriciorum Scriptorum qui jam diem suum obibunt collecta,' 8vo, 1709, with a continuation in 1727. The author has included in his list not only the authors whose name or surname was Fabricius, but also those whose names have turned into the Latin Fabricii; such as Le Jeune, Fabri, the German Schmidt, &c. Independently of the above and other minor works, Fabricius published editions of Sextus Empiricus, of the Galla Orientalis of Father Colonies, of the works of St. Hippolytus, of Aetius, Theodorus, and the Cosmographi, published by him exceeds 100. Fabricius died at Hamburg in April, 1736, in his 69th year. His private character was as praiseworthy as his learning was great. He was modest, hospitable to strangers who came to visit him, indefatigable in his work, and always gay and cheerful. He found time for the compilation of the numerous works already mentioned. Reimar, his son-in-law, wrote his biography in Latin, 8vo. 1732.

FABRICIUS, JOHANN CHRIST, was born in the year 1742, at Hamburg, in the duchy of Schleswick. He was brought up to the medical profession, and at the age of twenty-three was made professor of natural history and rural economy at Kiel.

Fabricius studied under Linneus, and afterwards enjoyed perhaps a still more brilliant reputation than any other pupil of that great naturalist. Having been filled with emulation by the circumstance of Linneus quoting him in his 'Systema Naturae,' he resolved to make an especial study of entomology, a science at that time in its infancy. The first results of his investigations were shortly after (1773) made known in his 'Systema Entomologica,' where he proposed a new arrangement of the insect tribe, the novelty of which consisted in choosing for his divisions the modifications observable in the parts of the mouth. These modifications were divided into two classes, according to the metamorphoses of the various tribes, the one upon their organs of motion. The latter was first pointed out by Aristotle, and was that adopted by Linneus.

Fabricius subsequently published numerous other works of still greater importance, a list of which is given at the end of this article. Possessing a great knowledge of languages, Fabricius travelled through the northern and middle states of Europe, collecting new materials, and frequenting the various museums, from which he described all the insects and hitherto been unpublished. Accounts of his travels in Norway, Russia, and England, were published by him. He visited England seven times, and received great assistance from inspecting the collections of Sir Joseph Banks*, John Hunter, Drury, Fraceniei, and others.

For far from being jealous of those naturalists who, in his day, enjoyed reputation in the several branches which he more particularly attended to, Fabricius, upon seeing the useful work that was being performed, concurred with them in the wish to do the subject of entomology the greatest possible delight; and although no request had been made, he hastened to convey to that author all the specimens which he possessed of the spider tribe. Fabricius was of an amiable disposition; and is said to have been reproached by a fellow professor for having this same modesty, which would otherwise weigh to his advancement. Although so well versed in entomology, Fabricius was not a stranger to other branches of zoology; he was also versed in botany and mineralogy. He died of dropsy, in his sixty-fifth year,

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* Numerous insects in the collection of Sir Joseph Banks (which is now the property of the Linnean Society) still have names attached to them in the handwriting of Fabricius.
much regretted by all naturalists. His principal works are as follows:—

1. 'Systema Entomologicum, sistens Insectorum Classes,' &c., 1 vol., 8vo., Flensburg; &c., 1785.
3. 'Reise nach Norwegen, mit Bemerkungen aus der Natur Historie und Ökonomie,' 8vo., Hamburg, 1779.
4. 'Species Insectorum, sistens eorum differentias specificas, synonymia auctorum, loci, natalia, memoriae honoribus. Part II.,' etc., 4 vols., 8vo., Hafniae, 1789. 1802. 1803. 1806.
5. 'Systema Entomologicae, sive Natura Insectorum, sistens eorum differentias specificas, synonymia auctorum, loci, natalia, memoriae honoribus. Part III.,' etc., 4 vols., 8vo., Hafniae, 1790, 1802, 1803, 1806.
6. 'Genera Insectorum, 1 vol., 8vo. (Chilonii), Kilini, 1776. 1786. 1787. 1790. 1792. 1794. 1796. 1800. 1802. 1803. 1807.
7. 'Entomologia Systematica, emendata et aucta,' 2 vols., 8vo., Kilini, 1798. 1801. 1802. 1803.
8. 'Systema Elecoterorum,' 2 vols., 8vo., Kilini, 1789. 1790. 1802.
9. 'Systema Rhynogatorum,' 8vo., Brunsvigae, 1802. 1814.
11. 'Systema Pizzatorum,' 8vo., Brunsvigae, 1809. 1810. 1811. 1812. 1814. 1817.
12. 'Systema Antitorum,' 8vo., Brunsvigae, 1809. 1810. 1811. 1812. 1814. 1817.

FABRIZIO, GERONIMO, commonly called FABRIZIUS AQUAPENDENTE, was born in 1537 at Acciaio, a city near Orvieto, in the States of the Church. His parents, although poor, contrived to furnish him with the means of obtaining an excellent education at Padua, which was then rapidly approaching the eminence it long held, especially as the seat of medical studies among the universities of Europe. It appears to have been a favourite object with the Venetian government to encourage the study of the medical sciences. Vesaliius and Fallopius had been successively invited to fill the chair of anatomy and surgery, then considered a lucrative and honorable position; and Fabricius himself, who did much to extend the reputation of the school formed by these leaders in the restoration of anatomy, was afterwards still more munificently rewarded, though equal to neither in merit or posthumous fame. He became a pupil of Fallopius at an early age, and speedily attracted the attention and good-will of his instructor. He thus secured many peculiar advantages, of which he availed himself so well, that having taken his degrees in medicine with reputation, he was appointed to succeed Fallopius in 1562 to succeed him in the direction of the anatomical studies of the university, and three years later to the full emoluments of the professorship. The growing perception of the importance of anatomical knowledge led, in the eighteenth century, to the establishment of a separate branch of medical science for the instruction of that branch of medicine, which, however, Fabricius appears to have still held in conjunction with that of surgery up to a late period of his life, with the able assistance of Caserius.

He was engaged as a teacher drew students from all parts of Europe; till at length the theatre of anatomy, built originally by himself, became so crowded, that the Venetian senate provided him, in 1553, with another of ample dimensions at the public expense; and at the same time added largely to his salary, and granted him many exclusive privileges and titles of honour. The fame and wealth he derived from his practice as a surgeon was even more than equal to that which he enjoyed as an anatomist; and after upwards of fifty years of uninterrupted and well-deserved prosperity, he retired from public life the possessor of an enormous fortune and the object of universal esteem. Yet he does not appear to have found the contentment he sought in his retirement. His latter years were embittered by domestic dissensions and the unfeeling conduct of those who expected to become his heirs; and he died in 1619, at the age of eighty-two, not without the suspicion of poison, at his country-seat on the banks of the Brenta, still known as the Montagnuola d'Acquapendente.

The name of Fabricius is endeared to the cultivators of his science by the fact that he having been the tutor of William Harvey, whose discovery of the circulation of the blood (by far the most important yet achieved in physiology) was suggested, according to his own statement, by the remarks of Fabricius on the valvar structure of the veins. Although Harvey's earliest and most important work has been disputed, though strongly asserted by some anatomists.

The truth is, that his merit did not so much consist in original discovery as in the systematic arrangement and dissemination of the knowledge acquired by his predecessors. We have mentioned that he had more contemporary reputation as a practical surgeon than as an anatomist; and it is as a surgeon that he is still chiefly remembered. Notwithstanding the large number of operations he had, however, been since wrought up in the general body of surgical knowledge, are now seldom consulted or quoted specifically as derived from himself.

He published many tracts on both departments. Those of an anatomical character are chiefly noticed. These, however, are not unmixed praise, by Harvey and the writers of the period immediately subsequent to his own, were collected in one volume folio, and republished, with a biographical memoir of the author, by Albinius at Leyden in 1728. The best edition of his surgical works, written in 1623, was also in one volume folio, at Padua in 1666. His writings are all in Latin, and display a considerable knowledge of the literature, general and medical, of that language and of the Greek.

FABIAN, ROBERT, the historian, was descended, of a respectable family of Essex. Bishop Tanner says he was born in London. We have no dates of his early life, but he is known to have belonged, as a citizen, to the Company of Drapers. From records in the city archives, it appears that he was alderman of the ward of Farringdon Without, and in 1493 served the office of sheriff. In 1496, in the mayoralty of Sir Henry Colet, we find him 'assigned and chosen,' with Mr. Recorder and certain commoners, to ride to the king 'for redress of the new impositions raised and raised and imposed by certain of the nobility and gentry of this town (the Low Countries) an exaction which was desisted from in the following year. In 1502, on the plea of poverty, he resigned the alderman's gown, not willing to take the mayoralty, and probably retired to the mansion in Essex, mentioned in his will, at Theydon Gommon. That he was equated at the period cannot be doubted, but he seems to have considered that the expenses of the chief magistracy, even at that time, were too great to be sustained by a man who had a numerous family. He ordered the figures, as may be seen in his will, of sixteen children, in brass, to be wrought upon his monument. Stowe, in his 'Survey of London' (edit. 1663, p. 198), gives the English part of the epitaph on Fabian's tomb, from the church of St. Michael Cornhill, and says he died in 1511, adding that his monument was gone.

There have been printed five editions of Fabian's 'Chronicle.' The first was printed by Pysson in 1516, and is of great rarity, in a perfect state. Bale says that Wolsey ordered many copies of it ('exemplaria nonnulla') to be sent. The second edition was published in 1542, by Reynes. The fourth in 1559, by Kentston. The changes of religion gave rise to many alterations and omissions in the third and fourth editions; but all the editions, as well as a manuscript of the second part of the book, were collated by Sir H. Ellis for the fifth edition, 4to., London, 1811, from the preface to which the present account of the historian has been principally taken. Fabian, whose object it was to reconcile the discordant testimonies of historians, named his book 'The Concordance of Histories.' The first edition, 1542, by Hynnes, was published under the latter part of his Chronicle. The first edition had no regular title; the latest is called 'The New Chronicles of England and France, in two parts, by Robert Fabian, named by himself the Concordance of Histories.' The first edition, which may be considered as Fabian's genuine work, extends from the time when 'Brute entryd feste the Isle of Albion,' to 1485; the second continued the history to 1509; the third to 1541; and the fourth to the month of May, 1559. The names of the several authors who were consulted are unknown.

FAÇADE, a French term of modern introduction into the English language. It expresses the face, or front view of an edifice, and is often used in speaking of architectural buildings, as the façade of the Louvre, or the façade of St. Paul's. It is French for the front of a building, or, in the modern sense, the principal front of a building: the term Façada, used by the Italians, is, for the most part, applied to such fronts as have a principal entrance.

FACCIOLATI, JA'COFO, was born at Tortugna on the
Euganean hills, in the province of Padua, in 1682. He
studied first in the college of Este, and was afterwards placed by
Cardinal Barbarigo, bishop of Padua, in the clerical
seminary of that city, where he completed his studies and
was admitted to teach books which have come from his
press. Facciolati contributed to support this reputation by
his labours. Among other works, he published improved
editions of the Lexicon of Schrevelius, of the Thesaurus
Ciceronianus of Niccolò, and of the vocabulary of seven
languages, known by the name of 'Calepino,' 2 vols., fol., Venice, 1778, and added many
oriental and other works. It was in the course of his
joint labours with Facciolati that Forcellini conceived
the plan of a totally new Latin Dictionary, which, after
more than 30 years' assiduous application, he brought to
light under the title of 'Totius Latiniae Epitheta,' 4 vols., fol., Padua, 1771. This work has superseded all other Latin
Dictionaries. Forcellini, more generous than Facciolati,
acknowledged in the title-page of his work that its productions
were made in great measure to the advice and instruction of his deceased master, in the words, 'To the memory of my pupils of the seminary of Padua, he tells them with a
touching simplicity that when he undertook the work he
was in the prime of youth, but that in the course of its
completion his own ideas and inference as they then beheld
him.' The MS. of 'Calepino' is preserved in the library of the seminary. A new edition of
Forcellini's Lexicon has been lately published by the Abate
Furlanetto of the same institution.

In 1723, 30 years before being appointed professor of logic in
the university of Padua, he published a series of introductory
Latin discourses to the students of his class, which were
received with considerable applause. In 1739 he began to
write in Latin the 'Fasti of the University of Padua,' the
immediate part, in which he describes the origin, the laws
and regulations, and the object of that celebrated institution,
is very well written, but the Fasti themselves contain
little more than dry lists of the successive professors with
few and unimportant remarks. His Latin epistles, as well as his Latin discourses, have been admired for the
purity of their diction. Indeed Facciolati's purity of
expression was much praised by competent judges, such as
Roberti and others of his countrymen, as well as by Brucker, the
historian of philosophy, and other learned foreigners. The king of
Portugal sent him a flattering invitation to Lisbon to
take up his residence there, and many other invitations in his kingdom, but
Facciolati declined the offer on account of his advanced
age. He however wrote instructions for the re-organization of
the scholastic establishments of that country, which had
become necessary after the expulsion of the Jesuits. Facci-
lati died at Padua in 1769, in his 88th year. He
left numerous works, mostly in Latin, besides those already
mentioned; among others, some allegorical and satirical
diatribes on the occasion of a funeral oration which he had
published, against G. Pinzani, being suppressed by the
Padua Riformatori, or Orators.

FACIA. [CIVIL ARCHITECTURE; COLUMN.]

FACTOR, a name given to any algebraical expression
considered as part of a product. Thus, a and a + x are the
factors of (a + x) (a - x); of (a + x) (a - x);
(a + x) (a - x); of (a + x) (a - x) (a + y).
The term factoriwm exprebm has been in some instances
applied to an expression of which the factors are in arith-
matical progression; such as:

\[(z + 1)(z + 2)(z + 3)(z + 4)\]

See Harshel, *Examples of the Calculus of Infinite

FAC'TOR. A mercantile agent, who buys and sells the
\[\text{goods of others, and transacts their ordinary business on commission. He is entrusted with the possession, management,}
\[\text{and disposal of the goods, and buys and sells in his own name, in which particulars consists the main difference}
\[\text{between factors and brokers. [Broken.}}]

The chief part of the foreign trade of every country is
carried on through the medium of factors, who generally
reside in a foreign country, or in a mercantile town at a
distance from the merchants or manufacturers who employ them; and they differ from mere agents in being entrusted
with a general authority to transact business for the employers. The common duty of a factor is to receive consignments of goods and make sales and remittances either in money, bills, or purchased goods in return; and he is paid by means of a per-centage or commission upon the
money passing through his hands. It is usual for a factor
to make advances upon the goods consigned to him, for
which, and also for his commission, he has a general lien
upon all the property of his employer which may at any

time be in his possession.

It is the duty of a factor to keep the goods with which
he is entrusted free from injury, to keep a clear account of
his dealings in the affairs of his employer, and at proper
times to transmit it to him, together with information of all
the transactions and liabilities which he has entered into
and incurred in the course of his business, and to
notify to his principal if the goods or any of them, or any
part of his capital, is lost, or in danger of loss, or if his
principal can be affected; also to send him advice of all
bills accepted or drawn upon his credit, and generally to act
with fidelity to him, strictly observing the letter or the
spirit of his instructions, and keeping them silent, following
the ordinary prudence of commerce of his nation in
business, and not to run into any like commodities as to time and mode of sale, credit, &c. A factor is not answerable against all events for the safety of the goods in his care: it is sufficient if he does all that a man of average prudence would do in the care of his own
goods. He is liable, however, to answer for any other accidental damage happening without his default.

He is bound, upon receiving notice from his principal, to
insure the goods consigned to him (provided he has effects
of his principal in his hands of sufficient amount to defray the
premium), to discharge the duty of every nature, the
exportation or importation of the goods, or to cause the
regular and necessary entries to be made at the customs-
house, and do all other things necessary for the safety and
security of the goods. His liability in this respect is
sensibly explained by Sir William Jones in his 'Treatise on
Bailments;' and see *BAILMENTS,* fifth division, 'Locaturn,' second subdivision.

Where general and unlimited orders are given to a factor,
he is left to be guided by the actual conditions he can;
and if detriment arise to the principal, he has no redress,
unless he can show that the factor acted fraudulently or
with gross negligence.

In accordance with the general rule that a principal can
cannot be bound by the acts of a factor acting without the
scope of his authority, it was held, that, notwithstanding
the passing of the recent stat. 6 George IV. c. 94, that a factor
had only authority to sell the goods of his principal, and
that if he pledged them, the principal might recover them
from the pledgee, the pledgee being paid for his services in
hardship in many cases; for, besides that by the measure
of every other country except England and America,
the pledgee might retain the goods as security for his
advances to the factor, it was urged, and with great reason,
that, as between the principal and the pledgee, the factor
ought to bear the loss. He it was who placed
confidence in the factor, and who enabled him to appear
the actual owner of the goods: he might have controlled
the authority and limited the operations of his factor; but
for pledgee knew nothing of his employer and nothing
of the factor in the possession of the goods, and advanced his
money on what appeared a sufficient security for repay-
ment. In accordance with views like these, that statute
was passed, and now the pledgee of a factor, when he lends
his money without notice that the fact of the actual
owner of the goods, is entitled to retain them for his
security; and even when he has such notice, the lender
has a lien upon the goods to the same amount as the factor
was entitled to.

A sale by a factor creates a contract between the prin-
cipal and the buyer, and the principal may maintain an
action against the buyer for the price, and may by notice
direct him not to pay the money to the factor, which notice
the buyer is bound to attend to. So a purchase by a factor
for his principal renders the latter liable to the vendee
though a payment to the factor is a sufficient discharge,
unless notice to the contrary has been given by the prin-
cipal. And this holds good in both cases, even when the

X3
name of the principal is not disclosed at the contract, but is afterwards discovered; though, where a factor conceals the name of his principal and buys or sells apparently on his own account, the buyer or seller may treat the factor as the principal so far as any other liability of the factor may exist to him; as a factor a seller or buyer in his own name, being indebted to the purchaser, the latter may set off the amount of debt due to him from the factor against the price of the goods.

There is another description of factor, who acts under what is called the agent's commission, where, for an additional per-centage he engages for the solvency of the purchasers of the goods consigned to him. This contract, it is evident, arises on the supposition that the factor being resident among the purchasers, must be better able to judge of the means and circumstances of the people composing a country. For a long time it was considered that under this arrangement those who dealt with the factor were liable to him alone, and that he was liable, in the first instance, to his employer; it has, however, been decided that the carrier, the person with whom he deals on account of the employer, and that he is liable to his employer only in case of their default. Del credere is an Italian mercantile phrase, of the same significations as the English word guarantee, and has a similar warranting effect.

When goods are consigned to agent factors they are answerable for another one for the whole, and by the law of merchants, as factors, are oftentimes dispersed, one may account without his companion.

The principal may recover against his factor by action for the return of his goods or for disobedience to his instructions of loss thereon, thereby, as if he purchases goods at a limited price, and fraudulently sells them again for his own profit. If a factor, without the orders of his principal, exports goods prohibited by the Customs' laws, and the same are seized, the loss is the factor's; and so if he pay money without the direction of his employer, or sells his goods at an under-value, or exports goods of an improper quality, he is answerable for the damage. And if a factor exports goods of a different quality or kind from those the principal directed to foreign parts, or sends them to a place other than that to which he was ordered to send them, the merchant may refuse to accept them, and may recover any damage he has sustained, in consequence of his neglect, from the factor. The rights and liabilities of merchants and factor are similar to those of the laws of the place in which they are domiciled, and any contract which may be made by either of them must, like the law of the place where it is made, and these rules are acted upon by the courts of justice of every country. But since the act of attorney-abolished statute, a foreign merchant cannot recover his goods from the pledge of his factor in England, though he may be totally ignorant of the change which has taken place in the law. And again, if a bill be accepted in Leith by an English factor, the factor having power to draw upon his banker, the effects of the drawer in his hands at the time of acceptance, the acceptance becomes void by the law of Leith, and the acceptor is discharged from all liability, though by the law of England he would be bound. (See 2 Strange's Reports, 234; Bone's "Le Mersons with London Commodities; Paley, Principal and Agent; M'Culloch's Commercial Dict.")

FACTORY. FACTORY SYSTEM. The name of factory was formerly given only to establishments of merchants, or factors, engaged in foreign trade, governed by certain regulations adopted for their mutual support and assistance against the undue encroachments or interference of the governments of the countries in which they resided. In modern times these factories have, in a great measure, ceased to exist, because of the greater degree of security which merchants feel as regards both the justice of those governments and the protection, when needed, of their own country. In its usual acceptation, the word factory is employed to denote an establishment in which goods are manufactured to order, or a number of artisans employed together for the production of some article of manufacture, most commonly with the assistance of machinery. The factory-system of England owes its origin to the invention and skill of Arkwright. It is true the name of factory is erroneously applied to numerous establishments for the operations of which those inventions are inapplicable, but it is probable that but for the invention of spinning-machinery, and the consequent necessary aggregation of large numbers of workmen in cotton-mills, the name would never have been thus applied. It is in these cotton-mills that the factory system has been brought to its highest state of perfection, and it cannot therefore be necessary to extend our description to the operations of any other branch of manufactures.

The first cotton-factory was established by Arkwright in connection with Messrs. Need and Strutt, of Derby, and was situated at Cromford, on the river Derwent. It was built in 1771, and continues still in operation, with the several improvements of the cotton manufactures. It is at least among the merest of that extraordinary man, that being the first to employ the combined labour of numerous workmen for the production of that which had previously required from individual efforts. He was able to arrange and establish the details of the processes with great regard to order, economy, and simplicity of action, that with but few and unimportant modifications, his plan is continued to the present day. (Arkwright) The operations of Arkwright and his partners were for many years met by a spirit of opposition on the part of other manufacturers, who foresaw that the success of the new machinery would speedily destroy the value of the hand-spinning implements which they employed. Their combinations to destroy his patent rights have already been described. Taking advantage of the prejudices of the workmen, they had no difficulty in producing the belief that the new machines would soon entirely supersede manual labour, and the consequence of this delusion was a general massacre of the new machines. It was in some instances actually done. In 1787 there were 115 cotton-spinning factories in England and Wales, containing nearly two millions of spindles, and estimated to produce as much yarn as could have been spun by a million of persons using the old domestic wheel.

A return called for by the House of Commons in the 1st session states the number of factories which, in the month of February, 1837, were under the regulations imposed by the "Factory Act." From this return, it appears that the establishments at that time subject to the visits of the sanitary inspectors were 396, and that the number of 1000 factories upon the numbers given above. The great increase may be owing in part to the circumstances of some establishments existing in 1833 having since been brought under the regulations. The return does not appear to be complete, as 50,792 were then erected or in the course of being erected, but the establishments for the use of which that additional machinery was destined were not yet supplied with hands. At the ordinary ascertained rate this amount of mechanical power would call for the employment of 50,000 workmen, of whom 30,000 would be male workmen; 10,000 children, 10,000 male and female domestic servants, 1000 labourers, handworkmen, and others employed out of the factories. The activity that up to the close of 1836 was experienced in this branch of national industry must have occasioned even a still greater extension than is mentioned by Dr. Kay. With 50,000 hands we must be within the mark if we estimate the number of hands employed in cotton factories in the autumn of 1836 at considerably 300,000. The whole of this commerce in the cotton business to the value of 200,000,000l. (£250 million) in the United Kingdom, with the number and ages of persons employed therein in the year 1835, was stated in the Statistical Tables published by the Board of Trade to be as follows:—
### NUMBER AND AGES OF PERSONS EMPLOYED.

<table>
<thead>
<tr>
<th>DIVISIONS OF FACTORIES</th>
<th>Number of Factories</th>
<th>Between 8 and 13 years</th>
<th>Between 14 and 18 years</th>
<th>Between 18 and 21 years</th>
<th>Above 21 years</th>
<th>Total Persons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
<td>Total</td>
<td>Males</td>
<td>Females</td>
<td>Total</td>
</tr>
<tr>
<td>Export</td>
<td>1,570</td>
<td>42</td>
<td>1,518</td>
<td>919</td>
<td>7,985</td>
<td>8,904</td>
</tr>
<tr>
<td>Weave</td>
<td>136</td>
<td>1</td>
<td>137</td>
<td>135</td>
<td>337</td>
<td>472</td>
</tr>
<tr>
<td>Mill</td>
<td>146</td>
<td>3</td>
<td>149</td>
<td>146</td>
<td>337</td>
<td>483</td>
</tr>
<tr>
<td>Total Cotton Factories</td>
<td>2,007</td>
<td>92</td>
<td>2,105</td>
<td>1,063</td>
<td>7,914</td>
<td>8,977</td>
</tr>
<tr>
<td>Wool.</td>
<td>1,139</td>
<td>9</td>
<td>1,150</td>
<td>1,237</td>
<td>21,756</td>
<td>23,007</td>
</tr>
<tr>
<td>Silk</td>
<td>125</td>
<td>3</td>
<td>128</td>
<td>125</td>
<td>337</td>
<td>462</td>
</tr>
<tr>
<td>Total Woollen Factories</td>
<td>1,264</td>
<td>12</td>
<td>1,276</td>
<td>1,362</td>
<td>24,133</td>
<td>25,502</td>
</tr>
<tr>
<td>Silk.</td>
<td>49</td>
<td>1</td>
<td>50</td>
<td>49</td>
<td>137</td>
<td>186</td>
</tr>
<tr>
<td>Total Silk Factories</td>
<td>285</td>
<td>25</td>
<td>310</td>
<td>285</td>
<td>1,881</td>
<td>2,166</td>
</tr>
<tr>
<td>Total of Flax Factories</td>
<td>347</td>
<td>32</td>
<td>379</td>
<td>347</td>
<td>2,026</td>
<td>2,389</td>
</tr>
<tr>
<td>Total of the four branches of manufacture</td>
<td>3,160</td>
<td>76</td>
<td>3,236</td>
<td>3,160</td>
<td>18,007</td>
<td>21,167</td>
</tr>
</tbody>
</table>

It will be seen from the foregoing table, that a very large proportion of the hands employed in factories consist of children and young persons. The large sums invested in machinery make it a matter of great importance to the owners to keep their works in motion as constantly as possible, and, unless prevented by legislative interference, there is too much reason to believe that children may be tasked beyond their strength, to the permanent injury of their constitutions. This abuse was the more to be apprehended, because a large proportion of the children engaged in cotton-spinning are not directly employed by the masters, but are under the control of the spinners, a highly-paid class of workmen, who are employed at the rate of one hour per day. Although the rectification of abuses alleged to exist were shown upon investigation to have been very greatly exaggerated, it cannot be denied that enough of misery was produced to render it imperative upon the legislature to interfere. A parliamentary committee sat for the investigation of this subject in 1832, and subsequently a commission was issued by the crown for ascertaining, by examinations at the factories themselves, the kind and degree of abuses that prevailed, and for suggesting the proper remedies. In consequence of these inquiries an act was passed in 1833, (32 and 3 Wm. IV., c. 103,) the provisions of which, it is generally believed, have affected all the good which it is in the power of the legislature to do, consistently with the preservation of the branches of industry to which the provisions of the act apply: the principal of those provisions are as follows:—

After the 1st January, 1834, no person under the age of 18 years is allowed to work in any cotton, woollen, flax, or silk factory worked by the aid of steam or water-power, between the hours of half past eight in the evening and half past five in the morning.

No person under 18 years of age is allowed to work more than 12 hours in any one day, nor more than 69 hours in the week. In factories worked by the aid of water-power, the time lost through the deficiency of water may be made up at the rate of three hours additional labour in the week. In factories where the steam-engine is employed lost time occurring through any accident happening to the machinery may be made up at the rate of one hour and a half to be allowed in each day for meals.

Except in silk-mills, no children under nine years of age are allowed to be employed.

Children under 11 years old are not to be worked more than nine hours in any one day, nor more than 48 hours in one week. This clause came into operation six months after the passing of the act. At the expiration of another 12 months its restriction was applied to children under 12 years old, and when 30 months from the passing of the act had elapsed the restriction was applied to all children under 13 years old. As the act was passed on the 30th August, 1833, this clause came fully into operation on the 1st of March, 1836. In silk-mills, children under 13 years of age are allowed to work 10 hours per day. The children whose hours of work are regulated by the act are entitled to weekly days of rest, a half holiday on the first day of each month, and Good-Friday, and besides to eight half days in the year. It is made illegal for any mill-owner to have in his employ any child who has not completed 11 years of age without a certificate by a surgeon or physician, that such child is of the ordinary strength and appearance of children of the same age. In 18 months from the passing of the act this provision was made to apply to all children under 12 years of age, and upon the first March, 1836, the provision was made to include all children under the age of 15. Four persons were appointed under the act to be Inspectors of Factories, in order to carry into effect the various provisions which it contains, with power to make such rules and orders for the purpose as they should see necessary; and in order to assist the inspectors in the performance of their duties, an adequate number of superintendents were appointed to act under their directions.

After the expiration of six months from the passing of the act, it was declared unlawful to employ in any factory any child under the ages restricted to forty-eight hours' labour in the week, unless on every Monday the employer should receive a ticket from some schoolmaster, certifying that such child has for two hours at least for six out of seven days of the week next preceding attended his school. The school to be chosen by the parents or guardians of the child; but in case of their omitting to appoint any school, or in case of the child being without parent or guardian, the inspector may appoint some school in which the child may be taught, and the employer may be allowed to deduct from one weekly earnings any sum not exceeding one penny in every shilling, to pay for the schooling of such child.

The full and perfect carrying out of the intention of the legislature in passing this act is provided for as far as possible by various penalties, which it is not necessary further
to particularise. One half of the penalties are, as is usual, awarded to the informers, and the remainder is to be applied towards the support of schools in which children employed in factories are educated.

The discharge of their duties on the part of the inspectors is provided for, by requiring them twice in every year, and oftener, if called upon, to deliver in a report to the secretary of state, concerning the condition of the factories, and of the children employed therein.

FACULTIES. [UNIVERSITY.] FAB'cula.

FAENZA (formerly Faentia), a town and bishop's see of the papal state north of the Apenines, in the delegazione or province of Ravenna. It is situated in a well-cultivated plain watered by the river Lamone, which rises in the Apenines of Tuscany and runs to the Adriatic. A navigable or navigable canal communicates between Faenza and the Po di Primario, or southernmost branch of the Po. Faenza is a well-built, modern-looking town, with about 15,000 inhabitants. The streets are regular; they are a fine market-place surrounded by arcades, many palaces, churches rich in paintings, convents, a fine bridge on the Lamone, a theatre, and a Lyceum. There are several manufactories of a kind of coloured and glazed earthenware, which is called Majolica in Italy, and Faience in France, where it was introduced from Faenza, and which, before the manufacture of china or porcelain became established in Europe, was in greater repute than it is at present. There are also manufactories for spinning and weaving silk, and some paper-mills. Faenza was at one time a town of the Boii, and afterwards a municipium under the Romans. It was near Faentia that Sulla defeated the consul Carbo and drove him out of Italy. (Liv. Epitome, 89.) It was afterwards ruined by the Goths, was restored under the Exarchs, but its buildings were not raised until the 13th century. It was, for some time subject to the Bolognese, but was afterwards ruled by the house of Manfredi to the end of the fifteenth century. Gauceto Manfredi being murdered by his wife, left two infant sons, Astaro and Evangelista, the elder of whom, a young man of handsome countenance, was proclaimed by the inhabitants lord of Faenza; but a few years after, Cesare Borgia, as captain-general of his father, Pope Alexander VI., besieged the town, and the inhabitants surrendered on condition that Astaro and his brother should be free. He however sent them prisoners to Rome, where they were cruelly put to death in the Castle Sant'Angelo, and their bodies thrown into the Tiber, in the year 1501. This was one of the most atrocious transactions in the life of Borgia. Since that time Faenza has been annexed to the papal state. E. Faenza is about 20 miles northeast of Rimini, 30 miles northeast of Bologna, 40 north-west of Rimini, and 20 north-west of Ravenna. In the Roman times, a road led from Faentia to the south, which ascending the valley of the Anemo, now Lamone, and crossing the ridge of the Apenines, descended to Faenza. By this road some have supposed that Hannibal crossed the Apenines into Etruria. A new carriage-road in a different direction, but more to the eastward, has been completed by the present grand-duke of Tuscany: it leads from Dremeno, in the valley of the Sieve, north of Florence, crosses the Apenines of San Benedetto, 5000 feet above the sea, and then following the course of the river Montone, joins the Via Amilia near Forli. F'A.GUS, the beech, is a genus of Corylaceae exogens, having triangular or heart-shaped leaves enclosed in a spiny envelope, a husk. There are several species, some of which are more bushes; the only one known in Europe of any importance is the Fagus sylvatica, or common beech, a native of various parts of the world in temperate climates. In Europe it is found far north in Norway and Sweden; it is also indigenous to the United States of America. It is one of the most handsome of our trees on dry sandy or chalky situations; its meat or nuts not only furnish food for swine, but yield a useful gum. A useful gum is obtained from the bark, though not of good quality where strength and durability are required, is very extensively used for a variety of purposes, particularly for boat-building, work under water, carving and chair-making; it is also one of the best kinds of varnish. The usual varnish is obtained from the wood of this tree, and theGun, the pearle, and the pearly-leaved being beautiful, and the crested very much the contrary. (See Loudon's Arboretum and Fruticulorum Britannicum, p. 1949, for a copious account of this tree.)

The common beech is multiplied by sowing its mast; the varieties by grafting upon the wild sort. To effect this successfully, it is necessary that the scions should be of at least two years' old wood, and the grafts must be laced first and then enlaunched. If one year old wood is used the scions rarely take.

There is no doubt that the beech is the plant called Fagus by Virgil; but the Fagus (pyrea) of Theophrastus seems to have been some sort of oak with sweet acorns, and is by most of the better commentators referred to the Quercus Esculus of Linnaeus.

FAHLORE, Fablerx, grey copper ore. Of this there are two varieties, the arsical and the antimonial; the former occurs crystallized and massive; the primary form of the crystals is cubical, but the regular tetrahedron is the predominating crystal. Colour steel-grey. Opal. Lustre metallic. Sp. gr. 4.8, 5.1. Hardness 3.4÷4. Blemish. Cleavage parallel to the planes of the tetrahedron, very indefinite. Fracture conchoidal. Massive Variety.—Amorphous. Structure, granular to compact.

It occurs in Cornwall, Hungary, Saxony, &c. A specimen from Freiberg, analyzed by Klaproth, yielded—

<table>
<thead>
<tr>
<th>Substance</th>
<th>Specific Gravity</th>
<th>Hardness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
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</tr>
<tr>
<td>Copper</td>
<td>4.0</td>
<td>2</td>
</tr>
<tr>
<td>Iron</td>
<td>3.2</td>
<td>2</td>
</tr>
<tr>
<td>Sulphur</td>
<td>2.6</td>
<td>2</td>
</tr>
<tr>
<td>Silver</td>
<td>2.3</td>
<td>2</td>
</tr>
<tr>
<td>Loss</td>
<td>1.9</td>
<td>2</td>
</tr>
</tbody>
</table>

It frequently contains a much larger quantity of silver and not uncommonly cine.

Antimonial Fahlore.—Occurs crystallized in modified tetrahedrons. Colour dark lead-grey, approaching to iron-black, both externally and internally; very brittle.

Analysis of a specimen from Kasping by Klaproth—

<table>
<thead>
<tr>
<th>Substance</th>
<th>Specific Gravity</th>
<th>Hardness</th>
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</thead>
<tbody>
<tr>
<td>Antimony</td>
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</tr>
<tr>
<td>Copper</td>
<td>3.7</td>
<td>2</td>
</tr>
<tr>
<td>Iron</td>
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<td>2</td>
</tr>
<tr>
<td>Sulphur</td>
<td>2.3</td>
<td>2</td>
</tr>
<tr>
<td>Silver</td>
<td>2.3</td>
<td>2</td>
</tr>
<tr>
<td>Zinc</td>
<td>1.9</td>
<td>2</td>
</tr>
<tr>
<td>Oxide of manganese</td>
<td>0.43</td>
<td>2</td>
</tr>
</tbody>
</table>

FAULNITE, Trichlasis. Occurs crystallized and massive. Primary form of the crystal a right rhombic prism, but it usually occurs in imbedded, regular, hexagonal prisms. Colour yellowish, greenish, and blackish-grey. Nearly or quite opaque. Lustre resinous. Sp. gr. 2.66. Hardness 5.3−5.5. Streak greyish-white. Cleavage perpendicular to the axis of the prism.

It is found at Faium, in Sweden. The yellow pipe alone it becomes grey, and fuses on its thinnest edges; with borax it melts slowly into a coloured glass.

According to Hiisinger it consists of—

<table>
<thead>
<tr>
<th>Substance</th>
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<tbody>
<tr>
<td>Silica</td>
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<tr>
<td>Alumina</td>
<td>2.57</td>
</tr>
<tr>
<td>Magnesia</td>
<td>3.03</td>
</tr>
<tr>
<td>Oxide of iron</td>
<td>5.11</td>
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<tr>
<td>Oxide of manganese</td>
<td>0.43</td>
</tr>
<tr>
<td>Water</td>
<td>1.35</td>
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</tbody>
</table>

FAHRENHEIT. [Thermometer.]

PAINTING. [Syncope.]

FAJOUM, a province of Egypt to the west of the Libyan ridge which bounds the valley of the Nile on the west. About 12 miles north-west of Benisonef there is a depression in the ridge and the depression is about 30 miles long, which bounds the plain of the Faioum. This plain is of a circular form, about 40 miles from east to west and about 30 from north to south. The northern and north-western part of this plain is occupied by the lake called Birket el Keroun, which spreads in the form of a crescent about 30 miles in length and five miles broad towards the middle. A range of nacked rocks bounds the lake to the north and joins towards the east the Libyan ridge which skirts the valley of the Nile. To the west and south the plain is bounded by lower hills which
divide it from the Libyan desert. It forms in fact a basin with only one opening or outlet to the east towards the Nile. The Bahr Yussouf, or great canal, which runs parallel to the Nile and has the same bank at all points, the one mentioned above, at a village called Howarah Illahun, turns to the west, passing under a bridge of three arches through which the water flows and forms a fall of about three feet at low water. It then runs along the valley, and, on passing through El Faiyum and the village of Howarah el Soghair, a wide cut branches off from it to the right, running first north and then north-west, and passing by Tamieh meets the north-east extremity of the lake. About two miles below Howarah el Soghair another deep ravine opens up to the south, and the waters of the north-west, passing by Nzeleh, and entering the south-west part of the lake. Between these two branches the cultivated part of the Faiyum is contained. But these two cuts have been long dyked across at their beginning, in order to economize the water of the Nile, which owing to the rising of the bed of the Bahr Yussof, flows less copiously than formerly. Only a small part of the water finds its way to the lake by the Tamieh and Nzeleh cuts. The main stream continues its course westwards towards the middle of the plain and the town of Medinet el Faiyum, the capital of the province. Here the water becomes distributed into a multitude of small canals for irrigation, which spread in every direction through the central part of the plain, and which are the cause of its extraordinary fertility, for the Bahr Yussouf contains water all the year round, and the small canals which drain the extreme end of the canals. All the part west of Nzeleh is arid and sandy, and only inhabited by a few nomadic Arabs, though it bears the traces of former cultivation. The strip of land which borders the lake Keroun is low and marshy, marking the course of the ancient lake Keroun, and separating the cultivated lands by a considerable rise all along, reckoned by Jomard to be about 20 feet above the level of the lake. The village of Senhour, which is now some miles distant from the lake, was, in 1673, when Vansleb visited it, close to the water. Jomard reckons that the water covered the whole of the low land below the rise above mentioned, of its circumference must have been above 100 miles. [Birket el Keroun.] It is calculated that the land susceptible of cultivation in the Faiyum is about 450 square miles, and that the cultivable villages, which are said to have been at one time above 300, are now reduced to less than 70. Still the cultivated part is superior in fertility to every other province of Egypt, from which it differs in the greater variety of its products, and from which it excels by the great extent of its corn, cotton, and the other cultivated plants, it produces in abundance apricots, figs, grapes, and olives, and other fruits, which thrive here better than in the valley of the Nile. This was also the case in ancient times, for Strabo says that the Faiyum excelled all others in appearance and condition, and that it alone produced olive trees, which were not found, elsewhere in Egypt except in the gardens of Alexandria. A vast quantity of roses also grow in the Faiyum, and this district is celebrated for making rose-water, which is sold at Cairo and all over Egypt for the use of the wealthy.

The remains of antiquities in the Faiyum are few. Two pyramids of some baked bricks about 70 feet high stand at the village of Keroun, near the other near Howarah el Soghair. There is an obelisk of red granite 43 feet high, with two sides narrower than the others and a circular top, sculptured with numerous hieroglyphics, near the village of Bijge, a few miles south of Medinet el Faiyum. In Burton's Excursions there is a drawing of it. Pococke, i. 59, also gives a description of it.

It is said to be of the same age as that of Heliopolis, bearing the name of Osiris I. (See an account of this obelisk in the Library of Entertaining Knowledge, British and Foreign, vol. i., pp. 119 and 121.)

Near Medinet el Faiyum are some remains of the ancient Arsinoe or Crocodileopolis, consisting of fragments of granite columns and statues, described by Belzoni. At Keroun, near the north-west extremity of the lake, is a temple 94 feet by 34 and about 40 feet high, which contains a statue of a god, and appears to be of the Roman period. On the north-west bank of the lake, at a place called Denay, a raised pavement or dromos, about 1300 feet in length, leads to a building, partly of stone and partly of brick, 109 feet by 67, divided into several apartments and surrounded by an outer wall of crude brick 370 feet by 270. It is supposed to be the site of the ancient Dionysia. Further to the east, on the north-west bank, at a place called Kombel Kem el Hogar, are the ruins of Bacebals. The description of the principal streets and the plans of many of the houses may be distinctly traced. The site of the ancient labyrinth has not yet been ascertained; Wilkinson thinks it was near the present town. At Fedimin el Kunouis, or the 'place of churches' in Coptic, near the south-east bank of the lake, are some remains of early Christian monuments: the village is now occupied one half by Copts and the other half by Mohammedans, who seem to live in harmony together.

The mountains along the north bank of the lake Keroun, on which the rains fall annually, are said to contain salt, and to this circumstance the saltness of the waters of the lake is attributed by some. As the lake now receives but little of the waters of the Nile, the bitterness of its water must have increased. No fish is said to be found in it, and Belzoni, at the time of his visit, saw nothing upon it except a crazy kind of ferry-boat.

South of the Faiyum there is an opening through the ridge of low hills leading into a smaller circular plain or basin, with a small lake called Birket el Garaq, which has one or two hamlets on its banks. A small stream from the Bahr Yussouf runs into it. The road-track of the caravans to the smaller oasis passes through this place. (Descriptions of Egypt, by the Rev. Mr. Browne; Belzoni; and Wilkinson's Topography of Thebes.)

Fair, an annual or fixed meeting of buyers and sellers; from the Latin feria, a holiday. Fairs in ancient times were chiefly held on holidays. Antiquity.

Flourishing towns were established, and the necessary or ornaments of life, from the convenience of communication and the increase of provincial civility, could be procured in various places, goods and commodities of every kind were chiefly sold at fairs; to each district, as to one part of the kingdom, there was furnished the fair. Parliament, for example, directed, in the year 1573, that the market fair be held at Town, or St. Giles's, for the use of the city of Westminster. It was instituted and given as a kind of revenue to the bishop of Winchester by William the Conqueror, who, by the charter, permitted a fair to continue for the benefit of the corporation of London, by the concession of new royal grants, Henry the Third prolonged its continuance to sixteen days. Its jurisdiction extended seven miles round, and comprehended even Southampton, then a capital trading town; and all merchants sold their goods without license from the parliaments. During this time the bishop was empowered to take toll of every load of goods passing through the gates of the city. On Saint Giles's eve, the mayor, bailiffs, and citizens of the city of Winchester delivered the keys of the four city gates to the bishop's officers; who, during the said sixteen days, had power and bailiff of their own to govern the city, and also a coroner to act within it. Numerous foreign merchants frequented this fair; and it appears that the justices of the pavilion and the treasurer of the bishop's palace commanded the sale of all foreign wares, and the sale of such goods for customs, four basons and ewers of those foreign merchants who sold brass vessels in the fair, and were called mercatores diuturni. In the fair several streets were formed, assigned to the sale of different commodities, and called the Drapery, the Rawdery, the Beadery, and the Silverware. In and about Winchester had shops or houses in these streets usually only at the fair, which they held under the bishop, and often let by lease for a term of years. As late as 1512, as we learn from the Northumberland Household Book, fairs still continued to be the principal marks for pur-
chasing necessaries in large quantities, which are now supplied by the numerous trading towns.

Philip, king of France, complained in very strong terms to Edward II, a.d. 1314, that the merchants of England had dosisted from frequenting the fairs in his dominions with all their other goods, to the great loss of his subjects; and entreated him to persuade, and, if necessary, to compel them to frequent the fairs of France as formerly, promising them all possible security and encouragement.

(See Ryn. Ford., tom. iii. p. 452.)

William of Malmesbury had been consumed, by way of assisting to re-establish it, a fair, among other privileges, was sometimes granted. This was the case at Burley, in Rutlandshire, 4th Edw. III. (Abbrev. Rot. Orig., vol. ii. p. 338.)

The different abridgments of Stowe and Grafston's Chronicles, published by themselves in Queen Elizabeth's time, contain lists of the fairs of England according to the months. There is also 'An authentic Account published by the king's authority of all the Fairs in England and Wales, as they have been settled to be held since the alteration of the style; noting likewise the Commodities which each of the said Fairs is remarkable for furnishing,' by William Owen, 12mo. Lond. 1756.

No fair or market can be held but by a grant from the crown, and even then the horse under the said grant, or any other grant, of which no record can be found.

(2 Inst. 220.)


The fairs of Frankfurt on the Mayn and Leipzig are still pre-eminent in Europe; the former held at Easter and in the months of August and September; the latter at Easter, Michaelmas, and Christmas. The fairs of England at these times were the mart and exchange of Central Europe, and is visited by merchants and foreigners, from the most distant parts of the globe, sometimes to the number of thirty or forty thousand. The whole book-trade of Germany is centred in the East. For

FAIRFAX, EDWARD, was the second son of Sir Thomas Fairfax, of Denton in Yorkshire. The date of his birth is unknown; but as his translation of Tasso's 'Jerusalem Delivered' was published in 1600, we may suppose that it fell some time in the reign of Queen Elizabeth.

Contrary to the habits of his family, who were of a military turn, he led a life of complete retirement at his native place, where his time was spent in literary pursuits and in the study of law, of his own choosing and that of his brother, one of whom became the celebrated Lord Fairfax. We learn from his own writings that he was neither a superstitious Papist nor a fantastic Puritan; but rather particulars of his life there are none. He is supposed to have lived 1632.

Fairfax is now known only for his translation of Tasso's 'Jerusalem Delivered,' which is executed in a manner which makes it wonderful how the frigid, jangling, and affected version by Hoole ever survived its birth. The measure which he chose for his work (that of the original Italian) is one less stately perhaps than the Spenserian stanza, but not less fitted for heroic subjects. It consists of eight-line stanzas, of which the first six lines are in forza rima and the last two rhyme with each other. It has the same purity over than is found in heroic couplets, that all jingle is avoided by the occasional introduction of a different species of rhyme. Moreover, the vers is more much harmonious than those of Hoole; the diction is more simple, and the English more pure. As the time is now sweeping and insolent as those retained in the place from which we have just quoted. (Biographia

1 Hoole, Preface to his Translation of Tasso, p. 49.)

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BRITAIN. -- Preface to Fairfax's Tasso, edition 1747; Preface to Hoole's Tasso.

FAIRFAIR, SIR THOMAS, afterwards Lord Fairfax, the son of Ferdinando Lord Fairfax and his wife, Mary, daughter of Edmund Sheffield, Lord Mulgrave, was born near London, July 1, 1618; was knighted in 1633, and, some time after, was admitted to the army. In 1642, he was elected for the city of London, and served under his command in Holland. The connexion of Fairfax with Lord Vere afterwards became more close. When he returned to England, he married Anne, the fourth daughter of that peer, who, like her father, was a devout Presbyterian, and therefore, perhaps, Lord Fairfax did not already possess the same religious and political feelings, he soon imbibed the principles of his wife. When the king began to raise troops, as it was said, for the defence of his person, Fairfax, who foresaw that it was intended to collect an army, in the presence of some 100,000 people assembled on Heyworth Moor, presented a petition to the king in person, praying that he would assent to his parliament and refrain from raising forces. In 1642, when the civil wars broke out, he accepted a commission of the prime of Gaelic, and joined the parliament forces in the north. His first employment was in the county of York, where at first the greatest number of actions between the parliament and royal troops were in favour of the king, whose army was under the command of the earl of Newcastle, while his somewhat dispersed, was detached from Lincoln, where he was in quarters, to raise the siege of Nantwich, in Cheshire. In this expedition he was successful, not only in the main object, but he also took a cavalry stomach, and seized the castle of Newcastle-upon-Tyne, the governor of which was the king's brother, the Duke of Lennox. A junction took place between the Scots and Fairfax, who acted in concert during the spring (1644) and fought together in the memorable battle of Marston Moor (July 2, 1644), where the king's troops experienced a signal defeat that the whole of his army, consisting of some 10,000 men, was surrendered to the parliament. Before Helmsley Castle, one of these forces, which Sir Thomas Fairfax was afterwards (September) sent to besiege, he received a wound in his shoulder that caused his life to be despaired of. William, earl of Essex, the king's general (Essex), was immediately summoned. It was unanimously voted that Fairfax should be his successor (January, 1644-5), and Cromwell by whom his actions were afterwards so greatly influenced, was appointed his lieutenant-general. Fairfax landed in London on the third day of his elevation, and, upon the appointment of the commission, the speaker paid him the highest compliments. After having been nominated governor of Hull, he marched to the succour of Taunton, in which place the parliamentary troops were closely besieged; but upon the king's leaving the field with Rupert, he was recalled before he had proceeded farther than Blandford, and received orders to join Cromwell and watchfully attend upon the movements of the king. On the 14th of June he was put into custody, and, shortly after, was removed into Wiltshire. Fairfax, married to a lady of Gloucestershire, possessed himself of Bath, Bristol, and other important posts in Somersetshire. From thence, by the way of Dorssetshire, he carried his arms into Cornwall, and entirely destroyed all forces of the king in that county.

After the surrender of Exeter, which was the last event of this western campaign, Fairfax returned to Oxford, which, as well as Wallingford, surrendered upon article. In the autumn, after further active and successful employments, he was sent to Hambledon, where he laboured for some weeks. In November, when he returned to London, he was welcomed by crowds who came out to meet him on his road, was publicly thanked for his services, and received from the parliament a jewel of great value, with the thanks of the country and a considerable pension. The payment of the 200,000l. to the Scottish army, in consideration of which they delivered up the king, was entrusted to Fairfax, who marched northward for this purpose.

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pose. The discontent of the army, who were fearful either that they should be disbanded or sent to Ireland, now rose to a great height. Their complaints were encouraged by Cromwell and Ireton; a council was formed in the army by several of Cromwell’s friends from the Independent Party, who showed an evident desire to form a party distinct from the Presbyterian Party, and to usurp for themselves a greater authority. Although Fairfax was in his heart opposed to these violent proceedings, and saw with them the danger of the party, he had not the resolution to resign his command. He remained the tool of Cromwell, following his counsels, until the army had become master both of the parliament and the kingdom.

In 1647 he was made Constable of the Tower; and in the following year took prisoner the Prince of Wales. On his death, he inherited his titles, appointments, and estates. The difference of his condition made no alteration in his life; he continued to attack or besiege the royalist troops wherever they were mustered or entrenched. Many towns in the east, and among them Colchester, which had been once so greatly respected, were clothed his arms. In December he marched to London, menaced the parliament, and quartered himself in the palace at Whitehall. He was named one of the king’s judges, but refused to act; and he was voted one of the new council of state (February, 1649), which was to subscribe the test. In May he marched against the Levellers, who were numerous in Oxfordshire. He continued in command of the army until June, 1650, when, upon the Scots declaring for the king, he declined marching against them, and consequently resigned his command. On July 28 he left house at Nun Appleton, in Yorkshire, which for some years he made his principal residence. He left it (in 1659) to assist General Monk against Lambert’s forces. In January, 1659-60, he was the first master of York. In the spring of the year and in the February following, he was clothed his apparel, and one of the council of state by the Rump Parliament, was elected one of the members for the county of York, and formed one of the committee appointed to promote the re-establishment of the state church. In November, 1657, while residing privately at his county-house, he was seized with an illness, which terminated in his death. He was buried at Bilborough, near York. He left issue two daughters, Mary and Elizabeth. Mary married the duke of Buckingham, the queen’s brother, and we have heard nothing of her.

The character of Fairfax was not distinguished for many vigorous qualities; the key to it may be found in the words of Clarendon: ‘Fairfax wished nothing that Cromwell did, and yet contributed to bring it all to pass. He was not one of the independent Party, he had no impediment in his speech: as an orator was not eloquent; as an author was indifferent: his love of literature was of no further benefit than as it served for the encouragement of others.’ (Clarendon’s Hist.; Whitelock’s History of England.)

FOURTH EPILOGUE.

FAIRIES, a small sort of imaginary spirits of both sexes in human shape, who are fabled to haunt houses in companies, to reward cleanliness, to dance and revel in meadows in the night-time, and to play a thousand freakish pranks. They are said to be invisible to men, but are dressed in green, and the traces of their tiny feet are supposed to remain visible on the grass for a long time after their dances: these are still called fairy rings or circles. They are also famed to be in the practice of stealing unbaptized infants, and to carry them away to the world below. Besides these terrestrial fairies there was a species who dwelt in the mines, where they were often heard to imitate the actions of the workmen, to whom they were thought to be inclined to do service. In Wales this kind of fairies were called ‘lorcans,’ and were said to point out the rich veins of silver and lead. Some fairies are fabled to have resided in wells. It was also believed that there was a sort of domestic fairies, called, from their sun-burnt complexion, Brownies, who were extremely useful and who performed all sorts of domestic drudgery. The words ‘fairy’ and ‘brownie’ seem at once to point out their own etymology.

Bourne, in his ‘Antiquitates Vulgares,’ supposes the superstition relating to fairies to have been conveyed down from the superstitious times of the Druids. The persecuted others have deduced them from the lares and larves of the Romans. Dr. Percy tells us, on the assurance of a learned friend in Wales, that the existence of fairies is alluded to by the most ancient British bards, among whom their commonest name was that of the Spirits of the Mountains. The most general conjecture, however, is, that these imaginary people are of oriental origin, and that the notion of them was first entertained by the Persians and Arabs, whose traditions and stories about the marvellous and the supernatural furnish the raw materials of all the others. The Persians called them Peris, the Arabs Ginn; and the Arabs assigned them a peculiar country to inhabit, which they called Ginnistan, or fairy-land.

Shakespeare has been singularly happy in his dramatic exhibition of fairies. The belief in these fabled beings is still a fast hold upon the minds of many of our rustic, which may perhaps be considered as a remnant of that ignorant credulity which was once almost universal. Poole, in his ‘English Farnamus,’ has given the names of the fairy species: Oberon the enchanter; Mab the empress; Periwigny, Periwinkle, Puck, Holglobin, Tolainy, Tom Thumb, courtiers; Hop, Mop, Drop, Pip, Trip, Skip, Tub, Tih, Tick, Pin, Pink, Quick, Gill, Im, Tif, Wap, Win, Nit, the maids of honour; Nymphidia, the mother of the maids. Dr. Grey, in his ‘English Fairy Mythology,’ gives a description, from other writers, of fairy-land, a fairy entertainments, and fairy hunting. Dr. King’s description of Orpheus’ fairy entertainment (Works, ed. 1776, vol. iii. p. 112), and ‘Oberon’s clothing’ and ‘Oberon’s diet,’ in Pope’s ‘English Farnamus,’ almost exhaust the whole fairy economy. A charm against fairies was turning the cloak. See Bishop Corbet’s Iter Boracii; Anquetil du Perron’s Zend Avesta; Brand’s Popular Antiquities, vol. iii. p. 327-354; Percy’s Reliques of Antient English Poetry, vol. i. p. 50. The English Farnamus almost exhaust the whole fairy economy. A charm against fairies was turning the cloak. See Bishop Corbet’s Iter Boracii; Anquetil du Perron’s Zend Avesta; Brand’s Popular Antiquities, vol. iii. p. 327-354; Percy’s Reliques of Antient English Poetry, vol. i. p. 50.

FAITH (fides, in Latin), means belief or trust in a fact or doctrine, and is more especially used to express the belief of Christians in the tenets of their religion, and also by figure to mean that religion itself. The great divisions of Christian religion are the Roman Catholic Church, the Eastern Orthodox Church, and Calvinism, or the Presbyterian and Congregationalist Churches. The latter are also called Reformed Churches. The word ‘fideism’ has been used to designate the doctrine of faith, as opposed to the doctrine of revelation. In modern times controversy has run more frequently upon moral questions concerning the conduct of men, the requisites of salvation, and the discipline of the Church. Faith, the necessity of which is acknowledged by the Christian religious systems, is the foundation upon which the moral law is built. The term ‘faith’ is a synonym of ‘faithfulness’; and ‘faith’ and ‘faithfulness’ and ‘faithfulness’ are used to express the same thing. The word ‘faith’ is frequently used to express the idea of reliance upon the promises of God, and the assurance of salvation. The term ‘faith’ is frequently used to express the idea of reliance upon the promises of God, and the assurance of salvation.

In the earlier ages of the church the chief controversy of theologians, especially in the East, ran upon metaphysical questions concerning the mysteries of the Church. The doctrine of the Trinity, the divinity of Christ, the inspiration of the Scriptures, and the divinity of Jesus Christ [Confer].
The opinions of Luther and Calvin on the subject of faith and predestination have been since considerably modified by many Protestant divines, who have admitted that the will of man must co-operate in order to obtain the grace necessary for justification. The Roman Catholic church admits the merit of good works and repentance, united with faith for the obtaining of salvation; but it requires absolute faith in all the decisions of its General Councils in matters of doctrine, without the least liberty of investigation on the part of the laity, and without any doubt, for doubt itself is held to be sinful. The Reformed and Protestant church, in particular, speaking the language in the fundamental dogmas of Christianity as an essential requisite for salvation.

Fakenham. [Norfolk.]

Fakir, an Arabic word meaning poor, which is applied to several parts of the eastern world. In this sense it is synonymous with the Persian and Turkish derwish. The word fakir is chiefly used in India. There are fakirs who live in communities like the monks of the western world, and others who live singly as hermits, or, as it is called, are barefoot and display all the marks of mendicancy.

Falkland, and others are fanatics or idiots. [Derwish.]

Falaize, a town in France, the capital of an arrondissement, in the department of Orne, near the source of the river Odon, which flows into the Dives. It is 127 miles from Paris, through Versailles, Dreux, Verneuil, and Argentan; in 48° 53' N. lat., and 6° 14' W. long. The ancient castle of Falaize was one of the residences and strongholds of the dukes of Normandy. It was here William the Conqueror, after his coronation, received fourteen sieges at different times, in the early troubles of the duchy of Normandy; in the wars of Henry I. of England with his brother Duke Robert and the Norman lords; in the invasion of France by Henry V. (A.D. 1417); in the expulsion of the English from France (A.D. 1450); and in the war of the League, in which Falaize was taken by Henri IV. in person (A.D. 1589). The fortifications, which were much injured in these attacks, are at present in a very dilapidated state: the walls have been partly or wholly demolished. This little town, in the suburb of Guibray, is one of the proudest relics of Norman antiquity: its walls are in some parts eight or nine feet thick.

The town stretches along the rocky ridge which bounds the fertile valley. The streets are wide, and the public fountains impart a freshness to the appearance of the place. Before the Revolution, there were twelve churches: there are now only four; two in the town, and two in the suburbs.

Falkirk was 9419 for the town, or 9581 for the whole commune. The inhabitants carry on a considerable manufacture of cotton yarn and hosiery. There is a large fair held in the suburb of Guibray, which is much frequented: it continues from the 15th to the 30th of August each year. This town has a tribunal de commerce, or court for commercial affairs, a high school, an agricultural society, and a theatre.

The arrondissement of Falaize contained, in 1832, a population of 62,349. The chief manufactures carried on in it are leather and paper. There are also many oil-mills.

Falah. [Abyssinia, p. 58.]

Falco. [Falcon.]

Falcon. [Falcons.]

Falconer, William, was born about the year 1730, but he commenced his profession as a merchantman, and was afterwards second mate of a vessel in the Levant trade, which was shipwrecked on the coast of Attica, himself with two others being the only survivors. This event laid the foundation of Falconer's fame, by forming the groundwork of 'The Shipwreck,' which poem he published in 1762. The notice which the poem received enabled him to enter the navy, during the ensuing year, as midshipman in the Royal George. After some other appointments, he became purser to the Aurora frigate, and was lost in her somewhere in the Mozambique Channel, during the outward voyage to India, in the winter of 1769.

Falconer was the author of a 'Nautical Dictionary' of considerable merit, as well as of some minor poems: but his chief claim to reputation consists in 'The Shipwreck,' the moral of which is owing to the vividness and power of description which pervade the work, and to the facility the author has shown in introducing nautical language. His style is formed on a model which may now be thought erroneous, and is certainly the most artificial imaginable—that of Pope; and the mixture of phrases, such as 'weather back-stays,' 'parrels, lips, and chaw-lines,' with the affectations of 'nymph,' 'swain,' 'Paphian graces,' etc., forms rather a ludicrous contrast. To call 'The Shipwreck' a first-rate poem, or to compare it with the Æneid of Virgil, would not now enter into many men's thoughts, although this was done at the time when it first appeared. Some might even assert that where there is no imagination, there is no poetry; but with all these limitations we must allow that Falconer has done what no one else ever attempted, and we must give him a high place among the writers of didactic poems.

(See Clarke's and Pickering's editions of The Shipwreck; Ireland's Life of Falconer; Chalmers's Dict. of Biog.)

Falconet, Etienne, was born at Paris in 1716, of poor parents, of a family originally from Savoy. He studied sculpture under Lemoyne, whom he soon surpassed. He executed several groups and statues, which are at Paris, in the church of St. Roch, in the Musée des Monuments Français, and in several private collections. In 1766 he accepted the invitation of Catherine II. to repair to Peters burg, in order to execute the colossal statue of Peter the Great. He remained in that capital twelve years, during which time he completed his work, which is now in the square called the Square of the Senate, and is perhaps the finest specimen of an equestrian statue existing. As he and the Russian founder appointed to cast the statue could not agree, Falconet cast it himself. He produced a tremendous block of granite, weighing about 1700 tons, which was found in some marly ground at a considerable distance from Petersburg, and was brought to the capital by machinery. Catherine, who had shown him the greatest attention during the first years of his residence in the Russian capital, grew cool towards him at last, owing to the misrepresentations of some of her courtiers. Falconet returned to Paris in 1778. In May, 1783, as he was going to set off for Italy, a country which he had never visited, he had a paralytic stroke. He died the next year several years, and died in January, 1791. In temper he was eccentric and blunt, but generous and warm-hearted. While at Petersburg he kept up a correspondence with Diderot, which is printed in Diderot's works. He wrote treatises and commentaries on the laws of Perspective, of which treat the sculpture and painting of the ancients: he also wrote 'Observations sur la statue de Marc Aurele,' in which he does not spare in the admiration expressed by many for that work. In general, Falconet had no great veneration for the ancients. All his writings were published under the title, 'Œuvres Complètes de Falconet,' 3 vols., 8vo, Paris, 1809, to which is prefixed an account of his life.

Falconidae. Leach's name for a family of Raptores, or birds of prey. (Raptores of Illiger.) In this family the destructive powers are considered by zoologists to be most perfectly developed; and we find in the bird, composing it natural instruments for striking, tripping, and dissecting their prey, combined with a power of flight and strength of limbs equivalent to the necessities of the race, while the prey be aerial, that is, whether the bird of the captorial bird is in question to strike down its quarry while the latter is in the act of flight, or whether the prey be terrestrial, or, in other words, captured on the ground. Of these natural weapons some ideas may be formed from the cues here given,—
each feather narrow, firm in consistence, the second the longest, and all gradually tapering to a point, is also best adapted for rapidity of motion, may be inferred from the example in the various species of the genera Hirundo, Scopae, Tringa, Charadrius, Procellaria, Sterna, & c.; but that extent of surface and this peculiarity of form in the wing is not in themselves sufficient to the needful flight, is proved in the genus Larus, the species of which, though capable of exercising their immense pinions with graceful ease for hours in succession, without any apparent insufficiency, are still not capable of rapid flight, for want of strong pectoral muscles. The numerous examples also furnished by the Gallinaceous tribe sufficiently evince that immense pectoral muscles are insufficient when coupled with a small round wing, and afford but a short flight, sustained with great labour, rapid in a small proportion only to the strength and repetition of the pinions, but accompanied by a motion too well known to need further remark. So material also is the perfection of the feather in the genus Falco, that when any of these of the wing or tail are broken, the flight of the bird is so injured that falconers find it necessary to repair them. For this purpose they are always provided with pinion and tail feathers accurately numbered, and the mode of uniting the more perfect feather to the injured stump is described in Sir John Sebright's excellent observations on hawking. The reader who is disposed to go farther back will find in the 'Book of Falconry or Hawking,' &c., &c., 'heretofore published by George Turberville, Gentleman,' (London, small 4to. 1611,) the following chapters:—Of Accidents that happen and light upon a falcon's feathers, first how to use the matter when a feather cannot be replaced. The way and manner how to ymp a hawk's feather, however it be broken or bruised; and four methods of operating, according to the circumstances, are detailed. 'How to ymp the traine of a hawke being all broken, and never a feather whole or sound.' Mr. Yarrell observes to observe that it is difficult to estimate the comparative rapidity of flight in different birds, and that our pigeons may appear to possess this advantage in a degree little inferior to the true falcons; but, asubida, the fact still is that these birds are deficient in natural courage, and are unstable, under circumstances, to avail themselves of those powers with which they are gifted. 'The bodies of all the species of true falcons,' writes Mr. Yarrell in continuation, 'when denuded of their feathers, are triumphant in form, broad at the shoulders and tapering gradually to the tail, the muscles of the thighs and legs of great size; but these characters are less prominent in the hawks, the bodies of which are more lengthened, the legs long and slender, the pectoral muscles smaller, the wing rounded in form, the fourth feather the longest, the wings primaries broad, and in the middle of the pinions, the lappet the next in succession, and emargined towards the end. These two divisions of the genus Falco, although the latter are unequal to the former in powers, are remarkable for their lightness, swiftness, and rapid flight, their inevitable mode of striking their prey on the wing, as well as the instinctive knowledge by which they are directed to destroy life, attacking the most vital part, and penetrating the brain with their sharp hooked beak, either by one of the orbits where the bone is very thin, or at the junction of the cervical vertebra with the occiput.' On comparing the bones of our two British eagles, the greater power of flight appears to belong to the Albitcilla, that of prelusion to the golden eagle, but both exhibit various indications of great strength. By an extended examination of the different species of buzzards and harrriers, it will be found that the characters described as necessary to produce rapid motion decline gradually. The sternum decreases in size, the keel loses part of its depth, the clavicles and furcula become more slight, while the form of the cranium, the long bill, and the neck, as well as the general downy texture of the plumage, indicate the approach to the genus next in succession. Of the bones of the different species of the genus Falco, generally, it may be added, that they are remarkable for their strength, such as are oviform, being alternated with numerous transverse bony processes within the tubes, and the distribution of air throughout their internal cavities. The humerus is supplied with air through several orifices upon its inner and upper surface, and some difference will be found in the angle at which this bone is articulated with the clavicle to accomplish the ascending flight of the sky.

![Image of the Peregrine Falcon](image-url)

**Foot of the Peregrine Falcon.**

The power of flight, as Mr. Yarrell observes in his memoir, is one of the decided marks of the distinct organization of birds; and, as one division of the first genus, Falco, appears to possess this power in the highest degree of perfection, he proceeds to consider the conditions necessary to produce such a degree. These, he observes, are a large and powerful pectoral muscles; great extent of surface, as well as peculiarity of form in the wing; and the breadth of the sternum and depth of its keel, as affording a good surface for the attachment of the large muscle by which the wing is depressed. As an illustration of this form the breast-bone of the peregrine falcon (Falco peregrinus) is represented, which ex-...
lack, in contradistinction to the precipitous horizontal direction of the falcons. The thigh bone is also supplied with air by orifices at the situation which answers to the front of the great trochanter; the large bones forming the pelvis, the vertebrae, sternum, furcula, clavicles, scapula, and even the ribs, are all furnished with apertures for the admission of air. All the various muscles, the arms, the sides, and thorax. This distribution of air to the bones does not seem however to be absolutely necessary for flight, since young birds of our summer visitors appear to perform their first autumnal migration with perfect ease and celerity, at an age when the cavities of their bones are filled with marrow.

The various characters of the feet are too obvious to require particular notice.

The reader is referred to the article Bruns for the details of the formation of the Falconidae, as exemplified in the Sparrow Hawk (vol. iv., pp. 424, 425), and we shall now endeavour to give a sketch of the other internal parts worthy of notice, and especially of the organs of the senses.

Organs of Digestion.—In the Museum of the Royal College of Surgeons in London (Physiological Series), the reader will find a preparation (Gallery, 522 A.) of the stomach of the golden eagle. It is laid open, so as to show the orifices of the numerous gastric glands of the proventriculus, the smooth lining membrane of the gizzard, and the valvar structures. The anterior part of the gizzard is very wide, and externally it appears to form one continued cavity with the proventriculus and stomach. On the outer surface of the latter may be observed the two shining tendons from which the muscular fibres radiate; these however form a very small tendon and others, the short small quill is passed through the pylorus, which is guarded within by three cuticular tubercles, two on the upper side of the orifice and one below which fits into the interspace of the preceding. The crop has not been preserved in this preparation, but J. L. Herre, in his 'Observations on Digestion' ('Animal Economy'), says, 'There are few animals that do not eat flesh in some form or other, while there are many who do not eat vegetables at all; and therefore the difficulty to make the herbivorous eat meat is not so great as to make the carnivorous incapable of digesting vegetables. Where there is an instinctive principle in an animal, directing it either to the one species of food or the other, the animal will certainly die rather than break through of its own accord that natural law; but it may be made to violate every natural principle by artificial means. That the hawk tribe can be made to feed upon bread I have known these thirty years; for to a tame kite I first gave fat, which it ate very readily; then tallow and butter; and afterwards bread rolled in fat or butter; and by decreasing the fat gradually the kite ate bread naturally, and seemed to thrive as well as when fed with meat. This, however, produced a difference in the consistence of the excreta; for when it ate meat, they were thin, and it had a tendency to expel them at a short distance; whereas when it ate bread, they were firmer in texture, and dropped like the excrement of a common fowl. Spallanzani attempted in vain to make an eagle eat bread by itself; but by inclining the bread in meat, so as to deceive the eagle, the bread was swallowed and digested in the stomach.'

Mr. Yarrell observes, that the esophagus offers nothing peculiar beyond that of other birds not possessing the power of minutely dividing their food. It is plicated lengthways, allowing great extension, and its separation from the stomach is a zone of muscular fibres. The author notices an opportunity which occurred to him of observing the castings or pellets of some eagles, which had been occasionally fed with dead pigeons. These castings showed that the vegetable food, such as peas, wheat, and barley, were digested in the crops, and that the small quill in size. The canal in most of the species, he adds, is in length, compared with that of the bird itself, as three to one; but in the Osprey it is as eight to one; and he observes that in the otter the intestinal canal is very long, equal in size, and without appendages; the seal, too, has long intestines with a small cecum. Mr. Yarrell inquires therefore if it may not be concluded that the small quantity of nutriment which fish, as an article of food, is known to afford, renders this extent of canal necessary in order that every portion may be extensively digested. In the Falconidae amount to no more than minute rudiments.

Organs of Respiration.—There is nothing very remarkable in these organs among the Falconidae. The trachea is composed of two membranes, inclosing between them numerous bony rings, forming a mole less perfect tube. The rings are strong and compressed. The point of divagation, the cross- bone and bronchi constituting together the inferior larynx, are of the most common form, having but one pair of muscles attached; and the veins, though superficial, are not exposed. The condition and structure of the external parts of the organs of the senses are the same as in the former preparation. (Yarrell.) Falco muscicuus seems, however, to be an exception, and it would be desirable to examine its trachea for the purpose of ascertaining whether it is not organized more after the fashion of that of the singing birds.

Organs of Sense.—In the same Museum (same series, No. 1482) will be found the tongue, larynx, and lower jaw of the Golden Eagle (Aquila chrysaetos). The tongue is fleshy and large, divided into two lateral portions by a deep longitudinal furrow; at its base is a series of small retroverted spines, which cover the tongue on the posterior, and the larynx the surface is studded with the orifices of numerous glandular follicles: two rows of retroverted spines again occur behind the larynx. There is a row of glandular follicles on either side of the frenum lingue, and a large papillose ciliation extending from which the skin of the whole of the preparations No. 1483 and 1484 exhibit respectively the tongue and sauces of an Erne (Haliatectis albicilla), and the tongue and larynx of an Osprey (Pandion haliatectus).

Smell.—A longitudinal section of the anterior part of the head of the Golden Eagle will be found in the same Museum and series (No. 1538). The preparation shows the turbinate cartilages and cavity of the nose, together with part of the orbit and the air-cell continued from it anteriorly, and situated below the nose. The parts are minutely dissected, and the nasal cavity, which is covered by the skin of the embryo covering the middle turbinate cartilage is well displayed. No. 1539 is a transverse section of the head of an Erne (Haliatectus albicilla), showing the convolutions of the middle turbinate cartilages, and the disposition of the pituitary bodies, which are in the special side of the convolutions. The air-cells in the superior maxillary bones, and their communications with those which are situated in front of the eye-ball, are well seen in this preparation. Bristles have been inserted into the lachrymal ducts, and into the commissural tube of the Esutchan tubes, the respective conduits of the eye and ear for conducting their superficial moisture to the nasal passages. An anterior transverse section of the head of the Osprey (Pandion haliatectus) is also exhibited, in which the internal nostrils, the anterior terminations of the middle turbinate cartilages, and of the lachrymal ducts, in which bristles are placed; together with the communications of the maxillary air-cells with the cancellous structure of the bones, are well exhibited. (Engelhard. iii.)

Hearing.—Nothing remarkable.

Sight.—'The extraordinary powers of vision,' says Mr. Yarrell, 'which birds are known to exercise beyond any other class of animals are in no genus more conspicuous than in that of Falco. Their diminution, preserving themselves as they occasionally do into the highest regions and the power required of perceiving objects at very different distances and in various directions, as well as the rapidity of their flight, seem to render such a provision necessary. The eyes of birds are much larger in proportion than those of quadrupeds, and exhibit also two other peculiarities. The one is the marupum, a delicate membrane arising at
of vision. No. 1796 exhibits the eye-sall, with portions of the horizontal eye-lid, the vertical eye-lid, or membrana nictitans, of an eagle. The quadratus nictitantis may be observed to have a more extensive origin than in the ostrich, and may be affected by the curves of the third membrane of the eye is relatively larger. The cornea is cut away, and the nictitating membrane raised, to show the termination of the ducts of the lacrimal glands, in which a bristle is placed. Bristles are also placed through the two puncta lachrymalia. The round and slightly con-

cave tarsal cartilage of the lower eye-lid may be observed: the upper lid has no tarsal cartilage. In No. 1797 the three eye-lids of an eagle are exhibited, and the tarsal cartilage, which is raised as in the act of closing the eyes, is shown. (Cat. Gallery, Physiol. Series, vol. iii.)

NATURAL HISTORY.

Aristotle divided the Falconidae into "Araur or Aratii (Eagles), "Ipsa (Hawks), and "Ariror (Kites), with many subdivisions. Mr. Vigors is of opinion that the division Ipsa (Hierax) of Aristotle comprises all the Falconidae of Vigors which belong to the sparrows or sub-families of Haustor, Falco, and Buzzard. Pliny separates the group into Aquila (Eagles) and Accipiter, a general term comprising as used by him, the rest of the Falconidae. The subdivisions of both Aristotle and Pliny do not differ much from the subdivisions of some of the modern zoologists.

Below, beginning with the Gallo-ligurian, I shall proceed from them to the Eagles; thence to the Gerfaut, which he gives as the Mornnus, Morphynh, Nilothophos, Flangos, Blanctus, Flangus, and Clangus of the Greeks, and Anataria of the Latins; next he places the Orfaque, which he makes the Halitatus, or the smell of fish, any power of vision beyond their generic companions, would be difficult to as- certain: but it may, while on this subject, be worthy of re- mark, that the trident of the Gryfalcon, Peregrine, Hobby, Merlin, and Kestrel, are hazel-brown, or still darker, while those of all the hawks, buzzards, harriers, and kites, are of various shades of yellow. I refer only to adult birds, and do not remember a single exception.

Mr. Yarrell observes, that the number of bony plates forming the beak of the Golden or Buzzard; in the White-tailed Eagle there are but fourteen: and he adds, that the external convex form of the bony ring in the Golden Eagle will be found to extend through all the species of every genus of British birds, except the owls, in the following series.

In the Museum of the College of Surgeons (Physiological Series, Gallery) are the following preparations illustrative of this part of the subject. No. 1741. The head of an eagle, with the eyes in situ. In the left eye the anterior part of the tunic and the humours have been removed to show the iris expanding from the oblique line by which the optic nerve terminates, and the vascular processes of the murrellus extending forwards from the centre of the optic fissure. In the right eye a lateral section of the coats has been removed, together with the humours and a great part of the iris, showing the uniformly dark-coloured chroidy, the thin but dense texture of the sclerotic, and the zone of circular plates which supports the projecting cornea. The murrellus is preserved in situ. It is of an unequal quadrilateral figure, consisting of two membranous partitions, the one placed in the nasal and the other in the nasal side of the eye-ball. The large size of the eyes is worthy of notice. No. 1742 exhibits a longitudinal section of the eye of an eagle, showing the oblique manner in which the eyes are turned to the extremity of the head, and the termination, from which the retina expands in a plaited manner: only the folds at its origin are here preserved. The parts being minutely injected, the vascularity of the choroid shown; also the breadth of the ciliary zone, the breadth and the thickness of the surrounding base of the cornea, the thickness of the corneal vault, and the large size of the anterior chamber of the eye. No. 1743 is the eye of an eagle, with a portion of the coats removed from inside, showing the blood-vessels and fibres of the membrane, from which the colouring matter has been removed. In No. 1338 above alluded to portions of the eye, and eye-lids with the nictitating membrane are preserved, showing the situation of the two puncta lachrymalia, through which the ducts are passed along the ducts to the nose; and in No. 1598, at the back part of the preparation, the left eye-ball is laid open, showing the membranous of the eyelids. The right eye-ball is entire, and the adductor, at- tenua, and deprimens ocularis, together with the quadratus pectoralis, and the membranous structures are well displayed. See also No. 1540, as referred to the organs of vision.

* Annals of Philosophy for March, 1818.

The Greater, and these either.

The more general, called Eagles: the Golden Eagle, the Sea-Eagle, the Black Eagle, &c.

The more cowardly and sluggish, called Falcons.

The more savage, and want to be restrained and manacled for halting, or being held in their flight, which our fal- cons, distin- guish into.

The more cowardly and sluggish, or eludic, and therefore by our falcons neglected, and permitted to live at large.

The Greater.—The Common Buzzard, Bird Buzzard, &c.

The Lesser.—The Buzzard, or Bated Buzzard, &c.

Europe: Bucconia; or the Buzzard, Bated Buzzard, &c. BIRDS OF PARADISE.
De Blainville divides the Raptatores into the Diurnal and the Nocturnal. The former he divides into the Anomalus (the Secretary, Serpentarius); and the Normal (Falco, Linn.).

M. Latrèille separates his first order of terrestrial birds into 2 families: 1st, The Vulturini (Vultures); 2nd, The Accipitlines. The latter consists of the genera Aigle, Pygargue, Baldouzard, Harpie, Aigle-Autor, Asturine, Messager, Autor, Epeire, Elaine, Milos, Bunode, Falco, Pavin, Gerfaut.

C. L. Bonaparte (Prince of Musignano), in his Tabella Analitica, divides his 'Ordine' Accipitri into the 'Familia Vulturini', and the 'Familia Rapaces.' These last are separated into the Diurni, with eyes on the sides of the head, 'Ocelli,' and the Nocturni, with eyes on the face, 'Ocelli sulla faccia.' His diurnal rapacious birds consist of two genera, viz., Gypaetus and Falco. The latter comprises the following subgenera: - Aquila, Haliaeæc, Pandion, Falco, Astur, Milos, Elanus, Buteo, Circus.

M. Lesson, in common with other zoologists, separates his first order, the Birds of Prey, Accipitres, or Rapaces, into the diurnal and nocturnal. The first embraces three families: - 1st, The Vulturines; 2nd, The Falcons, or Falco-nides, which he subdivides into the Noble Birds of Prey, viz., the genera Falco, Hiero-Falcon, Physita, and Gen-sonyz; and the Ignoble Birds of Prey, viz., the genera Aquila, Haliaeæc, Pandion, Circacæ, Caracara, Harpyæ, Morphonæ, Cyphæpes, Astur, Milos, Ictinia, Elanus, Naucérida, Pernis, Buteo, Circus. 3rd, The Messagers, or Serpentarius consisting of one genus only, Serpentarius, the Secretary Falcon.

Mr. Swainson (Fauna Boreali-Americana) remarks that in contemplating the diurnal birds of prey, arranged by Linnaus under the genus Falco, we can be at no loss to trace the traditional habits of Falcon and Harpy, and the Sparrow-hawks. Their peculiarities, he adds, did not escape the notice even of the earliest systematic writers, and the moderns, he observes, have only confirmed the justness of the distinction. But with regard to the remaining genera of birds of prey, the information is more scattered, and it exists; not, indeed, as regards the leading divisions, for here likewise the ancients had long ago anticipated our distinctions between the Eagles, Kites, and Buzzards. It is not, therefore, to these groups, taken per se, that any doubts can attach on their respective peculiarities, but rather to their relative rank with those that are considered typical. These doubts, in Mr. Swainson's opinion, can only be solved by analysis; and from an attentive consideration of the difficulties arising from the want of materials in our museums, and the other difficulties, it is evident that the subject has occupied several modern writers upon this family. He admits that it has been sufficiently proved that the various forms of which it is composed exhibit, as a whole, a circular succession of affinities; but the true series of the secondary affinities varies, and may be either of a composite or of a simple character. He made out: he adds however, that the inability to state in what way the falcons or hawks form their own respective circles cannot militate against the belief that such is their true distribution. It remains, therefore, continues Mr. Swainson, to be considered whether there is presumptive evidence to believe that the three remaining divisions, namely the Buzzards, Kites, and Eagles, form one circular group, independent of their affinity to the two former. The true Buzzards, of which the Vulgares - and the Lagopus mansoni - are the types, are slender, rather long-winged birds; the other types, viz., the Buzzards (Circus of Bechstein), and the Messager or Serpentarius (Serpentarius of Cuvier, Grypoganus of Illiger).

Vieillot divides his first order, Accipitres, into the Diurnal and Nocturnal tribes, making the first tribe to consist of three families: 1st, Vulturines, among which he places the Caracara; 2nd, Gypaetes; 3rd, Accipitres, consisting of the genera Aigle, Pygargue, Baldouzard, Harpye, Buteo, Milos, Elanus, Ictinia, Faucon, Physita, Harpye, Spizaste, Asturine, Epeire.

Mr. Vogors thus arranges the Falconidae.

** TYPICAL GENRES. **

** Sub-fam. Accipitres. **

Beaks short, strongiy toothed. Prey of small size.

Beaks long, slender. Prey of medium size.

** Sub-fam. Falcoidea. **

Wings long. ** Sub-fam. Falcoidea. **

Wings short. ** Sub-fam. Accipitres. **

AXEME GROUPS.

Beaks hooked (adnexes) from the base. Wings long. ** Sub-fam. Ulurines. **

Beaks hooked from the base. Talon forked. Wings very long. ** Sub-fam. Ulurines. **

Beaks hooked at the apex only. Long-winged. ** Sub-fam. Aquilina. **

Short-winged. ** Sub-fam. Accipitres. **
Form between the Buteo vulgaris and Falco. We here see a large-sized, heavy bird with shorted wings, not reaching to more than half the length of the tail; while the elongated bill, unlike either that of Buteo or Falco, obviously assimilates to that lengthened form which belongs to the eagles. Now, upon the supposition that a bird so constructed is intended to fill up the interval between Buteo and Falco, and at the same time to unite the former with the eagles, the singularity of its structure is no longer surprising: but if we consider it with a simple reference to the passage between Buteo and Falco, we are almost tempted to suspect that, in this instance, a real saltus has been made. While upon this subject we may cite an acute observation made by Prince C. Bonaparte, that 'the Borealis is almost as much an Astur of the first section as a Buteo;' a proof, at least, that its affinities to Astur and to the abertant eagles adjoined by that group have not escaped observation. Our idea that the buzzards are truly united to the eagles is still further strengthened by the Buteo pterocles, Temm. In this species the wings, as in Buteo, are remarkably long, but the bill is so considerably lengthened, that were we to judge alone from this member, we should have no scruple in placing the bird among the Aquilae. On the other hand, it must be remembered that, as every group, from the highest to the lowest denomination, when perfect, contains a representation of the other four, united to a form peculiar to itself, so we might naturally expect that one division of the buzzards would represent the true eagles. To ascertain, therefore, whether the resemblances above stated are those of analogy or of real affinity, recourse must be had to strict analysis. Now this, in our present state of knowledge, cannot be done, at least from the resources to be found in this country. We have thought it advisable to cite the above facts, drawn from the structure of the birds themselves, as likely to awaken the attention of ornithologists to a further investigation of the subject; they will, at least, show that our opinion on the union of the three aberrant groups is not entirely without foundation. Mr. Swainson considers the relative value of the whole group equivalent to that of Vultur or Strix in its own order, and to the families comprising the Rauex, Gruallatores, and Nautatores, as their principal distinguishing characters. But we need not consider the subordinate forms as sub-generic, but in considering the five forms of the Falconidae as genera, rather than sub-families, he guards himself against the supposition that he may mean to insinuate that the minor distinctions which have been dwelt upon by several able ornithologists who have investigated this family, are either trivial, or that they deserve not to be brought immediately before us. On the contrary he recommends to others the plan adopted by himself, viz. the minute examination of every change of structure, and the assembling together in minor groups such species as agree in certain peculiarities. Further, he would proceed, in certain cases, even to impose a name upon such groups, but in a family already so crowded by genera names he considers it essential to preserve a distinction between groups of unequal value; and not to elevate sub-genres, or forms of transition, to a rank they do not hold. Milvago, Polyborus, Daptrius, and Hygaster, are, unquestionably, in his opinion, of the latter description, each confined to one species, and he says that he has another of the same natural group in his cabinet, equally deserving of a patronymic name. By regarding these genera, each, as he thinks, is made equivalent to the whole genus of typical falcons; whereas, by representing them as lesser variations, which he considers in truth to be the student immediately perceives that their station is subordinate.

The genera into which Mr. Swainson divides the Falconidae are Falco, Accipiter, Buteo, Cynipida, and Aquila; and he gives the following table as the concentration of his remarks in reference to the sub-genres of Falco.*

* The characters of the sub-families and genera are from those given by Mr. Vigors.

<table>
<thead>
<tr>
<th>Sub-genres</th>
<th>Genera of the Falconidae</th>
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<tbody>
<tr>
<td>Falco</td>
<td>Pre-eminently typical; bill acutely toothed; wings pointed, rather long.</td>
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<tr>
<td></td>
<td>Falco</td>
</tr>
<tr>
<td></td>
<td>2. Sub-typical group.</td>
</tr>
<tr>
<td>Harpagus</td>
<td>Accipiter</td>
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</tbody>
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Lophotes. Feet short; head crested. Aquila. (Feet small, very short; soles broad and flattened; outer toe and claw shortest.)

Arctela. Bill neither notched or (nor) strong.

Camptonyx. (Bill neither notched or (nor) strong.)

3. Aberrant group.

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Mr. Vigors, who, as we have seen, first proposed the application of the Quinary System to the Falconidae, and indeed to the birds in general, thus defines the family which is the subject of our inquiry, and thus follows out his arrangement:

FAL. CO. (Lesci.)

Head plumose. Beak strong, hooked, with a cere at the base. Nostrils lateral, more or less rounded, open and situated in the cere. External toes especially connected with the middle toes. Claws or nails strong, very sharp, very much incurved, and retractile.*

1st. Sub-family, Aquilina.

Beak long, hooked at the apex only. Fourth quill the longest.

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Long-winged Eagles.

Genera. Bycter (Vieill.)

Beak convex above. Lower mandible notched at the apex, and subaeute. Cere naked. Cheeks, throat (gula) and crop (jugulum) featherless. Claws acute.

Mr. Vigors remarks that the type of this genus is Falco aquilinus of Gmelin, Petit Aigle d'Amérique of Buffon, and that he believes it still stands single in the genus.

Description. Beak carunculate; cere and feet yellow; orbits yellow; tibias orange; body above, greyish; below, red going into white; neck purplish to rufous; claws black. Gmelin gives it as the Red-throated Falcon of Litham.

Locality. South America.
Daptrins. (Vieillot.)


'How far,' writes Mr. Vigors, 'the two preceding genera of Mr. Vieillot are sufficiently distinct from each other, or from the remainder of the naked-checked Eagles, it is not for me to hazard an opinion, without the opportunity of more accurate examination of the birds than is at present within our power, and a more accurate knowledge of them than a more description affords us. It would appear, however, that one group at least, that of Buteo, is sufficiently distinguished from the other Halcyonids with the naked checks, by the difference of its food and habits. The accounts which have reached Europe of its mild and gentle manners and vegetable food have even induced some naturalists to refer it to the Gallinaceous Birds. I have strong doubts indeed whether the birds that compose this genus may not belong to quite a distinct station from the present, and be referable to one of those groups which I have elsewhere observed to be wanting among the Birds of Prey, to perfect that chain of affinities which is to be found complete in all the other orders. It is impossible, however, at present, to come to any decision on the subject. While our materials for classification are scanty, the most that is in our power is to conjecture the place which more perfect information will enable us to assign any group hereafter. For the present, therefore, I leave these genera before us in that situation, between the Vulturidae and the Falconidae, which they have hitherto been generally supposed to fill.'

Example. Daptrins atricollis.

Description.—Black with bluish reflections; tail white. Mr. Vigors' and Mr. Prévost's, each with a marked white cheek. 

Head and Feat of Daptrins atra.

Polyborus. (Vieillot.)

Break compressed above. Lower mandible entire and obtuse; cere covered with hairs, large; cheeks and throat featherless; crop woolly. Example, Polyborus brasiliensis, Polyborus vulgarius, Vieillot. The Brazilian Caracara.

We select Mr. Bennett's Description and general history of this species as the most complete. After giving the generic characters, and observing that the wings nearly equal the tail in length, that they are of a rounded form with the third and fourth quills longest; that the legs are rather long; the bill long and broad, and thick, without a hooked point; and the claws moderately long and curved, but with little or no tendency to the extreme of grasping, the last-named author thus proceeds:—In the Brazilian Caracara the whole upper surface of the head is black, with the feathers slightly elongated backwards, and the bill capable of being partially elevated in the shape of a pointed crest. The entire neck is of a light brownish grey, which also forms the ground colour on the breast and shoulders, but with the addition on these parts of numerous, minute, white bars of a deeper brown. Nearly all the rest of the plumage is a mixture of blackish brown, with the exception of the tail, which is at the base of a dirty white, with numerous narrow, transverse, unshaded bands of a dusky line; and, in its terminal third, black without any appearance of banding. The beak is horn-coloured at the tip and bluish at the base; the nares and the cere are streaked with dusky, and the eye is black. Such at least are the colours of the living specimen in the Society's garden. Several other specimens, however, place in the plumage of the bird as it always varies, in its general structure, and these are streaked with dusky, and in the cere and the eye as above. The eye, however, in each case varies with the position of the bird in the cage, and the beak is not as in the above description.

(The Garden and Menagerie of the Zoological Society, delineated, vol. ii.)

The same author observes that Maregrae [Maregrae] was the first to introduce into Europe the name of Caracara, the vulgar appellation of the bird in Brazil, derived from its hoarse and peculiar cry. But although M. Cuvier regards Maregrae's Caracara as identical with the species described by Mr. Bennett, the latter remarks that both the figure and description of this species have been much at variance with what he feels himself compelled to adopt in preference to the opinion of Professor Lichtenstein, founded upon the original drawing, that they belong to a totally different bird. Mr. Bennett is consequently unable to trace the history of the true Caracara beyond the year 1794, when a figure and description were published at Vienna by the younger Jacquin, from his father's papers, under the name of Falco cheriway. These do not differ from that of Maregrae, but the latter remarks that the figures of the birds have the head and neck more upright, and the tail longer than those of the bird in the figure of Maregrae, and that the body is more compressed. In the present edition of the Regne Animal, observes that the Falco cheriway of Jacquin may be nothing but a variety of age. Mr. Bennett then notices the very complete description of the North American Caracara, in the figure of D'Orleans. According to this author, the full-grown bird measures 21 inches in length and 3 feet in the expanse of the wings. Its colours agree with the description given, excepting that the first six quills-feathers of the wings are white, marked with rays and spots of brown, as in the young bird, blackish towards the point; the back is transversely rayed with brown and white, the latter predominating on its upper half, and vice versa: the fore part of the neck and breast are traversed by dusky lines mixed with a larger proportion of white; the cere is of an orange hue; and the upper and lower sides of the head are almost white. This description, Mr. Bennett remarks, very nearly coincides with that of M. Cuvier, taken from specimens in the Paris Museum, and with the figure of one of these specimens given by M. Vieillot in his 'Galeries des Oiseaux;' and Mr. Bennett then refers to the figure given by Mr. Spix in his 'Birds of Brazil,' as the young of this species, which resembles M. Vieillot's in its form, except that the legs are longer and thicker, and the tips of the wings reach to the extremity of the tail. In colour it is either of a darker brown, approaching more nearly to the Society's specimen alluded to by Mr. Bennett; the throat is light brown instead.
abundant in the south and east of Brazil (Prince of Neuwied); Spix’s specimens were from the northern provinces; less numerous on the Rio de la Plata than in Paraguay, where it is almost equal in number to all the other birds of prey put together (D’Azara); Strigats of Magallanes (Capt. Phillip Parker King, R.N.).

N.B.—There are now (1837) two fine specimens in the garden of the Zoological Society in the Regent’s Park.

Mr. Bennett’s provisional species Polyborus (?) (hypoleucus) was founded on the Angola Vulture of Pennant, Vultur Angolensis of Gmelin, in an immature state of plumage.

Dr. Smith proposed the genus Polyboriodes on the Falco Gymnogenys of Temminck in the South African Journal, in April, 1830, and M. Lesson, in the November of that year, separated the same form under the generic title Gymnogenys.

From Byceter and Polyborus Mr. Vigors passes to the Fishing Eagles, and particularizes as the first Pandion (Savigny).


Example, Pandion Haliaetus.

Locality. The bird extends over a considerable part of South America; the island of Aruba, on the coast of Venezuela (Jaquin); Brazil and Paraguay (Cuvier); most

P. C. No. 616.
Its hill, be adds, is more compressed than that of *Pandion*, its *acrotarsia* is seattled, and the 4th quill feather, as in *Haliæetus*, is the longest. It thus stands, in the opinion of Mr. Vigors, osellent between the two groups. For the description and natural history of Pandion *Haliæetus* see *B. Jour. N. Y. Z.*, vol. iii., p. 319.

The last group of the *Fishing Eagles*, according to Mr. Vigors, is comprised in the genus

*Haliæetus* (Savigny). &c.


Mr. Vigors notices the difference of this form from *Pandion* in the structure of the nails and the more compressed ossification of the *acrotarsia*, also, which have the acrotarsia seattled and are feathered half way below the knee.

There are several species; for instance, *F. leucopherus*, *F. albicilla*, *F. Ponderianus*, *F. flagus*, *F. vocifer*, &c. &c.

Balkeo, *Haliæetus leucopherus*.

Before we proceed to the description of our example, it may be necessary with Mr. Bennett's assistance to clear up the confusion which, as he observes, has existed in the synonyms of *Haliæetus albicilla*, the difference of the coloration of the plumage in the various stages of its growth having induced authors to record it under several different names.

Three of these were almost universally admitted till about 26 years ago, when the result of Mr. F. Cuvier's observations on individual differences in the *Jardine* and *Plante* led him to unite *Falco osfragris*, *albicantus*, and *albicilla* of Gmelin under one name: subsequent inquiry has confirmed this conclusion. In the earlier stages of life the beak of *H. albicilla* is of a bluish horn-colour; its head and neck deep brown; the plumage above brownish-black mixed with whitish or ash-coloured spots on the back and tail.

In this state it is *Falco osfragris* of systematicists. About the third or fourth year the head and neck become ashy-brown; the beak gradually changes from bluish to pale-yellow, by the time the whole of the tail is changed, and the plumage becomes uniformly greyish-white. It is now *Falco albicantus* of Gmelin, *Petit Pygargue of Buffon*, and the *Lesser White-tailed Eagle* of Latham. In its fifth year is come to maturity, and the change is complete. The head and neck have little of the brown tinge left, the back is through out of a dusky-brown intermingled with ashy-gray, and the tail is quite white. In this its perfect state it is *Falco albicilla*, the *Grande Pygargue*, the White-tailed or Cinereus Eagle. In all the stages of this, the *Great Sea Eagle*, which is the whole of the body of Nisus, that of *Asis*, the cere and naked parts of the legs are yellow; the under part of the body is of a lighter hue than the upper, and more thickly interspersed with pale emerald spots; the claws are completely black. (Gardens and Menagerie of the Marquis of North.)

We now return to *Haliæetus leucopherus*, the *Sea Eagle*, *Bald Eagle*, *White-headed Eagle*, the symbol of the United States of America.

Mr. Bennett, in the work last quoted, remarks, that in the earlier stages of its growth there is little to distinguish this species from the *Great Sea Eagle*. M. Vieillot, indeed, following the example of Daudin, has united the *White-headed Eagle* to the list of synonyms of the *Great Sea Eagle*. That such a union," writes Mr. Bennett, "is not justified, may be clearly seen upon inspection of the gradual development in the bird under consideration of a character which, after a certain age, at once distinguishes it from the remainder of its tribe. This character consists in the pure whiteness of its head and neck, from whence it has derived the popular but inappropriate title of the *Bald Eagle*, by which it is most commonly known. The young are clothed at first with a thick whitish or cream-coloured cotton-like down, and they become gradually gray as the development of the true plumage goes on. In the third year they are dark, brownish-black, with a white rump, back, covert, and tail; and by the end of the fourth year these parts become completely white, or sometimes tinged slightly with cream-colour. The eye, which is at first hazel, changes to a brilliant straw-colour as the head whites (Wilson)." This account of the metamorphoses in colour of the white-headed sea-eagle," says Mr. Bennett, "derived from the personal observations of the accurate author of the American Ornithology, has been in a great measure verified under our own inspection in the specimen now before us, which remained for several years in the possession of Mr. Brookes, before it was presented by him to the Society.

During a considerable part of the time it was regarded as the *Great Sea Eagle;* and the white of the change of plumage had at length rendered obvious its true character, that it was ascertained to be in reality a distinct species. The same error appears frequently to have existed with regard to it; and M. Temminck observes that the only mark of distinction that can be traced in it until assumed the adult colouring, consists in the somewhat greater length of its tail. He might however have added its smaller size, which is probably one-fourth less than that of the preceding bird, at the same age and under similar circumstances. Mr. Bennett has shown us that we have been enabled to make up the subject, we should be led to conclude that the period in which it attains its full growth and perfect colouring is, in this country at least and in captivity, two or three years longer than that stated by Wilson. In its immature state, that is to say, the third summer the upper parts of the head and body exhibit a mixture of brown and dirty white, the separate feathers having a ground of the latter colour, and being deeply tipped and broadly barred along the centre with the former. The quill-feathers and primary covert feathers are black, with their shafts of a pale brown; the secondary are considerably lighter; and the tail, which projects in a trifling degree beyond the extremities of the wings, is brown on the outer quills and of a mixed white and brown on the inner. The wings of the immature birds are of a much lighter shade than the upper, being of dull white, with numerous broad streaks of pale brown. In the posterior part is it of a deep brown, the feathers being only slightly margined with white. A similar hue prevails on the upper parts of the back and tail below the knees. The beak is of a dusky brown; the cere and legs of a golden yellow; the iris somewhat lighter; and the talons deep blackish-brown. The latter are long, strongly curved, of considerable power, and extremely acuminated at the point. The bill is of moderate size, and its length is of three feet in length from beak to tail, and more than seven in the expanse of its wings. Its beak is changed to a bright yellow; and its head, a greater or less proportion of the neck according as the bird is more or less advanced in age), and the entire tail, are become perfectly white. An analogous change, as we have before seen, takes place in the plumage of the preceding species; but the head and neck of that bird always retain more or less of a brownish tinge, seldom changing fully into grey, and never turning pure white. The breast is often of a rich bright orange colour, and upon numerous individuals, many of them placed far upwards of ten years under the eyes of various scientific observers: their accuracy may therefore be regarded as unquestionable. The remainder of the plumage in this state is a rich cinnamon. An approach is experienced, but is strength no trussed with the head and tail. The colour of the legs, feet, and talons remains nearly the same; but the iris generally continues to assume a lighter and a lighter hue. The eyes, it should be observed, are deeply sunk in the head, and instead of being placed in a line parallel with that of the check, are directed forwards, so as to form with them a considerable angle.

*Holota, Food, Reproduction.*—The reader will find in the article BALD BUZZARD an account of the robberies committed by that bird. We are now to consider its acts of plunder confined to that bird, for it will rob the vultures, and, even in hard times, make them disgorge their carrion to satiate its appetite. According to Audubon, it will strike down a swan and other aquatic birds, and now and then procure fish for itself, by wading in the shallows of shallow creeks; it also devours young pigs, lambs, fawns, and putrid flesh of every description. Niagara is one of its favourite haunts, where it watches for the swollen carcasses that the cataract has precipitated down the falls. Wilson states it has been observed to approach with readiness the vultures at a distance till it had satisfied itself; and, on another occasion, when many thousands of tree-squirrels had been drowned in their migration across the Ohio, and had collected hosts of vultures, the sudden appearance of a large number of the Buzzards caused all off, and the eagle kept sole possession for many days.

Benjamin Franklin thus speaks of this emblem of the United States of America:—"For my part, I wish the Bald
Eagle had not been chosen as the representative of our country. He is a bird of bad moral character; he does not get his living honestly. You may have seen him perched on some dead tree, where, too lazy to fish for himself, he watches the labourers of the fishing-hawk; and when that gentleman is gone, he fetches a fish, and is bearing it to his nest for the support of his mate and young ones, the Bald Eagle pursues him and takes it from him. With all this injustice, he is never in good ease, but, like those among men who live by sharpening and robbing, he is generally poor, and often very hungry. Besides, he is a rank coward; the little King-Bird, not bigger than a sparrow, attacks him boldly, and drives him out of the district. He is therefore by no means a proper emblem for the brave and honest Cincinnati of America, who have driven all the King Birds from our country: though exactly fit for that order of knights which the French call Chevaliers d’Industrie.

With regard to the Reproduction, M. Audubon says that incubation commences in the beginning of January. He shot a female on the 17th of that month, as she sat on her eggs, in one of the islands of the Canaries where the eggs had given great progress. The nest, says the author, which in some instances is of great size, is usually placed on a very tall tree, destitute of branches to a considerable height, but by no means always a dead one. It is never seen on rocks. It is composed of sticks from three to five feet in length, large pieces of turf, oak weeds, and Spanish moss in abundance, whatever that substance happens to be near. When finished, it measures from five to six feet in diameter, and so great is the accumulation of materials, that it sometimes measures the same depth, it being occupied for a great number of years in succession, and receiving some augmentation each season. When placed in a naked tree, between the forks of the branches, it is conspicuously seen at a great distance. The eggs, which are from two to four, more commonly two or three, are of a dull white colour, and equally rounded at both ends, some of them being occasionally granulated. Incubation lasts for more than three weeks, but I have not been able to ascertain its precise duration, as I have observed the female on different occasions sit for a few days in the nest before laying the first egg. Of this I assured myself by climbing to the nest every day in succession, during her temporary absence. (Ornithological Biography, vol. 1.)

Locality.—In every part of the United States of America, seldom appearing, according to Audubon, in very mountainous districts, but preferring the low lands of the seashores, those of the larger lakes, and the borders of rivers. Mr. Bennett remarks, that the White-headed Eagle is usually spoken of as inhabiting the northern parts both of the old and new continent; but that it appears to be only a rare and occasional visitor of the former. It is probable, he adds, that some of the varieties of the Common Sea-Eagle of this quarter of the globe have been frequently mistaken for it, and remarks, that throughout nearly the whole of North America, on the contrary, where the European species seems to be unknown, it is met with in great abundance.

Dr. Richardson says that it is the earliest of the summer visitors to the fur countries, and the period of its arrival has given the name of Mechoosheo espeshon, or Eagle Moon, to the month of March. ‘Temnotmor,’ says Dr. Richardson (Fauna Bororali-Americana), assigns for its habitual residence the regions within the Arctic Circle; and Wilson observes, that it is found at all seasons in the countries it inhabits. Both these assertions however require, I apprehend, to be taken with considerable latitude. We did not, in the late expeditions, meet with it to the north of the Great Slave Lake (62° N. lat.), although it is common in the summer, in the country extending from thence to Lake Superior, and its breeding-places in the latter district are numerous. But in the month of October, when the rivers from which it draws its principal supply of food are frozen over, it entirely quits the Hudson’s Bay lands; and if, after that period, it is to be seen in the northern regions, it can only be on the sea-coast, and for a limited time, while the sea continues unfrozen... It is known to breed as far south as Virginia, but its nests do not appear to be so common within any part of the United States as they are in the fur countries. The bird is not mentioned in the Supplement to Captain (now Sir W. E.) Parry’s First Voyage, nor in that to Captain (now Sir John) Ross’s Last Voyage.

This bird is the Mechooshoo (name for the species), Wa-patte-queen-Mechooshoo (White-headed Eagle—mature bird), Appalt-Meekeshoo (Black-headed Eagle—immature bird), and Meekeshoo-sesh (Yearling birds) of the Cree Indians.

Colonel Sykes notes among the birds of Dukkhun (Deccan) Halieetus Ponticerriana, Felis Ponticerriana of Latham, Bruhmyn Kite of the Europeans in India. The Colonel says that it is seen constantly passing up and down rivers at a considerable height, but prepared to fall at an instant on its prey. Usually it seizes while on the wing, but occasionally dips entirely under water, appearing to rise again with difficulty. It is quite a mistake, he adds, to suppose it feeds on carrion. On the examination of the stomach and crawl of many specimens, the contents were found to be fish, and fish only, excepting on one occasion, when a crab was met with. (Zool. Proc., April, 1834.)

There is a beautiful specimen of Halieetus Aquila, Chitlan Sea-eagle, now (1837) in the gardens of the Zoological Society, in the Regent’s Park; and there is a specimen of Halieetus vocifer, the Fishing Eagle of the Cape colonists, in the South African Museum, now (1837) exhibiting in the Egyptian Hall, Piccadilly. The last bird is only met with in the neighbourhood of the sea, or upon the banks of large rivers. See the interesting Catalogue, where it is also stated that Aquila cuculrina, which had recently been described by M. Lesson as a sub-species, but that it has however none of the habits of the Fishing Eagles, inhabiting the highest and most rocky mountains, praying principally upon the animal mentioned in the Catalogue. In the ‘Proceedings’ it is added that the error probably arose from the white back being concealed, in stuffed specimens, by the wings.

Leaving the Fishing Eagles, Mr. Vigors proceeds to Circaetus. (Vieillot.)

En 2 formas. Nostrils linear, transverse. Cere subfusiformis. Tarso elongated, naked. Aerotarsia re-
tulated. Toes short, the external toe connected with the middle one at the base. Claws short, subequal. This genus is founded upon the well-known Jean le Blanc of the European continent, Falco brachyacutus of Wolff, Falco Gallicus of Gmelin, aquiloto of the Italians. Here, Mr. Vigors observes, we find the exterior toe united to the middle by a short membrane, which is the case indeed in the greater portion of the family, while in the two latter genera the toes are all divided to the origin.

Description.—Circetus brachyacutus is, according to Temminck, the Falco brachyacutus of Wolff; Aquila brachyacuta of Meyer; Falco Gallicus of Gmelin; Falco leucopus of Bechstein; Aquila leucophaea, Borkh. Denl. Orn.; Le Jeau le Blanc of Buffon and the French generally; Aigle Jean le Blanc of Temminck; Falco Terzo & Aquila, Sior. deg. Uec.; and Kurzzeiger-Adler of Meyer.

Old Male.—Head very large; below the eyes a space clothed with white down; summit of the head, cheeks, throat, breast, and belly, white, but variegated with a few spots of bright brown; back and coverts of the wings brown, but the origin of all the feathers of a pure white; tail square, gray-brown, barred with deeper brown, white below; tarsi long and grayish-blue, as are the toes; beak black; cere bluish; iris yellow; length, two feet.

Female.—Less white than the male. The head, the neck, the breast, and the belly, are marked with numerous brown spots, which are very much approximated.

Young.—Upper parts darker, but the origin of the feathers pure white; throat, breast, and belly, of a red-brown, little or not at all spotted with white; bands on the tail nearly imperceptible; beak bluish; feet grayish-white.

Food and Reproduction.—Lizards and serpents, to which it gives the preference; rarely birds and domestic poultry. The nest is built on the highest trees, and the eggs are two or three in number, of a lustrous grey, and spotless.

Locality.—The great fir forests of the eastern parts of the north of Europe; not common in Germany and Switzerland; rare in France; never seen in Holland. (Tem-
Suffolk, Norfolk, Derbyshire, Durham, and Northumberland. Mr. Mudie, in his 'Feathered Tribes of the British Islands,' has named: 'The higher gums of the rivers that rise to the north and west of the island of the Grampians, the high cliff called Wallace's Craig, on the north, and the mountains of Gramp and Craig Muskefclie on its south side,' as localities for the Golden Eagle. Mr. Selby and his party of naturalists observed this species in Sutherlandshire in the summer of 1834. Mr. M'Cullany, in his detailed descriptions of the ravenous birds of Scotland, has recorded his observations of this species in the Hebrides; and other observers have seen it in the Orkney and Shetland Islands, where it is said constantly to rear its young. In a direction west of this point, the Golden Eagle has been obtained or seen on the coasts of Devonshire and Cornwall in Ireland, a Ring-tailed Eagle (the young of the Golden) was seen by a party of naturalists in Connemara in the autumn of 1835; and from William Thompson, Esq., vice-president of the Natural History Society of Belfast, I learn that I am indebted for a catalogue and notes of the birds of Ireland, which will be constantly referred to throughout the work, I learn that specimens of the Golden Eagle are preserved in Belfast which were obtained in the counties of Donegal and Antrim. The name is an almost perfect one. One that died at Vienna is said to have lived in confinement 104 years. Colonel Sykes notes the Golden Eagle among the birds of the Dukhun (Deccan). His specimen differed so slightly from the European bird as not to justify its separation. (Zool. Soc., 1832.)

In the catalogue of birds collected on the Ganges between Calcutta and Benares, and in the Vindhyian hills between the latter place and Gurrah Mundela, on the Nebuddy, by Major James Franklin, F.R.S., &c., we have recorded an Eagle, Aquila Vulturina, with a question whether it is the Cinemon Eagle of Latham (Zool. Proc., August, 1831), and among the Dukhun birds, Aquila bifasciata of Hardwicke and Gray. (Ind. Zool.) A whole rat was found in the stomach of one bird. A second was discovered in the dead cub of a royal tiger, but it had not fed, for the stomach was empty. Dr. Smith stated (Zool. Proc., 1833) that the eagle from the Cape presented to the Society by the Hon. J. T. Leslie Melville, and in the Society's menagerie, was not the young of Aquila ventricina (Daudin), but of Aquila Chrysaetos (Smith). Aquila rapax (Temminck). Specimens of Aquila heliaca and rapax are in the South African Museum, as well as of A. ventricina. The first is only found in wooded districts, preys upon small quadrupeds, and has been known to have preyed upon an antelope, and even a young calf. It has a nest. A. rapax, though it principally preys on living creatures, does not wholly reject carrion, being frequently one of the first birds that approaches a dead animal. (See Catalogue of South African Museum, 1840. Proc. Zool. Soc., Jun., 1834) notes among the Trebizond birds Aquila pennata, inhabiting Eastern Europe and the ad jacent parts of Asia and Africa.

Hematomism. (Vigors.)

Mr. Vigors, at a meeting of the Zoological Society (December, 1831), characterized among the species comprising the 'Century of Birds from the Himalaya Mountains,' drawn and lithographed by Mr. and Mrs. Gould, the above-mentioned genus, which Mr. Vigors considered as exhibiting a striking diversity of form among the Eagles.

Generic Character.—Beak rather strong, sufficienly elongated; upper mandible straight at the base, very much curved at the apex; nostrils oval, project from beak. Wings long, broad, and of uniform breadth, first quill rather short, the second and third longer, the fourth and fifth nearly equal and longest, the rest gradually decreasing. Feet rather weak, subelongated; tarsi rough, reticulated with scales; toes rather short, reticulated and strong. Tail scarcely long, divided and feathered. (Vigors.)

This group was observed to bear a near affinity to the genus Pandion in the shape of the bill, wings, and the rugose reticulated scales of the tarsi, but to differ from it in the comparative length and width of the wings, as well as in the long, winging the nails groove underneath, and not convex in as the latter group. To this genus belongs the Falco Bacha (Latham) of Africa, and the Manilla bird then lately described in the Proceedings (page 96), under the name of Buto holaris. These, from the ap-
parent weakness of their limbs, had hitherto generally been ranked among the buzzards; although from the description of the courageous habits of the Bacha Falcon, the only one well known of the group, doubts had been expressed of the propriety of ranking them with that tribe. Mr. Vigors suggested the subfamily of Eagles as a more appropriate station for them; where, united by many important characters to Pandion, they apparently led off by the length of their tails to the genus Linnaeus ('Memoirs of Sir S. Raffles,' Appendix, p. 648) and others of the long-legged Eagles. The three species of the group were exhibited, their general similarity in colour and markings pointed out, and their specific differences explained. These consist chiefly in size, Harmat. holospilus being one-third smaller than H. Bacha; while H. undulatus (which is 2 feet 7 inches in length) considerably exceeds the latter. The first is spotted all over the body, the second only on the abdomen, while the third is marked by spots on the wing-coverts, and by ocelli bearing an undulated appearance upon the abdomen, the breast also being crossed by undulating fascies. A specimen of H. undulatus was afterwards (January, 1832) exhibited from Mr. Hodgson's Nepaul collection. It agreed accurately with that which had been previously exhibited, except in size; the present specimen being about one-third longer. From this difference in size it was conjectured to be a female. Colonel Sykes identified a specimen shot in the Dukhan (Deccan) with Harma	
tornis Bacha. (Zool. Proc.)

Description of H. undulatus (male and female probably). Black and wings intense brown; head crested, the feathers white at the base, of a dark brown, nearly approaching or black at the end, the hind ones being margined with a light rufous band at the apex. The wing-coverts near the carpal joint deep brown, marked with small white spots; quill-feathers fuscous, darker at the apex, and marked with white towards the base of the interior web; the cere, base of bill, and legs, yellow; clavus black. (Vigors, in Gould's 'Century of Birds from the Himalaya Mountains.')

Hemornis undulatus, from the work above quoted, by permission.

Short-winged Eagles.

Harpyia (Cuvier.)


Mr. Vigors, in placing Harpyia next to Aquila, observes that the former equals the latter in size and powers of flight. In tarso, he remarks, are strong, thick, partly plumed, with scutellated acrorhia. The nare are elongated, apparently semilunar, and placed transversely on the cere. The upper mandible, he adds, seems to have a notch somewhat analogous to that of the true Falcons. This type is Falco imperialis of Shaw.

This powerful bird is the Grande Harpie d'Amerique of the French. Aquila coronata of the Spanish, Falco de la Gavina of the German, Gavina of the English, Aigle de la Guiana of Mauduit, Harpyia destructor of Cuvier. Mr. Vigors states with truth that much confusion has arisen as to the synonyms of this bird, and even as to the characters of the genus. Mr. Bennett has, in our opinion, cleared this confusion away, and we therefore select his synonymy.

'M. Temminck,' says the last-mentioned zoologist (Gardens and Menagerie of the Zoological Society delineated, vol. ii., 'the latest writer on this magnificent bird, positively identifies it with the Falco imperialis of the French, Aquila coro

nata of the Spanish, Vergne, and the crowned eagle (Falco coronatus) of Jaquin, on the singular ground that those names indicate a smaller bird with longer and more slender legs. Now Linnaeus, who borrowed his original description of the harpy from Hernandez, asserts, on the authority of that writer, that it is equal in size to Linnaeus coronata; and Jaquin states his bird to have measured full two feet and a half in height in its natural sitting posture, and almost two inches in the diameter of its legs. It is impossible to find the figures of Hernandez and Jaquin, making the case of the former somewhat more vague for comparison, without feeling a conviction that they both refer to the bird now under consideration. That of the latter author in particular is admirably characteristic. Linnaeus originally published his names on the indications given by Harpyia, in the tenth edition of his Systema; but Vergne, in his comparison between it and a bird seen by a friend, probably a pupil, in the Royal Menagerie at Madrid, which there is every reason to believe, from the description given, to have been just that which was in the twelfth edition of the Systema, worked by adding to the citation from Hernandez, to the account furnished by his friend, and to some particulars extracted from Jaquin's then unpublished description of his supposed species, a synonym from Maregraeve, which can alone justify Temminck's criticism. We restore without hesitation both these synonyms of Linnaeus and Jaquin, excluding only from the twelfth edition of the Systema Nature the references to Maregraeve and his copyists. With the Falco harpyia of Linnaeus and the Felce dijaquin of Jaquin are necessarily included among the synonyms of the Harpy eagle the Falco harpyia and the Falce jaquinii of Gmelin, by whom the trivial name assigned by Jaquin to his bird was changed on account of its introduction into a genus in which identical denomination was prohibited. In the year Mr. Dilib observed, in the Menagerie of Buen Retiro at Madrid, a species of eagle, which he imagined to be an underscribed kind not taken notice of by Linnaeus, the bird, which he figures in his Travels through Spain under the name of the Crested Falcon is evidently of the same species with the harpy, although the representation is rudely executed, and in some respects, as for example the length of the beak, grossly caricatured. We might almost be tempted to suspect that the specimen seen by him was identical with that described by him from the menagerie twenty years before, were it not that the latter bird is expressly called Mexican, while that of Mr. Dilon is stated to have come from the Cucacac. For this reason Dr. Latham introduced it into his Synopsis under the name of the Caracceo Falcon.

Gmelin, quoting from Latham, soon after latinised its former name into Falco cristasus, and this may therefore be added to the synonyms of our bird, of which Mr. Dilon's was the first published figure. The next original describer of the Harpy Eagle was Mauduit who also regarded his specimens as nondescript, and gave them the name of Grand Aigle de la Guiana, from the country whence they were obtained. To these birds, which formed part of the collection of the Paris Museum, Dulin, in his determination, published the scientific appellation of Falco destructor; and the names given by these two writers have been generally adopted on the continent of Europe as the only ones certainly applicable to the species. M. Sonnini seems doubtful whether to regard the two specimens described by him as distinct species, and names the one Aigle destructor, and the
other Grand Aigle de la Guiana; but there seems no sufficient reason for their separation. Dr. Shaw's Falco imperialis, described on the basis of the Skelinus, and the probability the Crested Eagle of Stedman's 'Expedition to Surinam,' spoken of as a very strong and fierce bird, belongs to the same species. Figures of the harpy are likewise given by M. Cuvier in his 'Regne Animal,' by M. Vieillot, in his "Nouveau Système des Arts et Sciences;" and by M. Temminck, in his 'Planches Colomies.' Those of the two last-named works are strikingly characteristic. That of the 'Dictionnaire' exhibits the crest-feathers equally and stiffly elevated round the back part of the head, a state in which we have never seen them in our bird, and which, on account of their laxity, and the lower position of the middle ones, we doubt their power to assume. It is right however to remark that the crest is stated by Linneaus and other authors to possess this power of elevation round the head in form of a crown, an ornament alluded to in the Spanish name of the bird, Agula coronada, and in the trivial appellation, coronatus, affixed to the species by Jacquin. We believe that we have now restored to this bird all the original synonyms which unquestionably belong to it. The original descriptions of Hernandez, Linneaus, Jacquin, Mauduyt, Daudin, and Sonnini, and the figures of Dillon, Shaw, Cuvier, Vieillot, and Temminck, are such as leave no doubt upon our minds of the accuracy of the references to those authors. We have, the more than once, closely examined those figures, and have been occasionally quoted, but which either do not appear to us to be satisfactorily determined, or are evidently founded on mistake. Of the former class, the Osprea Guacamay Lory, or Royal Bird of Prey of Brazil, may serve as an example; of the latter, the Calzain and Thore de Molina.

Description (adult).—Head with thick downy plumage, of a light slate-gray. Crest arising from the back part, of numerous broad feathers increasing in length towards the middle line of the head, and about half its width. (Bennet.) of their anterior surface only, the rest naked and reticulated; talons extremely strong, internal and posterior ones very long. Mr. Bennett observes that in some of these characters, as for instance the nakedness of the legs, the harpy approaches the sea-eagles; but it differs from them in many essential points, and in none more remarkably than in the shortness of its wings, and the robustness of its legs and talons; the former character rendering it, like the short-winged hawks, more adapted for perching near the surface of the ground on gallinaceous birds and quadrupeds, and the latter enabling it to carry off a prey of much greater magnitude.

Habits. The harpy is stated to be a solitary bird, frequenting the thickest forests, where it feeds upon the sloths; it also preys on fawns and other young quadrupeds. Sonnini observed it sitting motionless and uttering no cry, on a high tree on the banks of the Orapi. Hernandez does not seem inclined to detract from the powers of the bird, for he says that it will attack the most fierce beasts, and even man himself; and he further states that it may be trained like a hawk to pursue game. Linnaeus gives the bird credit for strength sufficient to split a man's skull with a single blow (unico ito). These accounts of its prowess must be taken with some grains of allowance, but that the bird is very powerful is without doubt. Jacquin's specimen was found dead in the ship that was conveying it to Europe, and its death was with some probability attributed to the sailors, whose monkeys the eagle had destroyed. When these animals gambolled too near its cage they were seized by its talons and devoured with almost all their bones, but not their skin, which the bird invariably stripped off. The harpy which was obtained by Mr. Hesketh, consul at Man- rama, near the mouth of the river Amazon, and brought to England by Captain (now Major) Sabine, by whom it was presented to the Horticultural Society, which transferred it to the Zoological Society, in whose collection at the Regent's Park it now (1837) is, is said to have destroyed and eaten a king of the vultures (Sarcoramphus Papa) while on its passage to England. After its arrival a cat was put into its cage, and the eagle, with one blow of its immense foot, broke its back.

Locality.—Mexico (Hernandez, Linnaeus, and others); neighbourhood of the river Magdalena, in New Granada (Jacquin); Caracas (Madrid specimen); Guiana (Sonnini).
Morphnus (Cuvier.)

Beak convex above; nostrils elliptical; tarsi elevated, rather slender; acrotarsia scutellated; toes rather short; claws acute.

Mr. Vigors observes, that this genus differs from Harpia in its more slender, lengthened, and scutellated tarsi, and the comparative weakness of its toes. It is separated into two sections, as the tarsi are plumed or otherwise; among the former M. Cuvier arranges Falcoceps cepsis, ornatus, and albecens of Daudin, and F. maculosus of Vieillot; among the latter, F. Guianensis of Daudin, and F. Uribintinga of Gmelin. Spizelicus of Vieillot corresponds with this group.

* Tarsi naked.

Example, Morphnus Uribintinga, Falco Uribintinga of Gmelin, Aquila Brasilensis of Brisson, Brasilian Eagle of Latham, Uribintinga of Maregrave, Willughby, Ray, and others. The following is Willughby's

Description.—This bird is like an eagle of the bigness of a goose of six months old. It hath a thick hooked black beak; a yellowish skin (cere) about the nostrils; great sparkling aquiline eyes; a great head; yellow legs and feet; four toes in each foot, disposed after the usual manner; crooked, long, black talons; large wings; a broad tail. It is all over covered with dusky and blackish feathers; yet the wings are waved with ash-colour. The tail is nine inches long, white for six, the end for three inches being black; howbeit in the very tip there is again a little white.

Young of the year.—Blackish yellow below; the centre of each feather marked with blackish brown tear-like spots; throat and cheeks with brown striæ on a whitish ground. Locality, Brazil and Guiana, where it is said to seek its prey on inundated places.

* * *

Head and foot of Morphnus Uribintinga.

Tarsi feathered.

Example.—Morphnus occipitalis, Falco occipitalis of Daudin, L'aigle-auberge noir huppé d'Afrique, and Hupport.

Description.—Size of a crow; black, with a long crest or tuft dependant from the occiput; tarsi, edge of the wing, and bands on the tail, whitish. Locality, Africa.

* * *

Head and foot of Cymindis hamatus.
Acrotarsia reticulata.

Example, Cymindis Cayennensis, Falco Cayennensis of Gmelin, Petit autour de Cayenne.

Description.—Summit of the head ash-coloured; back (mammae) brown, barred with deeper brown; belly white; tail grey, barred with white beneath; feet ash-coloured. Locality, Cayenne.

The reticulated acrotarsia, if not in that genus itself. He has, indeed, some doubts whether most of the short-winged Falconidae at present placed among the Buzzards, such as F. buceo and F. machro of Daudin, F. pelotonotus of Cuvier, &c., may not be more properly removed to a situation between the short-winged Eagles and the Hawks, with both of which they seem to have a considerable affinity. There is, continues Mr. Vigors, another group which also appears allied to the present, distinguished by a rather feeble and elongated bill, short wings, and slender, lengthened tarsi, feathered to the toes. It includes F. himmennus of Horsfield (Zool. Res., No. 6, Pl. Col. 134), F. nius of Temminck (Pl. Col. 127), and F. atricapillus of Cuvier (Pl. Col. 78). These appear to be strongly allied, in the opinion of Mr. Vigors, if not to appertain, to the before-mentioned genus Morphnus. F. tyrannus of Prince Maximilian (Pl. Col. 73) bears also, Mr. Vigors thinks, a strong similitude to the same group, though partially differing in external characters.

2. Sub-family Accipitrina (Hawks).

Beak short, hooked from the base; wings short, fourth quill longest.

The short wings of the last groups, writes Mr. Vigors, lead us to the present division of Hawks, all of which, a considerably extensive tribe, are characterized by their wings extending no further than two-thirds of the extent of their tail. The fourth quill-feather is the longest, the first, second, and third, gradually exceeding each other in length. In this division we may observe that the upper mandible, though not furnished with distinct teeth like the true Falcons, has the fleshy or prominence that generally supplies its place more strong and angular than is usual among these tribes. In some of the Accipitres this is particularly distinguishable. The sub-family we have just quitted includes all the birds of the present family in which the beak is straight at the base, and hooked only at the apex. We now enter upon the first of those groups where the bill is curved from the base, a character that extends through the remainder of the Falconidae. It may be observed, that this character, which thus separates the family into two departments, was equally noticed as a mark of distinction between the species known to the antients. Pliny, apparently referring to it as a line of demarcation between them, divides the group into his two departments of Aquile and Accipitres. It is from adopting the same views respecting
the family, that M. Brisson instituted his two leading divisions, to which he assigned corresponding denominations.

_Dedalion_ (Savigny).

_Beak short; tarsi moderate; acrotartria reticulata; type_ _F. cachinnans_ of Linneus, and _F. melanops_ of Latham.

Mr. Vigors adopts the name which was conferred by M. Savigny on the whole of the sub-family, for the present division of it.

Example, _Dedalion melanops_.

_Description._—(Adult male) white, flavished with black on the neck and breast; back, wings, and tail, deep black, the last with a white stripe, and terminated with white; there are dots of the same colour on the coverts of the wings; cere and tarsi reddish. _Locality_, Guiana. The form may be illustrated by the

[Image: Head and foot of Dedalion cachinnans]

_Astur_ (Bechstein).

_Beak short; nostrils suboval; tarsi moderate; acrotartria cecullatated._

Mr. Vigors observes, that _Astur_ is a title which has been applied to the whole group, but which may be confined to those whose tarsi, moderate in length, have their _acrotartria_ cecullatated or covered with broad and even scales. He considers our European species, _Falco peregrinus_ of Linneus, as the type; to which may be added _F. nix_ of Holland and _F. melanops_ of Latham, and a considerable number of corresponding species from every quarter of the globe.

Example, _Astur peregrinus_.

_Description._—This is the _Astur_ and _Ator_ of the French; Astorre (Ziain.) and Girefalco (Bonaparte), Sparviere da colombe and Sparviere Terzotto of the Italians; Grouser griffelz Fulch and Hunerhabicht of the Germans; Goshawk of the modern, and Hebeg Martin of the ancient British.

A full-grown _female_ measures from twenty-three to twenty-four inches in length; the males one-fourth, and sometimes one-third less; but when adult, the plumage is nearly similar. The beak is horn-coloured or bluish-black; the cere and irides yellow; the top of the head, the whole of the back, upper surface of the wings, and tail-feathers, dark greyish-brown; in females the colour inclines to clove-brown; the upper surface of the tail-feathers barred with darker brown; a band passing over the lore, eyes, cheeks and ear-coverts; the map of the neck, throat, breast, belly, and thighs, nearly white, with spots, transverse bars, and undulating lines of dull black; under tail-coverts white; lore, cheeks, and ear-coverts, greyish-brown, forming an elongated dark patch on the side of the head; the legs and toes yellow; the claws black.

_Young birds_ have the beak, cere, and eyes, nearly similar to those of the old birds; the top of the head, nape, and ear-coverts, ferruginous white, each feather darker in the middle; back, wings, and upper tail-coverts, brown suffused with black; the upper surface of the tail-feathers with five bands of dark-brown and four bands of lighter brown, the ends of all the feathers white; wing-primaries dark-brown, barred with two shades of brown on the inner webs; the rump, sides, back, and belly, greyish-brown, with a central elongated patch of dark-brown; thighs and under tail-coverts with a dark-brown longitudinal streak instead of a brown patch; under surface of the wings, greyish-white, with transverse dusky bars; under surface of the tail-feathers greyish-white, with five darker greyish-brown transverse bars, the tips of all the feathers white; legs and toes yellow-brown; the claws black; those of the inner toe considerably larger than those of the outer.

_Yarrell._

_Habitat, Food, Reproduction._—Flies low and pursues its prey in a line after it, or in the manner called _raking_ by falconers. If the game takes refuge it will sit patiently on a tree or stone till it moves, or till some other prey is accessible. _Food_, hares, rabbits, pigeons, pheasants, geese, partridges, and cranes. The female was generally flown by falconers at first, and the male at footer, but the female was also trained to take the larger winged game, the male being principally flown at partridges. Turberville says, ‘you shall not need to shew any other game to a goshawk for her first entrying than a partridge, because in learning to fleece the partridge they prove most excellent; and the first year you shall do best to fleece them to the field, and not to the covert, for so will they learn to hold out (and not to turn tayle) in the midst of their flight, and when they be mewed hawkes, you may do as you please, not needing to take such pain, nor to use such art in driving of a goshawke which is taken a brancher as with a Nygare, for she will alwaies know of her selfe what to doe.’ (The Fook of Falconrie.)

_Nest_, on a high tree in the outskirt of the forest; rarely found in the interior, except in those parts which are open and free from timber. Eggs three or four, frequently hatched in the middle of May. (Hewitson, _et al._) Mr. Yarrell says that the eggs are large, and that the few which he has seen were uniform in size and colour, 22ths inches in length by 2h 5ths inch in breadth, of a pale bluish-white, without any spots or streaks.

_Locality._—Denmark, Norway, Sweden, Siberia, Russia, and China. (Müller, Linnaeus, Pennant.) Very common in France, Germany, Russia, and Switzerland; more rare in Holland. (Temminck.) Rare in the south of England. Mr. Yarrell says the few that are used for hawking are obtained from the continent. Colonel Thomson mentions that he kept them constantly in Yorkshire; and that some of his specimens from Scotland. Dr. Moore, in his catalogue of the birds of Devonshire, says that it is found occasionally in Dartmoor, but I can find no record of its appearance farther west in England, nor any notice of it in Ireland. A Muscovy duck was treated by a gamekeeper in Suffolk in March, 1833; and Mr. Doubleday, of Epping, has sent me word that he received a young bird from Norfolk in the spring of the same year. Mr. Selby mentions that he had never seen a recent specimen south of the Thames, but that it is known to breed in the forest of Rothiemurchus, and on the wooded banks of the Dee. Mr. Low says that this species is pretty frequent in Orkney: but as he speaks of it in connexion with sea-baetson rocks without shelter or woods, it appears not to reside in the island. A Muscovy duck was treated by a gamekeeper in Suffolk in March, 1833; and Mr. Doubleday, of Epping, has sent me word that he received a young bird from Norfolk in the spring of the same year. Dr. Richardson (Zyma Boreali-Americani) describes one seen in company with the female at the nest on the plains of the Saskatchewan, and states that another specimen was
Astur palminarthus.

Accipiter (of Ray, Brisson, and authors).

Acrocinus scutellatus, the suture scarcely to be discerned. 

The Common Sparrow-hawk, Accipiter fringillarius 

of Ray; to which, says Mr. Vigors, may be added many 

respecriving species which do not seem to have any limits 

to their geographical distribution. 

Description.—The Sparrow-hawk is L'Epeireur of the 

French; Falco paludovino and Sparviere da fringuelli of 

the Italians; DiE sperbar of the Germans; Sparvhoek of 

the French Republic; Falco Circus of Linnaeus; and Gipeia 

of the ancient Greek. 


Adult Male.—About twelve inches in length; head blue, 

at the base; cere greenish-yellow, the irides yellow; 

top of the head, nape of the neck, back, wings, and wings 

coverts, rich dark-brown—in very old males with a tinge of 

main grey; tail-feathers grayish-brown, with three conspicuous transverse bands of dark-brown; chin, cheeks, 

throat, breast, belly, thighs, and under tail-coverts, rufous, 

with numerous transverse bars of darker rufous brown; 

legs and toes long, slender, and yellow; the claws curved, 

sharp, and black. 

Female.—Generally three inches longer than the male; 

head bluish horn-colour; cere yellowish, the irides yellow; 

top of the head, upper part of the neck, back, wings, and 

wings-coverts, brown—the base of many of the feathers 

visited, which, extending beyond the edge of the feather im- 

medately above it, causes a white spot or mark; primaries 

and tail-feathers light-brown, barred transversely with dark 

brown; under surface of the neck, body, wings-coverts, 

and wings, greyish-white, barred transversely with brown; 

under surface of the wing and tail-feathers of the same 

colour, but the light and dark bars much broader; the 

fourth and fifth tail-feathers equal and the longest, the first tail-feather 

the shortest; legs and toes yellow; claws long, curved, 

sharp, and black. 

Young Male.—Resembles the female; but the brown 

feathers of the back and the wing-coverts are edged with 

reddish-brown; feathers of the tail reddish-brown, par- 


ticularly toward the base, with three conspicuous dark- 

brown transverse bands. In other particulars like the 

female: both have a collar formed by a mixture of white 

and brown, which extends from the sides of the neck to the 

nape. (Yarrell.) 

Habits, Food, Reproduction.—Haunts, wooded districts. 

The great enemy of small quadrupeds and birds, and often 

very destructive to young chicks in poultry-yards in the 

breeding season. Used in falconry; the best of all hawks for 

landralls. (Sebright.) Nest. 'The Sparrow-hawk 

generally takes possession of some old or deserted nest in a 

tree, most frequently that of the crow, in which the female 

deposits four or five eggs, each about one inch seven lines 

long, by one inch four lines broad, of a pale bluish-white, 

blotched and spotted with dark-brown. The young are 

covered with a delicate and pure white down, and are 

abundantly supplied with food. Mr. Selby mentions having 

found a nest of five young sparrow-hawks, which contained 

besides, a lapwing, two blackbirds, one thrush, and two 

green linnets, recently killed, and partly devoured of 

their feathers. (Yarrell.) 

Locality.—Spread throughout Europe, Japan (Tem- 

minick), Smyrna (Mr. Strickland), Denmark, Sweden, 

Norway, Russia, and from thence southward over the 

European continent to Spain and Italy. Common in most 

of the countries of England, and has been observed in 

the west and north of Ireland; occurs also in Scotland and its 

northern islands. (Yarrell.) Very common, migratory, 

near Rome. (Bonaparte.)
to any established genus. They possess, he observes, a shortness of wing which would incline us to refer them to some of the present groups: but their upper mandibles, strongly and doubly dentated, presents a character that will not admit of their being included in any of the foregoing genera, in which the mandibles are entire, or where the place of the tooth is supplied by a rounded prominence. These species Mr. Vigors would have wished to arrange in one genus; but they are found to differ in essential points which bring them respectively within the pale of the two conterminous sub-families now under consideration; and he feels obliged, for the sake of perspicuity, to adopt the following genus of which the type is *Falco bolodatus* of Latham.

**Harpagus. (Vigors. Rodent.* of Spi.)**

irim: Upper mandible strongly bilatculated, lower with a double notch. **Tarsi** moderate. **Acoradinae** scutellated. Third and fourth quills longest, equal.

Mr. Vigors observes that the essential characteristic of this group is the double tooth on both the upper and lower mandible. The wings, which correspond with those of the other *Hawks*, in being one-third shorter than the tail, have the third and fourth quill feathers, which are the longest, of equal length. The *tarsi* are of moderate length and strength, and have the **acoradinae** scutellated as in the latter groups of the present sub-family. The **nostri** are of a semicircular form and the *corv* is naked.

**Example. Harpagus bolodatus. Locality. Brazil and Guiana.**

Description.—Length, a foot and some lines (French). Slate-colour above: *thorax* white; *breast* and belly red, unradiated with yellowish; lower coverts of the tail white; *tail* nearly equal, brownish, barred with whitish.

Mr. Vigors remarks that *Falco Diodon* of Temminck is to be referred to this genus.*

**Gampsonyx. (Vigors.)**

irim: Mandibles entire. *Nostrils* rounded. Wings: short, second quill longest, third generally equal to the second, and internal web of the first and second strongly notched near the apex. **Tarsi** moderate, equal. *Feet* moderate; **tarsi** reticulated, **acoradinae** feathered below the knee to the middle. (Vigors.)

The genus is founded on a small and beautiful *Haruck,* writes Mr. Vigors in *The Zoological Journal,* vol. ii., which has been kindly submitted to my inspection by Mr. Swainson, one of the fruits of that gentleman’s extensive researches in Brazil. This bird decisively belongs to the **Acipitrine** sub-family of the *Falcons,* but it is placed at that remote extremity of the world, where the species, gradually approaching the *Falcons,* partially assume some of their leading characters. It possesses the bill of the *Hawks,* and also the shortness of wing which so strongly characterizes them but the structure of the wing itself is the same as in *Falco,* the second quill-feather being the longest, and the first and second of these feathers being marked on the inner web by a distinct emargination near the apex, while the *tarsi* also display the character of the same group as having the **acoradinae** reticulated. The bird thus exhibits a striking modification of form, at once partaking of the chief of the respective characters of both the *Hawks* and *Falcons,* with the former of which it may in addition be

Mr. Vigors observes that the term *Diodon* is appropriated to *Dipteryx,* and *Temminck* a *Lammin* genus.

For the insertion of Mr. Swainson’s genus *Ampurca,* the reader is referred to the interesting work on the birds of *Western Africa* by that indefatigable Naturalist’s Library*, vol. vii. p. 104, *Ampurca cuneifida* (Cuckoo Falcon).

Mr. Vigors observes that it agrees in its general form, and with some of the latter, particularly the beautiful group of *Ierax corniculatus,* in its colours, and in the general distribution of them. To the latter group indeed it has a striking resemblance, and might perhaps be referred unconditionally to that could we pass over the important character of the unotched bill.

**Description of Gampsonyx Saccaminit.** Above emerald-black, white beneath: *front,* *cheeks,* sides of the abdomen, and umbral feathers orange; a black spot on each side of the breast.

**Break** black. Feathers of the back and *squamos* ash-black, spotted with ferruginous. Lower side and *wurul* collar white, sparingly variegated with orange. Primaries blackish, internally margined with white at the apex: secondaries, sparingly sprinkled with ferruginous, beneath white. **Tails** feathers ash-black, internally (the middle excepted) margined with white, beneath white. *Feet* yellow, *claws* black. Length of the body 27 inches. (Vigors.)

Locality, Brazil. Mr. Vigors says that the following **note** was appended to this bird in Mr. Swainson’s hand-writing:—'The only individual of this species I ever met with was shot on the Table Lando, about 10 leagues in the interior of Bahia, in a direction west-south-west from the bay of St. Salvador. It was perched on the trunk of a withered tree, apparently watching some small birds. The *tarsi* are bright and the *iris* hazel.'

**3rd. Sub-family, Falcographina (Falcons).**


Mr. Vigors observes that this, closely allied to *Harpagus* by the double tooth on its upper mandible, is another group for which he proposes the name of *Tetra.**

irim: Short, upper mandible strongly bilatculated, lower simply notched. **Tarsi** moderate, **acoradinae** scutellated. *Wings* short. **Second** quill longest, slightly notched near the apex.

*Harpagidae* corniculata.

*Whoever,* writes Mr. Vigors, *has seen that beautiful species, the smallest of its rare, *Falco corniculatus* of Linnaeus now rendered familiar to us by the accurate and splendid illustrations of Dr. Horsfield, will at once acknowledge a separation from every other established genus of its family. Its upper mandible is strongly and sharply bilatculated, as in *Harpagus,* but the under mandible is simply notched as in the true *Falcons.* Its wings, shorter than its tail, differ also from those of *Harpagus,* in having the sect quill-feather the longest, thus again establishing the affin of the genus to the *Falcons.* The *tarsi* are moderate, as the *acoradinae* scutellated as in the latter group of *Hawk* from its thus possessing characters in common with bo sub-families, it is difficult to say to which we should ret
it. But I prefer placing it in its present situation on
account of the length of the second quill-feather, a pecu-
larity which distinguishes the true Falcons, and gives
its striking character to their flight. Placed, however, at the
extremity of the division, it preserves its affinity with those
that went before.

Description.—Hierax cœruleus is, according to Dr.
Blyth, the duck-blue or hip-hop-blue of the Japanese; 
Palao cœeruleus of Linnaeus; F. Bengalensis of Brisson; 
Falco pardus Indicus Ger. Orn.; Little black and orange Indian
Black of Edwards; and the Bengal Falcon of Latham.
Kaire length six inches and a half. Upper parts bluish-
black and glossy. Throat, breast, axillars sides of the neck,
forehead, and a line continued from the environs of the bill
over the eye and along the neck, white, with a ferruginous
tail. Lower parts of the breast, abdomen, vent and thighs,
ferruginous. Hypochondria, thighs posteriorly, and a
feather patch extending from the eye along the side of the
head, black; the plumes which cover the thighs behind are
terminating by long silky filaments, or radii which are
straggling and pendulous, and by their laxity and irregular-
ity being a peculiar character to the bird. (Horsfeld.) The
natives told Dr. Horsfeld that this small but robust bird
was uncommonly bold in the pursuit of little birds. Several
individuals were brought to him from the range of the
southern hills, which are covered with forests, during his
stay at Suratka. These were obtained one in the eastern dis-
tricts. In the other parts of the Island of Java he did not
observe it. Bengal is also given as its locality.

Heaud and foot of Hierax cœeruleus.

Mr. Vigors (Zool. Proc. 1831) describes another species,
Hierax erythrogenys, the size of H. cœruleus, from the
neighbourhood of Manilla.

Falco.

Beak short. Upper mandible strongly toothed; lower
mandible, Acetaria reticulated. Second quill longest; first
and second do not disturb the general emargination of the
tail. This genus, which includes, as Mr. Vigors observes,
the greater portion of the present sub-family, comprises the
typical species. 'The upper mandible of this group,' writes
that geologist, 'is armed with a strong angular tooth; the
lower is notched near the extremity. The nares are
rounded. The wings are for the most part as long as the
tail, the second quill-feathers being invariably the longest.
The first and second quill-feathers are also distinguished by
an abrupt emargination on the inner web near the ex-
traventrilum. In some species, as in F. peregrinus, the emar-
gination of the second quill-feather is not so abrupt as in
others. But in all the species of the true Falcons that have
come under my examination, this emargination of the first
quill-feather is apparent—those of Pinnas are moderate, or
sometimes one-third less than the female, is called the
Tercel, Tiercel, and Tiercotelet, and is more frequently
found at partridges, and sometimes with magpies. Young Pere-
grines of the year, on account of the red tinge of their
plumage, are called, the female red a falcon, and the male
a red tereel, to distinguish them from older birds, which
are called Haggards or intermewed Hawks. The Lanner
of Pennant is a young female Peregrine, at which age it
bears some resemblance to the true Lanner, Falco luminis
alis, but not as much as a male Peregrine. It is called the
Peregrine, and which probably has never been killed
in this country. Mr. Gould says he was unable to find a
specimen in any collection here, either public or private,
at the time he was desirous of figuring this species in his
book of Europe. A Lanner from the southern and
south-eastern parts of Europe. The king of
France, Louis XVI., had Lanners sent annually from
Malta; but they were brought from the eastern countries.
It exceeds the European Falcon in size, and is
connected with both; and the Gy-falcon was much esteemed
for flying at the kite, with which the Peregrine is hardly able
to contend.' The name of Lanner is confined to the female;
the male is called a Lanneret, on account of his smaller
size. (British Zoology,) The limits of the Peregrine
enter into any account of the mode of flying it at hawks,
&c., flying at the brook or at the river, as it was antiently
called; and we must refer the reader to Turberville, among

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the old writers, and to Sir John Sebright as the best of the modern authors on the subject. (See Sir John's Observations on holistic.) Next:-On high rocks. In Britain, Mr. Yarrell states that the Peregrine builds on various parts of the coast, more frequently in Scotland than in England. The eggs are from two to four in number, about two inches long by one inch and eight lines in breadth, mottled all over with red and black. In Ireland, near Mullaghmore, they build on a cliff near St. Abb's Head. It was from this locality that the late Mr. Baird of Newbury usually obtained his best of Hawks, for each of which he gave the persons who undertook the peril of climbing the rock one guinea. Other localities for the nest in Britain are the cliffs between Freshwater Gate and the lighthouse near the Needles, Devonshire and Cornwall, where it is called Cliff Hawk. Holyhead and the Great Orme's Head. (Yarrell.) Rocky coast of Cowngronish. (Pennant.) Rocky situations inland and marine in Ireland. (Thompson quoted by Yarrell.) Vale of Mofiat in Dumfriesshire, the Bass Rock, and the isle of May, in the Forth. (Sir Wm. Jardine.)

Localities.-All the mountainous countries of Europe, particularly on rocks; very rare in champaign countries, never found in marshy districts; abundant in Germany and France; sufficiently common in England and Holland; rare in Switzerland. (Tunminck.) Shetland Isles, where it breeds; Denmark, Sweden, Norway, Lapland, and Greenland. (Yarrell.) Uralian and Siberian mountains in the winter.

Dr. Richardson, who describes an old male from Melville Peninsula, lat. 68° N., says (Fauna Boreali-Americana), 'The Peregrine being a rare bird in the wooded districts of the far countries where the trading posts are established, I did not have the pleasure of seeing one. Mr. Salby notices them, and I may sometimes see it whilst on the march across the Barren Grounds. Of the two specimens figured by Edwards, one was from Hudson's Bay and the other was caught off the entrance of Hudson's Straits. Captain Parry likewise brought home several male and female specimens from Melville Peninsula, some of which are preserved in the British Museum. It is a summer visitor of the northern parts of America, and frequents the coasts of Hudson's Bay and the Arctic Sea, with the Barren Grounds, but is very seldom seen in the interior. It pour habitually on the long-tailed ducks (Anas glacialis), which breed in great numbers in the Arctic regions, arriving in June and departing in September. Captain Parry observed it, in his recent collections, on the coasts of Greenland, near Cape Farewell. It frequents the shores of New Jersey and Pennsylvania in the winter, and is celebrated there for the havoc it makes among the water-fowl. Mr. Ord states that the ducks which are struck by it are lacerated from the neck to the body; the young ones are blown in poults, and returning to its bird. Port Famine, Emissary of Magalhães. Capt. King.) New Holland. (Vigors and Horsfield.) Cape of Good Hope. (Dr. A. Smith.) Prince Bonaparte notes it as rare, and as seen only in winter near Rockingham and Newhaven. (Dr. Smith.) (South African Museum, No. 94) says that the bird so numbered, though it does not exhibit exactly the plumage of the Peregrine Hawk of Europe, yet approaches it so closely, that it might be considered as attempting too great a refinement to pass it as a different species. (Gower.)

Mr. Vigors observes that Cuvier has separated the Falco Islandicus of Latham from the rest of the true Falcons, under the generic title of Hierofalco, which he characterizes as possessing no tooth in the upper incisor, which project in the centre, and in which he observes that the wings considerably fall short of the tail in length. In this opinion Mr. Vigors does not acquiesce. He cites examples of the Jerfalcon in its different stages of growth, and in none did he perceive any material difference between its bill and that of the true Falcons. He adds that he feels much hesitation in advancing the above opinion, not merely on account of the known accuracy of Cuvier, but on account of some facts that had then lately come to his knowledge. He mentions that in the mandible of the Jerfalcon, in which the mandible accords exactly with Cuvier's description—'il n'a qu'un feston comme celui des ignobilés.' In several specimens from the arctic regions, however, in the same collection, he found the tooth. After referring to the views of previous authors on the Cuvier, and inquiries whether it may not be possible that there are two species. He cannot think that the character itself is variable, or that Cuvier would have adopted one which must have been known to him as such, even from the place. 'In no specimen of a true falcon,' says Mr. Vigors, 'have I seen the slightest alteration of the tooth, except by accident.'

Our limits will not permit us to do more than hint at the other species of Falco, F. chiquera, Himalayan Mountains, gives the blow in poults, and returns to its bird. Port Famine, Emissary of Magalhães. The following Paloeones, besides F. pergerinus and F. chiquera, are in the catalogue of the South African Museum; bicarmicus, ru, nudus, raptorialis, subhumanus, and Stenostomum E. lineolatus, the Kea, inhabits Asia and South America, as well as Europe, and is very abundant in the Dakhan (Ocean). (Sykes, Abbott.)

4th. Sub-family, Buteonina (Buzzards).

Beak moderate, hooked from the base. Tail equal.

The sub-family of the Buzzards agrees, in the opinion of Mr. Vigors, with the last in the length of the wings, and the bill being bent from the base, and differs from it by a weaker and somewhat more elongated bill, by the third and fourth wing quills being longer, and more particularly by the absence of a tooth on the upper mandible. A gradation seems, however, as Mr. Vigors observes, to soften down these differences, and there is an approximation to the teeth of the falcons in the first genus of the sub-family.

Ictinia (Vieillot).


Mr. Vigors states that this genus is founded upon the Milan Cressorel of M. Vieillot, and has a strong and short bill, the upper mandible of which is somewhat angularly festooned, and the under distinctly notched. The tail is rounded, following the Palaeone, and its short and feathered below the knees, and the actobotus scutellatus. The wings are of considerable length, extending far beyond the tail; a character which induced M. Vieillot and others to place the bird near the Kite. Its strong affinities, however, to the last sub-family of which it possesses so many of the characteristic, inclines Mr. Vigors to assign it its present situation. In manners, he adds, it seems to approach the falcons; and he remarks that if we consider the Mantellinus of M. Wingeon, and the present group of Vieillot of which Mr. Vigors is in little doubt, we must attribute to the bird before us, judging from the interesting description in the American Ornithology, much of these.
spirited and generous qualities which we admire in theFAL
typal groups of the family.

Example.—Ictiopa plumbeou (Falco plumbeous of Latham.)

Description.—Back and wings slate-blue; head and belly
violet, spotted with brown. Iris fine red.

Habits.—said to fly to a great height, where it remains a
long time poised or stationary, and snares the air with
net, very like that of the casual game of insects which are its prey,

Locality. America.

Circus (of Authors).


Acrorura scutellata. Toes generally short. Third quill

largest. Sides of the head furnished with a circle of fea-
tures, very like the corvidae of birds.

This genus, says Mr. Vigor, exhibits still a slight ap-
proachment to the last groups in the structure of the upper
mandible, which has a rounded protrusion towards the
middle, similar to that of the Hawks. They are distin-
guished from the rest of the buzzards by their elevated
and slender tarsi, which are covered with feathers for some
space below the knee, and of which the acrorura are scut-
ellated. The nare is sub-oval and transverse on the cere,
and the third quill-feathers are the longest. It includes,
several species of Buzzards, the European Buzzards, the
African Buzzard, and the Buzzard of the New World.

Example. Circus Cyaneus.

Description.—This is the Harpy-Hawk, Buzzard Harpyae,
and Buzzard de Marais of the French; Falco castigulato
Falco con la testa bianca (young birds), Falco albemina
Falco castigulato, etc. (old), of the Italians; Schauertz-brauner,
Nacht oder mit dem gelben Kopf, Brauner rohr Geger,
Schauertz-brauner, Sampfenthe effective of the Ger-
man; Moor-Buzzard, Marsh-Harrier, Duck-Hawk, Harpyz,
and White-headed Harpy of the modern, and Bod y gyvenue
of the ancient British.

Adult Male (the moulting).—Beak bluish black, with a
slight festoon on the cutting edge; cere and irides yel-
low; top of the head, cheeks, and nape of the neck, yel-
lowish white, tinged with rufous and streaked with dark
brown; back, wing-coverts, and tertials, dark reddish brown
with lighter margins; primaries brownish black; seconda-
ries and tail feathers ash-grey.

After the third moult.—Wing-coverts and tertials become
in addition, partially or entirely ash-grey; wing primaries
grey; chin and throat nearly white; breast rufous,
streaked longitudinally with dark brown; belly, thighs, and
under tail-coverts reddish-brown, each feather streaked
with dark brown; legs long, slender, and yellow; toes ye-
low: claws sharp and black.

Second year.—Head, neck, chin, and throat dull yellow,
with part of the same colour on the carpus, or anterior point of the wing. (Bewick's figure.)

Young of the year.—All the plumage chocolate brown;
feathers tipped with lighter reddish brown; irides darker
than in the adult; legs and feet as in old birds. Length
from twenty to twenty-three inches, depending on the
sex. (Yarrell.)

Habits. — Food. — Reproduction. — The moor-buzzard,
when in pursuit of game, flies low, and will, so to speak,
burst a moor, or other piece of ground, with the regularity
since a man, to overflowing the European, Young rabbits, all
aquatics, birds, especially water-birds, reptiles, and even
fish, are its prey. Sometimes it will sit on the look-out on

a stone or low bush. Nest.—Generally on the ground, in
a tuft of rushes, or coarse grass, or furze, and composed of
rushes, or rank grass, and small sticks. Latham says that
it will sometimes build its nest in the fork of a large tree,
but that the instance is rare. Eggs, three or four, oval,
rather pointed at one end, two inches and one line in length,
one inch six lines in breadth (Yarrell).

Locality.—Denmark, Norway, Sweden, south of Russia,
Germany, France, Holland, Spain, Italy, Turkey. In all
countries where there are marshes, very abundant in Hol-
lund; rare in the south, migratory in the autumn (Tem-
minek); common in the marshes near Rome, but only
young birds, and migratory (Ronsparte); Trebizond (Ab-
ott), Gates, between Calcutta and Benares, &c. (James
Franklin). Europe, India, Africa (Gould). Smyrna
(Streickland).

The Moor Buzzard may be seen in most parts of England
and Wales, and more or less in their habitats. It occurs in Scotland
and the Habrises, and Mr. Thompson notes it as existing
in several counties of Ireland from Cork to Antrim.

Mr. Vigor observes that the sub-family of Buzzards is
that which of all the Falconidae approaches nearest to the
family of the owls (Strigidae). In their dull and aloof
habitats, their heavy flight, and indeed their whole appear-
ance, these contiguous groups evoince, he remarks, a general
resemblance indicating a corresponding inferiority in the
qualities which distinguish the birds of prey. The soft and
loose texture of the plumage of both presents a similar
affinity, and he adds that Circus, in particular, furnishes
us with a still further and more intimate point of resem-
blance. The feathers that cover the cheeks and ears form,
indeed, he says, a sort of rounded collar that rises on each
side of the face; thus exhibiting a conformity to the disk, or
circular portion of the face-feathers so conspicuous in the
owls.

Speaking of Circus Cyaneus, Hen Harrier, Mr. Gould,
in noticing the Trebizond collection of birds presented to
the Zoological Society by Mr. Keith Abbott, says that
European, African, Indian, Chinese, and North American
specimens present no specific difference. Circus cinctumen
he notes as European, Indian, and African. (Zool. Proc.)
1834.) In the South African Museum will be found Ceri ruminator (with habits very much resembling those of our Moor Buzzard, Merus, Stenwendi, and Le Vaillant). In the British Museum there is a very good series of the Moor Buzzard, illustrating the different changes of plumage.

Pernis. (Cuvier.)


Mr. Vigors observes that Pernis is distinguished by the singular character of the thorax, that surrounds the eye, being covered with feathers, instead of being naked as in the other Falconoids, or furnished only with hair. In other respects also, he states, the genus differs from that of Buteo with which it is so frequently confounded, as is noted in the case of Circus, it has the third quill the longest. The nectar are similar to those of Buteo. Buteo apicarius of Linnaeus, the Honey Buzzard, and a corresponding species from Java, F. philorhynchos of Temminck, form, he adds, the typical species on which the genus is based.

Description.—The Honey Buzzard is La Boudrie and Buse Boudrie of the French; Wespen-Busard of the German; Freche-guerler of Kramer; Slag-hok of the ‘Fauna Suecica;’ Mieze Hoog and Muse-Bauge of Brunniash; and Bateo of the ancient Britsh.

Old males.—Space between the eye and the beak covered with small serrated feathers. Top of the head very pure ash-blue; upper parts of the body brown, more or less ashy; secondaries barred alternately with blackish blue and grey blue; tail with three bars of blackish brown and a white bar, at unequal distances; throat yellowish white with brown spots; neck and belly marked with triangular brown spots on a whitish ground; cere deep ash; interior of beak, iris and feet yellow.

Length about two feet.

Female and young.—Ashy-blue on the forehead only; front of the neck marked with great spots of bright brown; breast and belly yellowish reddish with deeper spots; under surface of the body often whitish with reddish brown spots.

Young of the year.—Cere yellow, iris bright brown; head spotted with white and brown; under part of the body reddish white with great brown spots; feathers of the upper parts bordered with reddish. (Temminck.)

Habits.—Food—Reproduction.—The Honey Buzzard feeds on mice, rats, voles, rabbits, birds, reptiles, wasps and other insects. (Temminck.) Examinations.

Mr. Yarrell in his ‘British Birds,’ have usually proved the food to have been the larvae of bees and wasps, to obtain which the receptacles containing them are scratched out and broken up in the manner described by Sir William Jardine. In one instance, in the case of a Honey Buzzard kept in confinement, I was told that it killed and ate rats, as well as birds of considerable size, with great ease and good appetite. The same author records that the stomach of a sparrow, killed in the north of Ireland and examined by Mr. Thompson of Belfast, contained a few of the larvae and some fragments of perfect coleopterous insects; several whitish-hued hairy caterpillars; the puca of a species of butterfly; and also of the six-spot hornet moth. Wil- loughby says, ‘In the stony and guts of that we dissected, we found a huge number of green caterpillars of that sort called Geometria, many also of the common green caterpillars and others. White’s specimen had in its stomach lumps of frogs, and many grey sand without shells. Wil- loughby says that it runs very swiftly like a hare. Yarrell states that it seldom flies, except from one tree to another, or from bush to bush, and then always low, and that it runs on the ground with great rapidity like the common fowls. Not on any tree in a wood or forest. White mentions one on a tall slender beech near the middle of Schleer’s, like Hanger. Willoughby says, ‘It builds its nest of small twigs, laying upon them wool, and upon the wool its eggs. We saw one that made use of an old Kite’s nest to breed in, and feeding along with the Synophyle in wasps; for in the nest we found the cocoons of wasps’ nests, and in the sternum of the young the limbs and fragments of Wasp-maggots. There were in the nest only two young ones, covered with white down spotted with black. Their feet were of a pale yellow; their tails between the nostrils and the head white. Their claws large, in which we looked for Lizards, Frogs &c. In the crop of one of them we found two Lizards entire.

* Address to the members of the Herrickshire Naturalists’ Club, September, 1807.

with their heads lying towards the bird’s mouth, as if they sought to creep out.’ The same author says that the eggs are cuneiform, marked with darker spots. The eye mentioned by White was smaller and not so round as those of the common Buzzard, dotted at each end with small red spots, and surrounded in the middle with a broad red-rim. Pennant mentions two blotched over with two shades of red, somewhat darker than those of the Keest. ‘To the eggs of the Honey Buzzard,’ writes Mr. Yarrell, ‘are rare; I have only seen three or four specimens, one of which was referred to the description given by White, the colouring matter being confined to a broad band round the middle. One specimen in my collection resembles those mentioned by Pennant, being mottled nearly all over with two shades of orange brown: long diameter 2 inches; transverse diameter 1 inch 9 lines. Locality. Oriental countries; very rare and accidental in Holland; more abundant in France in the Vosges and in the south, a bird of passage (Temminck). Denmark, Norway, Sweden, Russia, Germany, France, Italy and the south of Europe generally (Yarrell and authors by him quoted). Skins received from India (Gould). In Petaso the bird has been obtained in Suffolk, Norfolk, and along the eastern coast as far north as Northumberland, and in several western counties, including Dorsetshire, Devonshire, and Worcestershire. Rare in Cumberland, according to Dr. Hey-sham, who had only met with one specimen; and was told that it bred in the woods at Lochre. Mr. Thompson mentions one killed in the North of Ireland, and Mr. Macgillivray saw no as having occurred in Scotland. Buffon and others, Below among the rest, say that it gets very fat in winter and is then good eating.

Buteo (of Authors).


Mr. Vigors remarks that the true Buzzards are known by their comparatively feeble bill, their short tarsi, and scutellated acroterios. Their nectar are round and their fourth quill-feather the longest. Their tarsi are either plumed to the toes or half-way covered with feathers. Of those whose tarsi are completely feathered, F. lapgus of Linnaeus is the type, according to Mr. Vigors, and F. german of Duelli appears to appertain to it: of those birds whose tarsi are but half plumed he gives Buteo vulgaris, the Common Buzzard, as an example, and remarks that the genus is very numerous in species, and that the form is generally to be observed over the globe.

Description.—Buteo vulgaris is the Falco Buteo of Lin- naeus; Buteo of Jesner; Falco vartegatus of Gmelin; F. falco of the French; Falco kithe-
Dr. Richardson ('Fauna Boreali-Americana') states that the Common Buzzard arrives in the fur countries in the middle of April, very soon afterwards begins to build its nest, and, having reared its young, departs about the end of September. It haunts the low alluvial points of land which stretch out under the high banks of a river, and may be observed for a long time motionless on the bough of a tree watching for some small quadruped, bird, or reptile to pass within its reach. As soon as it espies its prey, it glides silently into the air, and, swooping easily but rapidly down, seizes it in its claws. When disturbed, it makes a short circuit, and soon settles on another perch. One of Dr. Richardson's specimens had two middle-sized toads in its crop. It builds its nest, according to the Doctor, on a tree, of short sticks, lining it with deer's hair. The eggs are, he says, from three to five in number, and he remarks that it was seen by the expedition as far north as the 57th parallel, and that it most probably has a still higher range. He gives a description of two; one a male, shot on the 17th June, at the nest, which contained three eggs, on the plains of the Saskatchewan; and another, a female, killed at the nest also, near Carlton, May 22.

Buteo vulgaris.KR

Buteo Bacha is recorded by Major James Franklin among the collection formed by him on the banks of the Ganges and in the mountain-chain of Upper Hindostan. In the South African Museum the Buteones Jaculus and Tachadar are preserved, to which the birds are attached. The peculiar power and gracefulness of flight are the characteristics which more particularly separate the Kites from the rest of the Raptorses.

Elanus. (Savigny.)

Beak moderate, weak, compressed. Tarsi short, semiplumaged. Acroteria reticulata. Claws, with the exception of the middle one, rounded internally. Second quill longest. First and second quills strongly notched internally.

Example, Elanus melanopterus. Black-winged Swallow-tailed Hawk.

Description.—This is the Falco melanopterus of Daudin; E. caeruleus of Savigny; and Le Bleu de Le Vaillant. Size of a Sparrow-Hawk. Plumage soft and silky, but a little forked. Above ash-coloured, quills blackish, back and

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5th Sub-family. Milvina. (Kites)

Beak moderate, rather hooked from the base. Tarsi forked. The length of the wings and the forktail, instruments of motion to which the birds are adapted for their peculiar power and gracefulness of flight, are the characters which more particularly separate the Kites from the rest of the Raptorses.

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Buteo vulgaris. KR
shoulder black. Belly white. Tail principally white. Feet yellow.

Habits.—The bird is said to live principally upon insects which it captures on the wing.

Locality.—Common in Africa from Egypt to the Cape. There is a specimen in the South African Museum. Skene speaks of it as being in great abundance in Syria, Egypt, and Retaria. Couch (Tucker’s expedition) saw great numbers at the mouth of the Congo, and some were sent home from thence.Lesson says that it occurs in New Holland. It is a bird among the birds collected by Major James Franklin on the banks of the Ganges, and in the mountain chain of Upper Hindostan.

Naucerus (Vigors.)

Book rather short, weak, compressed. Notably colored, placed in the cere, which is furnished with bristles in an oblique direction. Wings long; second or third quill longest. Tail long, very much forked. Feet short, weak. Tarsus retracted. Arcturus feathered below the knee to the middle. Crows not cylindrical. Body slender, elegant.

Mr. Vigors observes that Naucerus is distinguished from the true Micrus by the greater development of the character of the forked tail; by the relative proportion of the wing-feathers, the fourth being the longest in Micrus; and by the reincarnation of the arcturus, those of Micrus being covered with even scales or scutellated. He divides the genus into two sections.

1st.

With the second quill longest.

Example, Naucerus Rivinarii.

2nd.

With the third quill longest.

Example, Naucerus Forcatus. Edna Forcatus, Linn. Swallow-tailed Hawk.

Description.—Whole length 20 inches. Book bluish-black, cere lighter blue, trods dark; head, neck, breast, belly, under surface of the wings, sides of the body, thighs, and under tail-coverts pure white; back, wing primaries, secondaries, upper tail-coverts and tail-coverts black, with a rich metallic lustre; tertials black on the outer web, but patched with pure white on the inner; tail very deeply forked: eyes and lore greenish blue; claws faded orange. (Yarrell.)

Habits.—Feeds—Reproduction—Locality.—We select Mr. Audubon’s account of the habits and locality of this graceful bird:—“A solitary individual of this species has once or twice been seen in Pennsylvania. Farther to the eastward the Swallow-tailed Hawk has never, I believe, been observed. Travelling southward along the Atlantic coast, we find it in Virginia, although in very small numbers. Beyond that state it becomes more abundant. Near the falls of the Ohio a pair had a nest, and reared four young ones in 1826. In the lower parts of Kentucky it begins to become more numerous; but in the states farther to the south, and particularly in parts near the sea, it is abundant. In the large prairies of the Attercopas and Oppelutas it is extremely common. In the states of Louisiana and Mississippi, where these birds are abundant, they arrive in large numbers in the beginning of April, and are heard uttering a sharp plaintive note. At this period I generally remark that they come from the westward, and have counted upwards of a hundred in the space of an hour, prowling about in a directed eastward course. At that season and in the beginning of September, when they all return to the United States, they are again approachable when they have alighted, being then apparently fatigued, and busily engaged in preparing themselves for continuing their journey, by dressing and oiling their feathers. At all other times, however, it is extremely difficult to get near them, as they are generally on wing through the day, and at night rest on the stumps and stumps, balancing the mark of the day’s flight, the breezes or the stumps of the forest they are in the wild on the wind. To calm and warm weather their keenness to the moon, my head, purifying the large insects of the Mosquito Hawks, and performing the most singular evolutions that can be conceived, using their tail with a vengeance of motion peculiar to themselves. Their principal food however is large grasshoppers, grasshoppers, and large ants, bees, wasps, and flies. They sweep close over the land, sometimes seeming to be attracted to a point for a moment and then flying with the swiftness of a meteor, carrying it off and depositing it in the air. When searching for grasshoppers and caterpillars, it is not difficult to approach them under a tree in a second, as if they were one in the act of alighting. When once on the ground and falling to the ground, the whole hawk comes over the dead bird, and acts upon carrying it off. An excellent opportunity is then afforded of shooting as many as may be desired, and I have killed several of these hawks in this manner, finding a step I could load my gun. The Swallow-tailed Hawk was immediately after its arrival in the southern states and its courtship takes place on the wing, its motions are then more beautiful than ever. The nest is usually placed in the top branches of the tallest oak or pine tree, excepted in the margin of a stream or pond. It resembles that of a crow, being externally, being formed of dry sticks, mixed with Spanish moss, and lined with coarse grass and a few feathers. The eggs are four to six, of greenish white color, with a few irregular brown spots at the larger end. The male and female sit alternately, the one feeding the other. The young are at first covered with buff-colored down. Their next color exhibits the pure white and black of the old bird, but without any of the glossy purplish tints of the latter. The first flight is but slightly forked, becomes more so in a few weeks, and at the approach of autumn exhibits little diff
The plumage is completed the first spring. Only one brood is raised in the season. The species leaves the United States in the beginning of September, moving off in flocks, which are formed immediately after the breeding season is over.

This species, according to Mr. Nuttall, will, like the Honey Buzzard, prey upon locusts and wasps, and their larvae, and make a regular attack on their nests. M. Vieillot states that it visits Peru and Buenos Ayres. Mr. Yarrell gives it a place among the British birds on the authority of two specimens, one killed at Balacholaiat in Argyleshire in 1723, and another taken alive in Shaw-gill, near Hawes in Wensleydale, Yorkshire, in 1805. Apparently to avoid the violence of a tremendous thunder-storm, and the clamorous perambulation of a flock of rooks which attacked it at the same instant, it took shelter in a thicket, where it was seized before it could extricate itself, on the 6th September. The person who caught it kept it a month; but a door being accidentally left open, it made its escape. It first alighted on a tree at so great a distance, from which it soon ascended in a spiral flight to a great elevation, and then went steadily in a southerly direction as far as the eye could trace it. (Linn. Trans., vol. xiv.)

**Milvus (of Author).**

Beak moderate, weak, subangular above; nostrils oblique, elliptical; tarsi short; acrorurus scutellate; wings very long, fourth quill longest; tail forked.

Example, Milvus milvus, Falco milvus Linnaeus; Milvus virgata of Fleming and Gould.

Description.—This is the Milvus Royal of the French from Belon to Buffon; Pojana, Milvus, Nicchio, and Nibbio of the Italian; Rother Milan of the Germans; Gliena of Brunswick; Gliada of the Fauna Suecica; Kite, Fork-tailed Buzzard, Gleds or Gledoe (Pennant says from the Saxon 'Glida') of the modern, and Burcud of the ancient British. In some of the counties of England it is called the Puffock, a name the sometimes bestowed provincial upon the common Buzzard. In Essex it is called the Crooked-tailed Paddock.

**Milvus cineraceus.**

Length about twenty-six inches; beak horn-colour; cere and ridge yellow; feathers of the head and neck grayish-white, streaked along the shaft with ash-brown; feathers of the back and wings-covers dark brown in the centre, locally edged with rufous; inner web of some of the tertials edged with white; primaries nearly black; upper tail-coverts rufous; tail-feathers reddish brown, the outer web of one uniform colour, the inner webs barred with dark brown; the outer tail-feather on each side the darkest is white; tail deeply forked; chin and throat grayish white, streaked with dusky; breast, belly, and thighs, rufous brown, each feather with a central longitudinal streak of dark brown; under surface of the wings, near the body, feathers, with dark brown caps, and rufous tips, and streaks towards the outer part of the wing; under tail-coverts plain rufous-white; under surface of the tail-feathers grayish-white, with the dark bars of the upper surface showing through; tarsi and toes yellow; claws black (Yarrell). The Thematics are large in the males.

**Habitat—Food—Reproduction.**—The Kite sails gracefully in the air, now describing circles and anon with outspread tail remaining stationary. It pounces on its prey, consisting of moles, mice, lizards, ravens, unoccupied birds, and the young of the Gallinaceae. In Britain especially. It was when more plentiful than it is at present, a great scourge to the poultry-yard. It will eat frogs and snakes, and, in the 'Magazine of Natural History,' an observer sees it catch fish from a broad river near which he resided. The nest, made of sticks, and lined with soft materials, is usually built on the fork of a tree in a thick wood. The eggs are two, sometimes three, short oval, 2 inches in length by 1 inch 9 lines in breadth. They are of a dirty white, with a few reddish-brown spots at the large end. The female lays early in the season, and she often makes a vigorous defence when her nest is attacked.

**Locality.**—France, Italy, Switzerland, and Germany; less abundant in Russia; much more abundant in Holland; migratory in autumn. (Temminck.) Very common near Rome, and also in Italy near the coast. As a breeding place it occurs in Siberia, and the country about Lake baikal; and has been observed in Egypt, and several parts of Africa north of the equator. In Ireland it does not seem to be known. In Britain, especially in the southern counties, it is bred, though it is not so very abundant. Cissus states, that when he was in London an amazing number of kites flocked there for the offals which were thrown into the streets. They were so tame, that they took their prey in the midst of crowds, and it was forbidden to kill them. In Falconry it was used both as pursuer and pursued, and is very docile. A good instance of this docility is given by Mr. Thompson in the 'Magazine of Zoology and Botany,' vol. ii, p. 172. Louis XVI. fed at the kite with powerful falcons; and Sir John Sebright tells us, that 'Fork-tailed kites were much flown years ago by the earl of Orford, in the neighbourhood of Alconbury Hill.' A great owl to the leg of which the falconers usually tie a fox's brush, not only to impede its flight, but to make it, as they fancy, more attractive, is thrown up to draw down the kite.

Colonel Sykes notes Milvus Goninda as occurring both in South Africa and India. In the catalogue of the South African Museum is the following account of Milvus parasiticus, the Cape Kite, there proscribed. This bird is the Kitchen Delf or the Steeler of the Dutch colonists, and only appears in South Africa during the summer season. It resists to inhabited places, and, as its name implies, is very destructive to young chickens. Everywhere it is bold; but it is particularly so in quest of which firesarms have not as yet been introduced, where it will swoop down and seize pieces of flesh from the hands of children, or even grown persons. It feeds in part upon carrion, and many individuals are often seen congregated together upon dead carcasses.

**General Geographical Distribution of the Falconicides**—Wherever birds and small quadrupeds are to be found there is the bird of prey, whose office it is to keep their number within their proper bounds. Thus, as Mr. Vigors writes (Zool. Journ., vol. ii., p. 357):—"On the Groups of the Falconicides there seem to be no limits afixd to the geographical distribution of the true Falcons. This indeed appears generally the case in the larger groups of this family. The naked-cheeked Falconicide alone seem to be confined to the warm parts of the Old World, and to Australia, where they are to refer F. Noon Zealandiae of Dr. Latham to the genus Polyborus, according to M. Temminck's view. But the remaining groups appear to be dispersed in every division of the globe."

The Falconicide described and figured in Mr. Swainson's 'Birds of Western Africa,' before alluded to, belong to the two most typical or perfect divisions of the family, viz. the noble falcons (Falconicide), and the hawks (Accipitrine).

Some of the best illustrations of the Falconicides will be found in Audubon, Bewick, Gould, L. Vaillant, Temminck,
Savigny, Swainson, Vieillot, and Yarrell. Some of Frisch's figures are good. There are many fine and expensive works (the 'Planches Enluminées, for example) which contain figures for these albums, but they are sadly deficient in character, and look like what they were mostly taken from, ill-stuffed specimens. There is more to be learnt from the wood-cuts of the heads by Swainson in 'Fauna Boreali-Americana' and the 'Catalogue of Birds', than from the most gorgeously colored ill-illustrated engravings. The magnificent works of Audubon and Gould are full of the character of the respective species: Swainson particularly excels in this, whether he portrays the bird in his beautiful drawings, or gives an epitome of its habits and parts, in the quadruplet columnar. The figures in Yarrell's 'British Birds' are excellent, and charming examples of the perfection to which wood engraving can be carried.

FOSSIL FALCONIDE.

Dr. Buckland notices the remains of Falconidae in the 1st period of the Tertiary series (Eocene period of Lyell), and figures a Buzzard (Buteo), as recent and fossil, in the first plate of his Bridgewater Treatise.

FALCONRY, or HAWKING, the art of training and flying hawks to take other birds. Julius Firmicus, who lived in the middle of the fourth century, is the first Latin writer who speaks of falcons and the art of teaching one species of birds to hunt and catch others. The art certainly had, even, been had, in all probability, practised in the East from remote ages; whence it certainly came to Europe.

From the Heaptcrity to the time of Charles II. falconry was the principal amusement of our ancestors in England: a gentleman was supposed 'not to be a gentleman' if he did not keep a hawk upon his hand, which, in old illuminations and upon ancient seals, is the criterion of nobility. Harold, afterwards king of England, is thus represented in the Bayeux tapestry, when visiting the court of William duke of Normandy.

A 'Dei Gratia' (4to, 1623, p. 310) states that King Alfred had his falcons among the persons whom he encouraged for their skill in different professions; and a metrical treatise on the art of falconry, still extant, is ascribed to King Edward the Confessor.

In 'Domesday Book' the practice of falconry is illustrated by numerous entries. In several places we find a sum, no less than ten pounds, made the optional payment instead of finding a hawk ('Domes. tom. i. fol. 134, b. 172, 230); and once, at Worcester (tom. i. 172) a Norway hawk is specified. Acres, or places destined for the breeding or training of hawks, are entered in the Survey in Buckinghamshire, Gloucestershire, Worcestershire, Herefordshire, Shropshire, and, more frequently than in other counties, in Cheshire; as well as among the lands between the Ribble and the Kent (Add. tom. i. fol. 1363. f. 180, 252 b, 256 b, 257, 264, 265 b, 266 b, 267 b, 268 b, 269, 270).

Norse were hawks less prized at subsequent periods. According to Madox (Hist. Excheq. i. 273), in the 14th Hen. II. 'Fulacram' one of the king's hawks, rendered his rent at the exchequer in three hawks and three girafolas. King John had also his hawks ('Pat. 4, Joh. m. 2); and upon the Patent Roll of the 34th Hen. III. a copy occurs of the letter which the king sent in that year to the king of France, to demand the return of a hawk which he was to find in a forest of Normandy ('vol. iii. p. 82) relates a curious anecdote of Henry III.'s anger with one Roger Belet, who by reason of something he had done or omitted about a spar-hawk, was diseseed of all his lands and 400. rent in Bagarbon. In the 34th Edw. III. it was made a good behaviour for seven years, or to lie in prison till he did. (Pennant, Brit. Zool., 5vo. Lond. 1812, vol. i. p. 212.)

Edward III., according to Froissart (Chron. i., c. 210), met with him in his army, when he invaded France, thirty falcons on horseback, who had charged on his hawks; and every day he either hunted or went to the river for the purpose of hawking, as his fancy inclined him. Queen Elizabeth is represented enjoying this sport in a wood-cut in 'Falco),' published 1572; and it was the favourite amusement with King James I.
in 1715, of the earl of Linlithgow and Callander, by whose forfeiture his estates and superiorities became vested in the crown. In 1720 the estate of Callander was purchased by the York Buildings Company, from whom, in 1763, it was bought by Sir John Forbes, the father of the present occupier. During the time the estate was held by the York Buildings Company there was always a resident baron-bailie; and Mr. Forbes continued to name a person to that office till about the end of the last century.

Since then the office has been vacant.

The management of the affairs of the town and community is at present vested in two separate bodies, the stentmasters and committee of feuers. The stentmasters are elected annually, and are twenty-four in number; four being chosen by the inhabitants, twelve by the burgesses of the trades or guilds of hammermen, wrights, weavers, shoemakers, masons, tailors, bakers and brewers, and four from the suburbs of the town. Any person belonging to any of these trades is qualified to vote for and to be elected a stent-master of his craft. By the act of Robert the Fourth of Falkirk obtained a municipal constitution. The council consists of a provost, three bailies, a treasurer, and seven councillors. According to the population returns for 1831 the burgh and parish of Falkirk contained 12,743 persons.

It returns a member to parliament in union with the burghs of Lanark, Linlithgow, Hamilton, and Airdrie. The debt of the town is 1700L. its revenue about 200L, and annual expenditure 174L. The patronage is in the crown. Near Falkirk the Pretender gained a victory over the royal army on the 15th of February 1746. The heads of the Roman wall, known by the name of 'Graham's Dyke,' built in the time of the Emperor Antoninus Pius. The grammar and English schools of Falkirk are in high repute; they are all private except the parish one, the master of which is appointed by the parish. The act of Robert the Fourth of Falkirk obtained a municipal constitution; Bannatyne's Statistical Account of Scotland; Boundary Reports; Municipal Corporation Reports, 1835; Population Returns.

FALKLAND, HENRY CARY, VISOUNT, born in 1733, the Carys of Cockington, was the son of Sir Edward Cary of Berkshireham and Aldenden in Hertfordshire, at which latter place he was born late in the reign of Queen Elizabeth. When about sixteen years of age, he was sent to Exeter College, Oxford; but he left that university without taking a degree. In 1698 he was made one of the Knights of the Bath, at the creation of Henry, Prince of Wales; and in 1617 was sworn in Comptroller of his Majesty's household, and made one of his privy coun- cil. On the 10th November, 1620, he was created Viscount of Falkland in reward of his services in the Low Countries, for knowing his abilities and experience, constituted him Lord Deputy of Ireland, into which office he was sworn Septem- ber 15th, 1622, and continued in it till 1629. During his administration it is said to have kept a strict hand over the soldiers, and that whenever occasion served to send complaints to the court of England against him, till, by their clamour and prevailing power, he was removed in disgrace. Lealad in his 'History of Ireland,' has given a very high character of the government which he held; and that his government was very severe, it is true. His government was in a very severe and rigid one, in a manner which no man could not always gratify to the full extent of their desires; his actions were severely maligned at the court of England; his administration in consequence was cautious and embarrassed. Such a governor was little qualified to save the negotiations in Scotland, which he entered into. His government was not always in a manner which his subjects were satisfied. His government was rather in a manner which he was satisfied, and on the contrary, they were dissatisfied. Wood includes Lord Falkland among the Oxford writers. The only work of his which was published was a History of the most unfortunate Prince Edward II., edited by Sir James Harrington, in folio and octavo, in 1688. One of his letters, which he wrote in 1687 to the Duke of St. Louls, remains unpublished in the Harleian Collection of Manu- scripts in the British Museum. Lord Oxford says he was remarkable for an invention to prevent his name being counterfeited, by artfully concealing in it the successive years of his age, and by that means, detecting a man who had not observed so nice a particularity. (Biogr. Brit., Kippis's ed., vol. iii., p. 299; Leland's Hist. of Irel., vol. ii., p. 474; Park's ed. of Lord Oxford's Royal and Noble Authors, vol. ii., p. 4.)

FALKLAND ISLANDS. The are a group of islands situated in the southern Atlantic Ocean, between 51° 40' and 52° 10' S. lat., and 57° 30' and 60° 6' W. long. There are two larger islands, called East and West Falkland, and a number of smaller ones, which is said amount to more than 90. The strait which separates the larger islands is known as the Falkland or Carlsle Strait, and is from six to ten miles wide. The surface of both islands is calculated to be about 3400 square miles, or about 1000 miles more than that of Devon- shire. The northern districts in both islands are rather mountainous, but the highest ground does not much exceed 2000 feet above the sea-level. At the foot of the mountains the plains stretch from five to fifteen miles along the margin of the sea; the southern districts are more level, and hardly and fast a hill. Ten raised,祖国, particularly in the northern districts, is much indented, and contains numerous excellent harbours; among which the most frequented are Berkeley Sound on West Falkland and Port Egmont on East Falkland; both these bays are spacious, of sufficient depth for men-of-war, and have excellent anchoring grounds. The climate of these islands does not differ much from that of the British islands. The range of the thermometer is between 26° and 75°; in winter between 26° and 50°, and in summer between 50° and 75°. The weather is rather un- certain, being mostly cloudy, with occasional showers, often amounting to rain. The hills are surrounded by the tops of the mountains, and the ice is seldom above an inch thick. Fogs are frequent, especially in autumn and spring, but they usually disappear towards noon. The vegetation is very rapid.

No trees grow on the islands, but wood for building may easily be obtained from the Strait of Magalasla. Peat and some bushes, which are abundant, supply fuel. Several antiaceticrute plants grow in abundance. The islands contain foxes, but they differ from those of Europe, having a shorter head and a smaller tail. Seals also abound, and are close to the islands. Many black whales are caught in the neighbouring seas. A kind of fish, between the mullet and the salmon, is very abundant, especially in spring. Game is extremely common, especially wild geese and ducks, which are easily tamed. The flocks of gulls and penguins which visit these shores are valuable on account of their eggs.

The Europeans who settled in these islands about the middle of the last century brought with them domestic animals; on the cessation of settlement in 1820, some of them remained, and some of them thrive well. There are herds of wild horned cattle and of wild hogs; the horses are of small size, but very hardy, and may be broken in, though with some difficulty. Rabbits are very numerous, of a large size, and have a fine fur. The soil, especially along the base of the mountains and hills, is well adapted to cultivation, consisting generally of soil from six to eight inches of black vegetable mould. Wheats are manufactured. This island is in latitude 5° 30' S. and 57° 30' W. and covers an area of 6620 square miles, and is about 13 miles in circumference. It is inhabited by the people of the island, as well as by the people of the mainland.
South America was opened to all nations by the navigation round Cape Horn. The English again formed a small settlement in Port Egmont in 1817, principally as a place of refreshment for the whalers. Berkeley Sound, which is better situated for vessels bound round Cape Horn, was settled by a small colony sent there from Buenos Ayres in 1839, but the English government took possession of it soon afterwards. [London Geog. Journ., III. and VI.]

FALL OF BODIES. Under this head we propose to discuss the forces which regulate the fall of a material substance, supposed either to be allowed to drop or to be projected directly upwards or downwards. The motion of a body projected in an oblique or horizontal direction comes under PROJECTILES, Theory of the motion of bodies which cause the descent or retard the ascent, under ACCELERATION, Gravity, &c.; and the circumstances which influence more or less the results about to be specified, under PROJECTILES, Resistances, Motion of the Earth; Motion, Law of.

The resistance of the air does not greatly affect the motion of bodies, unless either—1, the bodies themselves be very light, as in the case of feathers, or—2, the velocities be very great, as in that of a cannon-ball. The law according to which this resistance acts is not well ascertained for great velocities; but for moderate velocities it is not far from the truth to say that it is as the square of the velocity: that is to say, whatever resistance there may be to a velocity of 10 feet per second, there is four times as much to 20 feet per second, nine times as much to 30 feet per second, and so on.

Neglecting the resistance of the air, let us first suppose a body (say a bullet) to be allowed to drop from a height above the earth. The law of its motion is as follows. It accelerates uniformly at the rate of 32 feet per second: that is, at the end of a quarter of a second it is in such motion as would, if the action of the earth ceased, cause it to describe 8¼ feet in a second. At the end of one second the rate of motion is 32 feet per second; at the end of two seconds, 64 feet per second, and so on: that is, the fall of a body is a uniformly accelerated motion. In the article just cited the law of this motion is further explained. We shall here collect the principal formulæ connected with the subject, referring to Ptolemaeus and instruments, for the manner in which the main fact of the acceleration being 32 feet per second is proved and verified.

Let \( g = 32 \) feet a second be the number of seconds during which the motion has lasted when the body has attained a velocity of \( v \) feet per second.

Firstly, suppose the bullet simply to drop without any initial impulse being communicated. Then

\[
v = \frac{1}{2}gt^2 = \frac{1}{2} 
\]

Thus, either of the three, \( v, t, s \), being given, the others may be found.

Secondly, suppose the bullet to be projected downwards with a velocity of \( v \) feet per second; the consequent is still a uniform addition of \( gt \) feet per second to the velocity, and we have

\[
v = vt + \frac{1}{2}gt^2 = v^2 + \frac{1}{2}g^2.
\]

Thirdly, suppose the bullet to be projected upwards with a velocity of \( v \) feet per second. The action of the earth begins by producing a loss of velocity at the rate of 32 feet per second. This lasts until the velocity of the bullet is diminished to zero, after which it begins to descend without any initial impulse, and we have the first case repeated.

During the ascent,

\[
\frac{1}{2}g \quad \frac{1}{2}g
\]

and the height through which the bullet will ascend is \( h = \frac{1}{2}g t^2 \), the time of doing which is \( t = \sqrt{h} \) seconds. After this the first case may be repeated; but this is not necessary; the equation continues to hold good between the relations which actually exist provided that \( v \) becoming negative, be interpreted as indicating that the turn has taken place and the bullet has begun its descent, and also that \( v \) becoming negative be interpreted to mean that the element continues until the bullet has passed through the point from which it was first thrown, and fallen below it. For instance (supposing \( g = 32 \) for simplicity), let a bullet be projected upwards with a velocity of 100 feet per second, where will it be, and at what rate will it be moving, at the end of ten seconds?

FALLACY. As defined by the publisher Whately, is an unsound mode of arguing which appears to carry conviction and to be decisive of the question in hand, when in fairness it is not. Bentham's definition in his 'Book of Fallacies' is this: 'By the name of fallacy it is common to understand an argument which, though perfectly or apparently suited to the purpose, or with a probability, of producing the effect of deception,—of causing some erroneous opinion to be entertained by any person to whose mind such argument may have been presented.' Accordingly if an argument is well founded in a sound rational exception, it is more correctly termed a paradox, and it is the intention of fraud that constitutes the fallacy or sophism. There is, however, a legitimate use of fallacy which is too often unnoticed by writers on logic. He means a fallacious reasoning which is purblindly used to deceive an opponent; when, in reality, the reasoner is not false, but unwise in the choice of his mode of addressing his adversary. Thus a refutation of the Aristotelian fallacies of the lyceum and the hestep and the bald-head (accurva calvis), in which it is proved that these notions are incapable of any precise determination, may have been designed to show that the distinctions of degree (here represented by the hestep and bald-head) are unavailable for philosophical purposes, and thereby to call attention to the difficulty of admitting into science the vague representations of sense.

Aristotle in his treatise 'De Sophisticis Elenchis' has laboured to expose and classify the different fallacies which he terms sophisms (σοφίσματα). He divides them into those extra dictum (ἐκτός τοῦ δικτύου) where the fallacy is in the process of reasoning, and those in dictio (ἐκτός τοῦ δικτύου) where it lies in the subject-matter. The former have by the schoolmen been called formal, the latter material.

The fallacies are usually divided into formal and material, under the expressions of deduction and induction, whereas those of the state must be corrected by the formation of valid principles and a correct generalization of terms, which belong to the synthesis of induction, which is totally alien from logic as the science of demonstrative knowledge.

For an enumeration and exposition of the several sophisms see the sections on fallacy in Whately's Logic; and for the exposure of that class of fallacies which he has called political fallacies, the work of Bentham already cited, s.v.

FALLING STARS. [AEROLITES.]

FALLOPIAN TUBES. The Fallopian tubes, so called from the anatomist who first accurately described them, are tortuous and slender membranous canals about three inches long and a quarter of an inch in diameter, one from the upper corner of the flattened transverse or pear-shaped body of the uterus. They communicate with the cavity by minute openings, capable of admitting a large brazier. As they diverge outwards from their origin, they enlarge, and, curving backwards, terminate obliquely in small fringed extremities directed towards the ovaries, which lie below and somewhat behind them. They are included, as are likewise the ovaries, in the duplicitate of the peritoneal lining of the abdomen, called the broad ligaments of the uterus, by which that body is suspended to the body and attached to the pelvis. A production of this membrane sheathes them to their loose trumpet-shaped extremities, and turning over the edge is continued for some distance up the interior surface, finally becoming more or less mucous lining which accompanies them in their passage from the uterine cavity to the body in the lining of the serous and mucous membrane, and probably has some concern in the spreading of inflammation from the interior of the uterus to the peritoneum, which constitutes one of the forms of purpura fever.
Before the period of conception these tubes are observed in the lower animals to become more full of blood, and to have a writhing peristaltic motion like that which impels the aliment along the intestinal canal. Certain prominences are observed in it, which, when the ovary is opened, are seen to be the Gravid ova, which are the ova or germ of the future progeny. The Fallopian tubes then become attached by their open filibrated mouths over these prominences; and receiving the vesicles as they burst through the peritoneal covering of the ovaries, convey them by the peristaltic motion we have mentioned into the uterus.

Whether these germs are always fecundated before they reach their destination is disputed. Such is unquestionably the case in the lower animals; but in Man, the womb enters into the general cavity of the abdomen. Such cases are not necessarily fatal; the fetus, dead of course, sometimes becomes enclosed after a certain period in a membranous cyst, gradually extended around it from the parietes of the abdomen; and may remain for many years without exciting much disorder by its presence. In other instances abscesses form and break in succession, discharging the bones and other unabosorbed parts of the fetus, and the case eventually does well. But such results are rare; and nothing but the casuarine operation affords much prospect of one.

FALLOPIO, GABRIELLO, or FALLOPIUS, was born at Modena about the year 1523. He was one of the three distinguished anatomists of the sixteenth century, to whom Caver, an unquestionable authority on such subjects, has assigned the character of being the greatest in conception. In these cases the germ never reaches the uterus at all, but remains in the intermediate canal and becomes attached to its surface; in this position it may attain its full size, expanding the tube as it grows, till at length it gives way, and the fetus does not displace the ova from the confines of the abdomen. Such cases are not necessarily fatal; the fetus, dead of course, sometimes becomes enclosed after a certain period in a membranous cyst, gradually extended around it from the parietes of the abdomen; and may remain for many years without exciting much disorder by its presence. In other instances abscesses form and break in succession, discharging the bones and other unabosorbed parts of the fetus, and the case eventually does well. But such results are rare; and nothing but the casuarine operation affords much prospect of one.

FALLOPIUS appears at once time to have held an ecclesiastical office, the recommendation of which not unfavourable to a medical profession. In other instances, a university, which was, in fact, a sphere too narrow for his talents; and had lectured at Pisa for some years with increasing reputation under the patronage of the first Grand Duke of Tuscany [Cosmo I.], when he was induced by the liberal offer of a manure plant to come to Ferrara. But he was so little inclined to the业 of teaching that he was obliged to resign his academic offices by one of the disastrous incidents which have thrown a romantic interest over the latter part of his remarkable life. [Vesalius.]

The fact is, he never was confined to one department of natural history. He appears to have occupied himself among the rest with the subject of systematic botany, which had very recently begun to attract attention. In this, as in all other steps in the revival of learning, he was encouraged and assisted; and he was the first to have been established at Pisa by Cosmo de' Medici in 1543, and was at this time under the management of Cesalpinus. [Botany.] The second was established two years later at Padua; and the charge of this garden, with the professorial duties annexed to it, was committed to Fallopian soon after his arrival in that university. The botanical researches and collections he had made during his travels, and his subsequent opportunities at Pisa of access to the best sources of contemporary information, had probably fitted him in no common degree to the task of a botanist. It is said that he is said to have sustained with great ability and applause. He did not write, and we are not aware that he lectured expressly on the subject of botany as a system; but there are many allusions to it in his works, and among them are several queries on the preparation and use of various medicinal herbs, as well as of the mineral substances employed in pharmacy.

In addition to his merit as a naturalist and a teacher, Fallopian was an excellent and expeditious operator, and otherwise, for his time, a good practical surgeon. His cha-

acter with posterity in this respect is somewhat tainted by the appearance of a degree of quackery in the concealment of his remedies, and a trumpeting forth of his virtues which his experience of them could not have justified. But it is not from this source that his name has suffered; and, from the credibility which tempts to their commission, as to make it a matter of surprise that such things were consistent three centuries ago with the high reputation of Fallopian. After a short but brilliant career of eleven years both in practice and as a teacher, he died at Padua in 1562, and was succeeded by his favourite pupil Fabricius ab Aquapendente.

The only work certainly known to have been revised by himself was a volume entitled 'Anatomical Observations.' It was first printed in ivo, at Venice, in the year before his death, and has been frequently reprinted. The publication of this work forms an epoch in the science of human anatomy. There is no part of the frame with which the author does not deal in a temperate manner. It is full of curious facts, and published with his Observations in three volumes folio, Venice, 1584, and have passed through several editions. They are now superseded by more complete and systematic treatises, and are seldom consulted but by antiquarians in medical literature, who are interested in bringing to light these sciences, as in others, much that is new is likewise old.

FALLOW is a portion of land in which no seed is sown for a whole year, in order that the soil may be left exposed to the influence of the sun and the winds. It is chiefly used for repeated ploughings and harrowings, and the fertilization improved at a less expense of manure than it would be if a crop had been raised upon it.

The practice of following land is as old as the Roman Empire. It appears that wherever the Romans extended their conquests and planted colonies, they introduced this mode of restoring land to a certain degree of fertility when exhausted by burning grain. The principle on which it is based is the thought that the land grew tired of raising vegetable produce and required rest, and hence this rest was often all that constituted the fallow, the tillage, which alone is the improving part of the process, being almost entirely neglected. Where the land was abundant and the best of the crops were collected no great loss to allow a considerable portion of the soil to remain unproductive; and it was cheaper to let land lie fallow during the course of a whole year, which gave ample leisure for every operation, than to accelerate the tillage and increase the produce at the cost of the land becoming of no more value with the increase of population, it is a serious loss if a great portion of the soil be thus left in an unproductive state. Accordingly the attention of agriculturists has been turned to lessen the necessity of fallows, and to substitute other means for maintaining agriculture. It is acknowledged by all experienced farmers that manure alone is not sufficient for this purpose. The ground must be tilled and noxious weeds destroyed; and the only efficacious mode of doing so is to stir the ground at the time when their seeds are not yet vegetated. But when the land becomes of no value with the increase of population, it is a serious loss if a great portion of the soil be thus left in an unproductive state. Accordingly the attention of agriculturists has been turned to lessen the necessity of fallows, and to substitute other means for maintaining agriculture. It is acknowledged by all experienced farmers that manure alone is not sufficient for this purpose. The ground must be tilled and noxious weeds destroyed; and the only efficacious mode of doing so is to stir the ground at the time when their seeds are not yet vegetated. But when the land becomes of no value with the increase of population, it is a serious loss if a great portion of the soil be thus left in an unproductive state. Accordingly the attention of agriculturists has been turned to lessen the necessity of fallows, and to substitute other means for maintaining agriculture. It is acknowledged by all experienced farmers that manure alone is not sufficient for this purpose. The ground must be tilled and noxious weeds destroyed; and the only efficacious mode of doing so is to stir the ground at the time when their seeds are not yet vegetated. But when the land becomes of no value with the increase of population, it is a serious loss if a great portion of the soil be thus left in an unproductive state. Accordingly the attention of agriculturists has been turned to lessen the necessity of fallows, and to substitute other means for maintaining agriculture. It is acknowledged by all experienced farmers that manure alone is not sufficient for this purpose. The ground must be tilled and noxious weeds destroyed; and the only efficacious mode of doing so is to stir the ground at the time when their seeds are not yet vegetated. But when the land becomes of no value with the increase of population, it is a serious loss if a great portion of the soil be thus left in an unproductive state.

There is no difference of opinion respecting the manner of exterminating weeds by repeated ploughing and harrowing, but there is with respect to the influence of the heat of the sun upon the land. Some men are of opinion that light is the great purifier of the soil; that it decomposes certain noxious particles, which are the result of the formation of the seed, and which have been termed the excrements of plants. Physiologists agree that the roots draw the nutritive juices out of the soil, that they undergo a chemical change in the plant, and that there is an exudation also
from the roots, which may be looked upon as the residuum of the natural process. De Candolle, Raspail, and other eminent physiologists have placed this point beyond controversy, but it has yet been able to collect the matters so as to analyze and compare them; and the reasonings on the subject have been merely conjectural.

In particular soils and situations a scorching sun has a pernicious effect on the soil which is exposed to his rays; and whether the crops are green or ripe, if it completes its course of growth, it seems to have acquired fertility, which the exposed surface has not. But this is not sufficient to establish a general rule. Some soils which are of a wet nature are greatly improved by being as they were baked in a hot sun. Not only are the weeds which are destroyed by the action of moistureless heat, but the soil thus becomes lighter and more friable. On sandy soils the reverse is the case, and on intermediate loams the effect will be more or less disadvantageous as they approach nearer to the clay or to the sand. In light sandy soil the object of winter is to kill weeds, especially theouch-grass (tritium ripeness), which is apt to infest light soils; and that the exposure to the hot sun in hot weather is not only no advantage, but probably detrimental. If, then, any means can be found by which the crops can be kept from them fallow for a whole summer, a great advantage will be obtained. This has been effected completely by the cultivation of turnips and clover, which was first practised in the light soils of Flanders, and afterwards introduced into England, and now practised almost all over Great Britain, and is beginning to be adopted more generally in Ireland. The advantage of the turnip culture is so great in light lands, that it has gradually been extended through the different grades of loams, till it has now become quite common in all soil and climatic clays, on which it would at one time have been thought absurd to attempt to raise this root. But this has been attended with an important benefit. It has made the cultivators of heavy soils turn their attention to the drying of their lands, by draining and deep tillage, in order to make them capable of bearing turnips; and although the extended culture of this useful root is not what we should recommend for cold wet clays, we highly approve of all improvements which will make such lands, though contrary to the growing good crops, tolerable. Turnips can be consumed by sheep, or by cattle near at hand, without injuring the land in taking off the turnips and carting on the manure, there will be no great advantage in a crop of turnips; and some other substitute must be found for the occasional fallow before it can be altogether abandoned. On light lands the preparation for the turnips, the abundant manuring, and subsequent hoeing are as effectual in cleaning the land and bringing it into a fertile state as any complete fallow could ever be. The turnips are of great service to the same soils, and may have come up amongst the barley or oats sown after the turnips. There are several ways in which the cultivation of light soils may be varied without adhering strictly to the Norfolk rotation, so as to introduce a greater variety. Heavy soils it is often impossible to keep the land clear of weeds, in wet climates and unfavourable seasons, without a complete fallow, and when this is the case it is best to do the thing effectually. Upon cold wet soils, which should always first of all be well under-drained, no pains should be spared to get the land perfectly clean; it should be thoroughly exposed to the sun, both manured and the heat of the summer and part of another, as already mentioned. [ARABLE LAND.] Only one crop is lost by this method, and if the land is properly worked, cleaned, and manured in autumn, it may be sown with barley or oats in the spring of the second year, and the first and second year, in the complete produce of clover equally so, and the land so clean, that, with proper manuring, several crops may succeed, such as wheat, beans, oats, tares, wheat, without the necessity of another intervening fallow. The advice we would impress on the minds of the growers of clover is, that if you can keep your land clean; but when you fallow, do it effectually, and improve the soil at the same time by chalk, lime or marl, according to circumstances. Do not spare either ploughs or harrows in dry weather. Lay the stitches high and dry, and at least one or two inches of a spade. By following these rules the stiffer land may be brought into a good state of cultivation; and the farmer will not find by the growth of weeds, docks, and thistles, that his labour and manure are thrown away, as is too often the case. At these seasons when the rain is not plenty, and the dry spells, the dry weather, not only furnish fertility to the soil, and that land which has been well fallow and stirred requires less manure than it would otherwise do. Fallowing alone will not make up for want of manure, nor will manuring be sufficient without ploughing, and hoeing, and turning. What the land was, and the influence of the atmosphere, especially in autumn and in spring: but a great saving of the one and the other may be effected, by judiciously varying the crops so as to admit of ploughing the land at different seasons. So that it is not the disease of some unfitted soil, but a good farmer that the plough alone is sufficient for all the purposes of fallowing. This is a great error, which leads to useless and unnecessary labour. We would almost say that ploughing the fallows is never, which extends the storage-doors and harrows to stir the land. The first ploughing of the stubble cannot be too shallow, and the harrows should be set to work before the wet weather sets in. When the surface is become mellow and clean, the land may be ploughed deep, and the soil brought to the surface, and the land plowed. Under these circumstances the winter may frost all the winter. In spring the drag should begin the work again before the soil is hard. It may then be ploughed in narrow ridges right across the old stitches, or obliquely, and left for the influence of summer. The drag will level and make the soil. If the land is fallowed in spring, and well harrowed before the seed is sown, especially if this is done by the driller or the sower, the seed will be well covered, and the young plants will stand more compactly, and the land will be well tilled. There is no danger of making it too fine in spring. Without a fine tillage no good barley can be expected.

FALMOUTH, a parish, borough, market, and seaport town, in Cornwall, is 544 miles south-west from Launceston and 267 miles west-south-west from London, in 50° 48' N. lat. 5° 3' W. long. The town is situated at the mouth of the river Fal, whence it derives its name, and consists principally of one street and two or three smaller ones. The town is chiefly remarkable for the market-house and town-hall. The Public Rooms, a handsome building, is situated in the heart of the town; and not far from it is the polytechnic hall, a spacious and commodious structure, in which are held the annual exhibitions of the Royal Cornwall Institution which, though only established in the year 1833, has always contributed much to promote eminence in the fine and useful arts among all classes throughout the county. The church, which has a handsome altar, was built during the restoration of Charles II. The average net income of the living is about 800l. It is in the diocese of Exeter, and the patron is Lord Wodehouse. There are also places of worship for Baptists, Quakers, Unitarians, a Roman Catholic chapel, and Jews' synagogue, and likewise several schools and numerous cha-
risible institutions. On the whole Falmouth is a neat and
sterile well-built town. It is lighted with gas, and con-
tains two good hotels. The suburbs are adorned with sev-
nal villas, which, together with the harbour, when seen from the
surrounding hills, have a very beautiful appearance.
The charter of incorporation bears date 13 Charles II.
The governing body, under the Act 5 and 6 William IV.,
c. 16, consists of a mayor, four aldermen, and twelve coun-
cillors. The corporation has no revenue whatever; the tolls of
the town and port, licences, &c., are the only financial
resources of the town. The only police are the constables appointed by the
town councils, these and other expenses being paid by a rate.
According to the returns made in 1831 the population of the town and parish of Falmouth was 7294, of which the town
alone has 5780 inhabitants. The increase since 1821 is 17, and the
value of $a x + n$ (which is, in fact, supposing that $a x$ is the
form $m x + n$); assume two values for $x$, $p$, and $q$, and let the
considering values of $a x$ be $P$ and $Q$. If then (to use
the easiest form of speech) a uniform increase of $x$ is accom-
panied by a uniform increase of $a x$, and if $x$ represents
the value which makes $a x$ equal to $a$, it follows that the inter-
val between $P$ and $Q$ bears to that between $p$ and $q$ the same
proportion as the interval between $P$ and $Q$ bears to that
between $p$ and $q$. Or $x$ can be obtained from the propor-
tion

$$P - Q : p - q = P : a ; p - x$$

If the preceding be not easily understood, the same propor-
tion may be immediately deduced from

$$m x + n : x = (m x + n) : (m x + n + a)$$

which follow from the several hypotheses made.

When $a x$ and $x$ do not increase uniformly together, it is
nevertheless true that they do so nearly when the succes-
sive increments added to $x$ are very small. If then $p$ and $q$ are
so chosen that $p - q$ is a very small number, the preceding propor-
tion will produce a value of $x$ which is nearer the truth than either $p$ or $q$, and may be substi-
tuted for either in a repetition of the process, which will
then continue to produce a nearer approximation.

The rule of False Position, as thus extended, is simply
Newton's well-known method of approximating to the roots
of equations, with this difference, that instead of the differen-
tial co-efficient of $a x$, the approximation ($P - Q : p - q$ is
used. The equation of the first degree is either as above, in
which each method will bring an accurate result in one process;
but the notoriety of the rule of False Position arose out of its
appearance that a couple of errors, or wrong solutions, were
made infallibly to give the right result: and thus is it that
Recordo says he can solve mathematical questions by taking
the answers of any children or idiots who may be in the room.

To persons ignorant of algebra there seems to be a mystery
in the being able to make any two guesses, however rea-
sonable, to discover the truth. Thus, what is that number
whose half, third, fourth, fifth, sixth, seventh, eighth, and
ninth, together with 10, make 632? Make any guess, say 12; the
half, third, and fourth of 12, together with 10, make 33, which is
wrong. Make another guess, say 60, which produces 75, also wrong.
The difference is 15, and the square of the difference of the wrong assumptions, 60 - 15, or 45, the same propor-
tion as the excess of the result 75 over 62 (the required result)
bears to the excess of 60 over the truth. But 52 : 48

$$13 : 12, or 13 is the excess of 60 over the truth, that is, the true answer is 48, as may easily be verified.

Where the equation is of the form $m x + n = a$, one guess only
will suffice. If the assumption of $p$ give $P$, or if $mp = P$,
then $P : p :: a : x$.

FALSETTO. In Music, an Italian term, signifying a false or artificial voice, produced by tightening the lig-
ments of the glottis, and thus the vocal compass is extended
about an octave higher. The Italians call the falsetto
di testa, or voice from the head; the natural voice
re di petto, or voice from the chest.

FALSTER, a Danish island in the Baltic, due south of
Seeland, and east of Lolland or Lolland; between 54° 30' and
54° 48' N. lat., and 11° 43' and 12° 11' E. long. The strait called the Gotsorunmur separates it from Seeland,
the strait which separates Falden and Fals, and the
Gosow mount from the island of Moen. Its greatest length from north to south is about 25 miles, and its
greatest breadth from east to west is about 16 miles.
The area is about 20 square miles; its population in
1810 was 15,948. It formerly formed the part of the circle
or 'sheet' of Falster or Fals. It lies less high
than Lolland, but has better water, and a healthier at-
mosp.

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mosphere, and is accounted one of the best cultivated and most productive parts of the Danish dominions. The surface
is level on the north and south the island terminates in two long tongues of land, formed by an arm of the sea called the Noret. The western tongue of land has a lighthouse upon it,
by which a reef of rocks extends far into the sea. The soil is equally fertile with but less swampy than that of the other Danish islands near it: the produce of grain is
more than adequate to the consumption, so that between 30,000 to 35,000 quarters are annually exported. Flax and hemp, hops, potatoes, and other vegetables, are grown.
Lettuce is raised and turnips in particular are a considerable article of exportation. The woodlands occupy about one-sixth of the whole surface. Horned cattle and a native race of sheep are bred, and the forests afford food for a great number of swine. Much wax and honey are obtained; and by the collection of the senna, in the absence of tobacco, there is a considerable trade in the island.
There are no rivers but the Aar, an incomconsiderable stream, and the short river through which the Mariboerse, a large lake, has an outlet into the sea. There are no manufactures in the island; and the people make their own clothing, stockings, and brandy. The principal imports are
colonial produce, salt, and tobacco; and the exports are grain, salt meat, butter, fruit, live cattle, potatoes, &c.
There is some ship-building.

The island is divided into two districts, the North and South
Hardes, and contains 28 parishes, 2 towns, and 107 villages
and hamlets. Nyköbing, the chief town, is situated on the
western side of the island upon the Goldborgund; it is a pleasant well-built place, has some traces of its former fortifications, and contains a cathedral, a church, a
school, a town-hall, a hospital, and 250 houses, and a popula-
tion of about 1000. There is an ancient castle, in which了几 several dower queens of Denmark have resided, called
Nørreborg. The situation of this town is so picturesque, that it has been termed the Athens of the North.
The town has a good corn trade. Stubbenkobing, the other town, is an
inconsiderable place on the Gronsund in the north-east,
outside the island of Beagoe: it is surrounded by wells,
and contains a church, a school, and a poor-house, about
130 houses, and about 700 inhabitants.

FALUN, a town in Sweden, the capital of the province of
Dalecarlia, and of the Län of Kopparberga, lies in 60°
29' N. lat. and 14° 35' E. long. The population is about
4000 or 4500. The town is situated in a deep valley between
two lakes, which are not far from it. It is celebrated for
the great mine of copper which is in the middle of the town.
Unlike all other mines, this is an immense abyss, about
1200 feet long and as many wide, into which people descend
by a staircase to a depth of 1200 feet: the composition of the ore is detected
by the miners from the bottom of this hole, so that they
are not obliged to use candle-light. The vapours which
continually rise from the mine have destroyed every trace of organic life in the neighbourhood. At one time animals
and birds are rarely seen. The annual produce of this mine
varies from 4000 to 4500kipfopper of copper. It also produces
gold to the annual value of from 200 to 300 ducats, silver from
400 to 500 marks, lead from 100 to 150 skippounds, vitriol from
600 to 900 tons, ore about 1000 tons, and bromstone from
20 to 30 skippounds. The copper is sent to Avesta
to be refined and worked up. There are a few manufactu-
res of linen, cotton and wool, but all on a small scale.

FAMAGOST [Cypres].

FAN PALM. [Gran Espana.

FANARIOTES, a name applied to the inhabitants of
the Fanar, or Greek quarter of Constantinople. After
the capture of Constantinople by the Turks, the Greeks of the Fanar were placed under the surveillance of the ignorance of the Turks, succeeded in rendering themselves satisfactory by the minis-
ters of the Porto as translators, and to other Turkish grandeza as secretaries, agents, and men of business in general. They were all comprised under the general deno-
mination of Fanariotes, which the following describes. At first
they were not distinguished from common servants; and the
office of the translator to the Sublime Porto conferred no
consideration on the individual who held it. The Greek
traders of the Fanar, or Clairmont street, having obtained
the contents of a foreign dispatch, after which the school and hall of the palace, where he waited with other menials to his masters might want him
In the year 1669, under the reign of Mahomet the Fourth, a
brother named Fanaraki persuaded the Turkish divan that
the interests of the Sublime Porte would be much
better served by an official interpreter, entitled in the
capital of the Government, than by the ordinary
translators who had hitherto been employed. The gov-
ernment acted on this suggestion, and Fanaraki was
named dragoman of the divan, or translator to the
council of the state. The successors of Fanaraki en-
joyed the situation conferred on their pre-
cessor, which were gradually enlarged. From that
time the ambition of the Fanariote families became entirely
turned in that direction, and they instructed their children in the Turkish, the Italian, and French languages, in order
that they might be enabled discharge the duties attached to the office of the dragoman.

In the progress of time the divan created another drag-
oman, who was called the dragoman of the fleet, whose duty
was to accompany the captain pasha, or grand admiral, on
all his undertakings, and to dispense the state
and the collection of the marine taxes. Although the office of the dragoman of the fleet was
much less important than that of the dragoman of the divan, it was more lucrative, being estimated at about 300 purses,
while the fixed salary of the dragoman of the fleet
exceeded 94 purses. The dragoman of the fleet exercised an almost unlimited power over the islands of the Archipelago, which, with the exception of Cyprus and Corfu,
were governed by officers called mosseuls, chosen by the
captain pasha. The dragomans of the fleet always pur-
chased the appointments to those offices, which he resold with considerable profit. The capitan pasha never acted without the advice of the dragoman,
who even frequently acted as his master's deputy in the
collection of the duties due to the Porte. The Fanaraiotes,
thus invested with the office of dragoman of the divan,
being the only agents of communication between the
Porte and the European governments, necessarily ac-
quired a great influence over the Turkish government, and

centralized in their own hands the interests of Greece and
in the Dardanelles. In the beginning of the eighteenth century the Fanariotes
succeeded by their intrigues in prevailing on the Turkish
government to choose from amongst them the Hospodars or princely governors of Moldavia and Wallachia, which dignities were hence bestowed on nominees in the above-mentioned provinces.

Maurocordato was the first Greek who was nominated
Hospodar of Wallachia in 1711. A crowd of Fanaraiotes
always followed the new Hospodar, who employed them in
different offices in their respective provinces, where they
became notorious for their unprincipled exactions, employ-
ing every means, however odious, to acquire as much wealth
corporate as possible during their short and precarious tenure of office.

In consequence of the tax-gatherer's oppression,
the Fanariotes were the customarly hated and proscribed,
and on many other similar charges, could find the
favorable opportunity to annoy the confident banker of the vizier of the vizier, or
nominations for the desired places, with whom the left in blank.

The purchaser entered into an arrangement with the bank,
who filled up the blank with his name, and gave him
the right to claim the office of the new governor to his province, which he administered in
his name, and collected from the revenue the sums advan-
ted by the banker to the grand vizier with the greatest interest.

Many judicial appointments, and the Turkish benefice were also purchased by the bankers of the Fanar,
and resold at a considerable profit. It is superflous
to add, that this system led to general oppression, and the most venal administration of justice. Besides this immense
protection, the Fanariotes were only unfortunate in the few annual transactions which are
about all the private affairs of the Turkish grandees. They
purchased, sold, and managed their estates, which the supine
and ignorance of the proprietors entirely abandoned
in their care. The profits which they realized from such
transactions generally amounted to from forty to sixty per

A landscape picture of the Fanariotes is given in Mr. Hope's celebrated novel 'Antinatus; or, the Memoirs of a Greek,' as well as in the 'Essai sur les Fanariotes,' by Marco Zalloni; and in a work published by Von Hammer, called 'Constantinople and the Bosphorus.'

The revolution which last Greek revolution has considerably diminished the importance and altered the position of the Fanariotes.

FANCY, a corruption of phantasy (pavrosia), which term is absent philosophy indicated the sensuous appearance of an object, and in which term was used as co-extensive with conception, or the faculty by which man reproduces images of objects either absent or present, without an immediate impression on the organs of sensation. In later times its signification has been greatly narrowed, and it is now limited to the mental vision, or remorse, of which, however, it is often confused in loose and inaccurate language, and to which it is employed as equivalent. Imagination differs from conception either by the greater distinctness and vividness of its images, or else by combining the manifold materials of experience into a new and true unity. In the former case it is merely reproductive; in the latter creative, and becomes fancy.

Fancy is a higher energy of the mental activity than imagination simply, but is nevertheless dependent upon it, since it is the outcome of mental vision which creates its phantasies either by modifying or exaggerating them, or by forming new combinations, and by a procreation investing its personification with the properties of real beings. Imagination is necessary to authors generally, but the style of Fanciers is commonly distinguished latter presenting him with those lofty speculations which comprise what has been term the ideal of art, and furnishing the link for that enchantment of his ideas which, rejecting the restraint of all general laws, is wholly dependent on the sympathy of the spectator. FANCY backwards

FANDANGO, a quick dance in 1 or 2 time, universally admired and practised in Spain, and supposed to be of Moorish origin; though Volney ascribes much higher antiquity to it. From Morocco it was brought originally from Carthage, thence to Rome, and so into Spain. The probability however is that it was brought into Europe by the Arabs, to whom certainly it may have been transmitted from very remote ages. Like many other dances, this is performed according to the degree of delicacy possessed by those who practise it.

FANO. [Urbino e Pesaro.]

FANO. [DENMARK. VOL. VIII., P. 398.]

FANSHAWE. THE Right Honourable Sir RICHARD, was a member of parliament for Oxford, and was born at Ware Park, in the county of Hertford. He became a fellow-commoner of Jesus College, Cambridge, in 1623, and removed to the Inner Temple in 1626. On the death of his mother, who had long survived his father, he betook himself to travel, and visited France and Spain. He was subsequently appointed secretary to the embassy at Madrid, and was left resident there till 1638. After his return, and on the breaking out of the civil war, he declared himself a royalist, and attended the court of Oxford, where he received the degree of Doctor of Civil Law. He followed the prince of Wales to the islands of Sylly and Jersey in the capacity of secretary, and in 1648 became treasurer to the navy under Prince Rupert. At the battle of Sole Bay, he was wounded, and was soon freed and released, and repaired to Charles II. at Breda, where he appointed him master of requests and his Latin secretary. He returned to England with Charles, represented Cambridge in 1651, and was employed in negotiating Charles's marriage. He afterwards entered into a single against the President to Philip IV. of Spain in 1664, and died at Madrid in 1666, leaving a widow and five children. His body was sent home embalmed.

Notwithstanding the active life of Fanshawe, he found leisure to attend to literature, and produced several works, the most celebrated of which is a translation of Guinrin's 'Pastor Fido.' The parts of this work written in heroic measures are harsh and ill-arranged, but the lighter lyric passages are playfull and often melodious, and some of the more sublime choruses are sonorous and majestic. This book is not very easily procured. It was published in 1664, and is adorned with a curious portrait of Guinrin by "Fante," or "Fantis," a nation inhabiting a part of the Gold Coast in Western Africa. The country of the Fantes is bounded by Aeron on the east, and by Saba, from which it is divided by the Iron Mountain, about three leagues east from the Castle of Torto. Its length, according to Bosman, is nine or ten miles. The capital, called Fantin, is placed about fifteen miles inland, but all the other towns of note lie along the sea-coast. The most celebrated of the principal are:—Manro, Lagoa, Agu, Cornant, A Aisia, the Lesser Cornantin, Aga or Ada, Anamambode or Jamissia, and Amikan or Ingeniuss. At many of these places the Dutch, Danes, Portuguese, and English, used to have forts or factories. The description of these places may be consulted in the 'Biographie Universelle.' Out of his work 600, or, as he terms them, 'six centuries,' of sonnets, exactly 200 are in Portuguese, and twelve of his eclogues are also in that language.

His works are:—1st. Noches claras, o Discurso Morales y Politicos. 2nd. Comentarios sobre la Lusaida.
which he laboured twenty-five years, and yet the comment-
ter, except on historical points, rather obscure than illus-
trates the original. It was prohibited first by the inquisi-
tion, and more strictly, and by law, by that of Portugal.
This occasioned the following work:—3rd. Defensa
por los Comentarios sobre la Lusiada. 4th. Ejemplo de
las Historias Portuguesas, or a History of Portugal. 5th.
Imperio da China, y Cultura Evangelica por los Religiosos
de las Provincias de China, by Father Miguel de Augusto
Faria. The following are his posthumous works:—El
Asia Portuguesa desde 1497 hasta 1649; La Europa Port-
guesa hasta 1557; El Africa Portuguesa, translated by
John Stevens, 3 vols. 8vo, London, 1796; El America
Portuguesa; works of Apolonio de Albuquerque; La Reli-
Divinas y humanas Flores; Gran Justicia de Aragon; at
the end of which is the Retrato de Manuel Faria, that
is, his life, by his friend Porel. Besides this work the
reader may consult Bouterweck, Spanish and Portuguese
Literature; Núñez del Arinón, Biblioth. Hist.; Isornon,
Mémoires, &c., vol. xxxi.

FARINA. [STARCH.]

FARM. A farm is a portion of land which is set apart
for cultivation either by the owner or by a tenant who
pays a certain stipulated rent for it. We shall consider it
in this latter sense; and, without entering into the mode
of cultivation, we shall notice the circumstances which de-
termined the profit that a tenant may reasonably expect to
make, and the sources of trouble and profit that arise.

The first thing to be considered in taking a farm is the
capital which the tenant is possessed of, or of which he can
procure the use at a reasonable rate. If a man takes a
farm without the means of stocking it properly, and is
responsible for the rent, he will be obliged to buy stock, but even
if he can buy it with benefit to himself or to his landlord: he will
be obliged to sell his produce at a loss, to over-work his cattle,
and to keep a smaller quantity of stock, and consequently most
of the revenue from the farm is required to meet the expenses of
productive state. It is not sufficient that he has the means of
stocking the farm; he must have wherewith to pay the rent;
which is the greater part of the whole expenses and the rent for the
year. In the present state of agriculture, a man who takes as
his farm an arable land with a good stock of cattle and partly arable
land, will require from 1500l. to 2000l.; and it is not the interest,
either of the landlord or the tenant, that he should take the farm unless he can command
that sum. The amount of capital required depends in a
considerable degree also on the quality of the soil; a very rich
land requires less capital in proportion to the rent than poor
land, especially if the poor land requires draining, chalking,
or mowing, before it will produce any tolerable crops. All these circumstances must be taken into consideration before a
farm is hired.

When it is ascertained what extent of farm may be safely
undertaken with a given capital, the most important object
to be attended to is the condition and fertility of the soil,
not only as it affects the natural quality of the produce
but the actual state it is left in by the preceding system of
cultivation. A moderately fertile soil, in good condition,
will give a greater profit for several years than a better soil
which is partially exhausted and rendered foul by injudicious
management and over-cropping. For this purpose it is nece-
sary to ascertain what has been the state of the crops for
several years before, how the land has been ploughed,
and whether the crops have been heavy with or without
manure. To ascertain this it is found out by examining the
comparative state of land which has been exhausted, etc. It
would be a discovery well worth the attention of modern chemists,
who have made such progress lately in the analysis of vege-
table substances, and would be invaluable to farmers and
proprietors of land. In the mean time the nature of the
weeds which abound on the land will give some clue to its
state; and an experienced person will collect from various
minute appearances in the soil whether it has been fairly
managed or exhausted. It is in general more advantageous
to farm a piece of land which is yielding stocks well with
"the most common and commonest" kind of crops, to farm a
piece of land which is yielding stocks well with
the most common and commonest" kind of crops,
The page discusses the buildings required for a Flemish farm, emphasizing the need for a clear and well-organized layout. It mentions the importance of having a separate yard for stable purposes, including the provision of a cow-house and hay-sheds. The page also notes the need for a dairy and bakehouse, along with a kitchen and cellar. The importance of a separate yard for farm and stable buildings is highlighted, with a focus on the need for a large kitchen, two good parlours, and several bed-rooms. The yard itself should be divided into two parts, one for stables and the other for hay-sheds.

The diagram illustrates the layout of a farm of 300 acres, with detailed labels for various buildings and features such as the barn, cow-house, and stable. The text concludes by noting that the farm should be divided into two parts, and that the barn and cow-house should be built in such a way that they can be easily adapted for different uses, depending on the specific needs of the farm.
Those two examples of farm-buildings will be sufficient to give some idea of what may be proper for farms of an intermediate size. A principal thing to be attended to is to have plenty of room for cattle; and where old barns remain much larger than is required according to the present mode of stacking corn in the yard, they can be very advantageously converted into cow-sheds or ox-stables. Where many sheep are kept, it is of great advantage to have a sheep shed, with low sheds for the sheep, at the time when the ewes lamb, especially when the season is wet and chilly, which hurts them more than a dry frost. The second yard B (see plan, p. 197) is well adapted for that purpose; and an additional temporary shed against the partition which divides it in two will convert either division into an excellent sheep-yard.

In valuing the rent of a farm the habitation of the farmer is seldom taken into the account, and it ought not to be above the station of the tenant; but the buildings immediately connected with the cultivation necessarily add to the rent or diminish it, as they add to or diminish the profit.

The next important question is what may be a fair rent both to the landlord and the tenant. This depends as much on the mode of cultivation adopted as on the fertility of the soil. The tenant must have a fair interest for his capital, and a fair remuneration for his trouble. In the old system a third of the gross average produce was considered as a fair rent, including all the direct payments for the occupation of the land, such as tithes, rates, taxes, and taxes; another third was supposed to cover the labour and expenses of the farm and interest of capital, and the remaining third was appropriated to the maintenance of the farmer and his family, out of which he had to save whatever he laid by as a clear profit. But this calculation is no longer applicable to the present state of agriculture. The expenses are greatly increased, and the produce is also greater. It requires a greater capital, and more skill to manage a large farm. The tenant is a man of a more liberal education, and his habits are more expensive. The occupier of 500 acres of land in England expects to live as well as a land-owner of 5000 a year income. He cultivates better by applying more labour, and much of the produce is owing to his skill and his capital. He therefore expects a greater share of the produce than the landlord, not only to repay his outlay, which is greater, but to live upon. Supposing the tenant to have a capital employed equal to ten times the rent, which is often the case, the gross annual produce ought to be equal to five times the rent. This we shall distribute as follows: two-fifths for expenses, including rates, tithes, labour, and interest of capital at 5 per cent.; one-fifth for rent; one-tenth for improvements and purchased manure; and three-tenths for the net profit of the farmer, out of which he is to live. This appears a less proportion than the old third; but it must be remembered that the produce is greatly increased. It will be found, wherever accurate accounts of the profits are sufficiently managed, that the proportions above stated are not far from the truth. It requires much judgment and experience to calculate what average crops may be expected by an improved mode of cultivation, and especially by increasing the number of cattle and sheep maintained on the farm.

In Scotland it is notorious that rents are much higher than in England, not only for small occupancies, but for extensive farms; and that the tenants have complained less of the times than their neighbours in the south. It may be worth while to inquire into the cause of this, for the low price of corn must affect the Scotch farmer equally with the English. One great difference between the Scotch and the English farmer is, that the former gets work done at a cheaper rate than the latter. The Scotch labour is fully so well fed, and clothed, and lodged, as the English; but he has less money to spend at the alehouse. He is paid not in a certain sum every Saturday, but in comforts, in the keeping of a cow, in a certain number of rows of potatoes, a certain quantity of malt to make his beer, a cottage to live in, and a meal to feed his family. His immediate wants are supplied, and he is comfortable; the consequence is, that he works willingly. He has no remnant of the last night's debauch, at the beer-shop. He is early at work, and he does his work cheerfully. 'The horses of a Scotch farmer are well fed; they are always in good condition. They work ten and even twelve hours in a day at two yoking.' The ploughman only thinks how he shall finish his work in proper time, and unless he makes the horses work as much as they can without distressing them, he knows he shall not get through his work. All this is worth 25 per cent. on the whole labour of the farm, as Arthur Young has very judiciously calculated, when he gives the expense of labour on the farm of a gentleman, compared with that on the land of a farmer who works with his men. (See Farmer's Guide.) The moral effect of an interest in the work to be done, when opposed to that of a perfectly distinct and often hostile interest, will readily account for so great a difference. But besides this the Scotch farmer has generally the ad
da
vant
age of a scientific education, and of a thorough knowledge of the principles of his profession; and with the shrewdness peculiar to his country, he knows how to take advantage of every favourable circumstance. He has also been taught to calculate, and will soon discover where there is a profit or a loss. This has made him turn his attention to cattle and sheep of late years, more than to the production of corn; and the Scotch have found, that while a very
decent profit was made on the cattle, their land produced more corn, although it sold at a lower price; for the green crops raised for the cattle, and the manure made by them, enriched the land more evidently. The general average, on which some light lands was nearly doubled. All this kept up rents to a much higher level than in England, where prices were low, and there were no means of diminishing expenses or increasing produce. Hence rents in Scotland have kept up wonderfully where we consider the great fall of rents in England since the peace.

The price of agricultural produce throughout Great Britain and even Ireland is brought very nearly to an equality, and the land more evident. This is the average which farmers' accounts should be kept preserved, therefore particular attention.

Farm Accounts.—In proportion as the management of a farm requires more skill, and the various operations become more complicated, so the necessity of great accuracy in the accounts becomes more evident. The necessity which farm accounts should be kept preserved, therefore particular attention.

Many farmers, who are not devoid of intelligence, and who are anxious to ascertain their gain or their loss in culminating times, in order to obtain means of ascertaining this than the balance of their account omissions and expenditure. If they separate the accounts of their private establishment from that of their farm, they think that they have done all that is required, and in their accounts can tell account of how much they have gained or lost by their farm. But ask them to account for this gain or loss, and they can give no answer. If it's a tradesman, who has a capital in business equal to that of a farm, he will endeavor to separate the accounts in a manner that the debts of the bankrupt, no one would hesitate in saying that he failed because he kept no regular accounts. He had no greater stake than the farmer, and his transactions were perhaps less varied; if he kept his clerk, he should have attended better to the accounts of himself. The same may be said of the farmer; and if a man who has a floating capital of 2000£. does not think it worth his while to employ a clerk to keep his accounts, not having time to do so himself, it is no great wonder. If a man who has a capital in business, which is equal to that of a farm, does not think it worth his while to have a accountant, not having time to do so himself, it is no great wonder. If a man who has a capital in business, which is equal to that of a farm, does not think it worth his while to have a client, he is as much to blame as the farmer who does not have some education. He is useless in seeing that the operations ordered by the farmer are duly executed. He is a trusty overseer, and, as he has his accounts in his thoughts, he is most likely to detect the frauds of the agents in whom the power of the general average, on which an increase is proportionate to the outlay, and which affords a good interest; but it may also be a decided loss. How is this to be ascertained, except by a correct account? The expense of keeping accounts is much less. A clerk should be paid, who can do the work, and who has some education. He is useful in seeing that the operations ordered by the farmer are duly executed. He is a trusty overseer, and, as he has his accounts in his thoughts, he is most likely to detect the frauds of the agents in whom the power of the common account gives it. The principle of this method is so simple, that the lowest arithmetician cannot be confused by it, and it is so perfect that no error can escape its scrutiny. As applied to agricultural accounts, which are simple in their nature, it becomes so clear, that it has been adopted in all parts of the country, and considerably. The satisfaction of a perfect proof of the correctness of the accounts is so great, that no one who has ever experienced it will be satisfied with any other method.

To give a general and comprehensive notion of the system of double entry, to those who are not acquainted with it, would lead us from our present purpose, suffice it to say, that every account is checked by another, in which the same entry is made in a different manner. The sum of all the accounts must be the same, and consequently any inequality indicates an error somewhere, which may be detected.

In the accounts of a farm there are many separate items to be taken into consideration. There may be a separate account kept for every debt of the farm; and especially for the daily rent, for every crop of which the rotation consists. There is an account of the labour of men and horses; of the produce of the dairy; of the stock purchased to be fattened, or sold again at an improved state. In the accounts divisions of the general account may be increased without limit. The more subjects there are to furnish items for an account, the more difficult it is to strike a balance, but, with a little attention and perseverance, it may be done; and he who keeps very correct accounts will always be the first to detect an impending evil, and to take measures to provide against it.

The basis of all the accounts is a daily journal of every transaction, which must be collected from all the labourers and agents employed. M. De Dombasle, in his celebrated farm of Grand-Coul, in the county of Meuse, and in the low country, has employed his servants and his apprentices assembled every evening after the day's work is over. Each man gives an account of the work done by him or under his superintendence, which is written down by his own hand. Every day the accounts are read, and every one returns to his lodging for the night. In the course of the next day the clerk enters all that is in the journal into a book, where every person employed has an account; every field has one; every servant has one; and every domestic animal has one; and each receipt and every expense is then given, and every one returns to his lodging for the night. In the course of the next day the clerk enters all that is in the journal into a book, where every person employed has an account; every field has one; every servant has one; and every domestic animal has one; and each receipt and every expense is then given, and every one returns to his lodging for the night. In the course of the next day the clerk enters all that is in the journal into a book, where every person employed has an account; every field has one; every servant has one; and every domestic animal has one; and each receipt and every expense is then given, and every one returns to his lodging for the night.
should be kept exactly as that of a mercantile man, and be frequently balanced to ensure correctness. This is a thing which cannot be too strongly recommended to young farmers.

When a farm has been agreed for as far as rent is concerned, there are always conditions in a lease, which is of great importance to the farmer to understand fully. It is necessary that the landlord should have some security against the wilful deterioration of his land by a dishonest tenant, nor is it just to cram the true tenant with prescribing the exact mode of cultivation without giving the tenant sufficient scope to try improved methods, which may ultimately be highly beneficial to all parties. If the landlord should not see the proper quantity of manure put on the land every year, and that it shall be well tilled and kept free from weeds, he need not have any other protection, unless he be for the last two or three years of the lease, when the tenant might be induced to over-crop the land and thus exhaust it.

In entering on a farm there is often a heavy demand on the in-coming tenant for work done by the predecessor, for a supposed remainder of manure, and various other items, which are usually settled by reference to the custom of the country. Some general rule is required to regulate all these demands, which are often exorbitant, and cripple the in-coming tenant in his capital. It is just that an outgoing tenant should be repaid for any permanent improvement, but he should not, and of course it is to the whole advantage, and that he should be encouraged to keep up the proper cultivation of the land, so that the incoming tenant may be able to continue the regular course. But this he will not do, unless he expect to be remunerated. One point he must insist on is that there should not pay for work slowly done or for supposed remain of manure which do not exist in the land. We have known instances where the valuation of all the items to be paid for by the incoming tenant greatly diminished his capital and crippled his operations for several years. There should therefore be a separate stipulation on this head before a farm is finally hired.

FARMER, DR. RICHARD, descended from a respectable family of the same name, was born at Lichfield, Aug. 6, 1735. He received the early part of his education in the Free Grammar School of his native town, and in 1755 was entered a pensioner of Emmanuel College, Cambridge. He appears to have been little influenced by the overbearing tendency to mathematical study which existed and still exists in that University, and after his degree, took no interest in pursuits of that nature, rather than was necessary for the purposes of college tuition. In 1760 he became Chancellor of Emmanuel College, which office he held until his election to the mastership in 1775. He succeeded the office of Vice-Chancellor in the same year, and in 1778 was elected Chief Librarian to the University. In 1780 he was collated to a prebendal stall at Lichfield, and some time after, 1782, was presented by the Prebendaries of Lichfield to the office of a Canon Residentary at St. Paul’s. He died after a long and painful illness, at Emmanuel Lodge, Sept. 8, 1797, and was buried in the church. An epitaph to his memory was written by Dr. Parr, and is inscribed on the college cloisters. Dr. Farmer collected a valuable library of tracts and early English literature, which was sold after his death and produced, as it is said, a great deal more than it originally cost.

Dr. Farmer’s constant residence at Cambridge is said to have been an early disgust with love; a cause perhaps more productive of resident fellows than any other. His political principles were inclined to Toryism, and he appears to have been attached to that party in the church which goes by the name of orthodox. These men were frank and unreserved, and his habits rather those of a boon companion than of a clergyman. It is reported of him that he declined a bishopric rather than forego his favourite amusement of seeing Shakespeare performed on the stage. He was much interested in life, had art events more cogent in the time of Garrick than at present. Dr. Farmer is celebrated, and justly so, for one single work, his Essay on the Learning of Shakespeare, which, in our opinion, surpasses anything of the kind written in England, since the time of Pope. The mixture of gold and rubbish which is generally appended as notes to every edition of Shakespeare contains so little of the former element and so much of the latter, that it is not easy to estimate such commentaries as Dr. Farmer’s above their true value; indeed, if we had to choose from all Shakespeare’s voluminous annotations what appears to us most deserving of study, we should have in his dissertation on the English literature and in fact the Coleridge’s Lectures and Dr. Farmer’s Essay, works which are, and are intended to be, entirely dissimilar, but which, more than any others, come up to our notion of a commendation of Shakespeare.

FARMERS GENERAL. Fermiers Généraux, was the name given in France under the old monarchy to a company which formed certain branches of the public revenue, that is to say, contracted with the government to pay into the hands of the public revenue the collection of certain taxes as an equivalent. The system of farming the taxes was an old custom of the French monarchy. Under Francis I, the revenue arising from the sale of salt was farmed by private individuals in each town. This was and is still in France and other countries of Europe a monopoly of the government. The government has alone the right of providing the people with salt, which it collects in its stores, and sells to the retailers at its own price. This monopoly was first assumed by Philippe de Vaine in 1536. Other sources of revenue were likewise farmed by several individuals, most of whom were favourites of the court or of the minister of the day. Sully, the able minister of Henry IV, saw the dilapidation of the public revenue and had so many complaints made by the people, only 30 millions reached the treasury, speedy the contracts for farming the taxes to public auction, gave the men to the highest bidder, according to the antient Roman practice. By this means he greatly increased the revenue of the crown. The farming or bribery was renewed under the following regents: Colbert, the minister of Louis XIV, called the farmers of the revenue to a severe account, and by an act of state deprived them of their enormous gains. In 1729 the revenue, the vast revenue, the vast quantity of money paid over to the farmers was confided to a new Ferme Générale, which was let to a company, the members of which were henceforth called Fermiers Généraux. In 1739, Silhouette, minister of Louis XV, quashed the right of all farmers and sold the revenue to his own agents. But the system of contracts revived; for the court, the ministers, and favourites were all well disposed to them, as private bargains were made with the Fermier general, by which they paid large sums as dovecotes. In the time of Necker, the business consisted of 24 members who paid a rent of 186 millions of livres, and Necker calculated their profit at about 2 millions yearly, no tertiary extraordinary sum, it is correct. But independent of this profit there were the expenses of collection, and a great debt was made in this article of the public foreign debt. France pays its foreign and military expenses, either by gabelle or sales of salt, among others, was a fruitful source of oppression. Not satisfied with obliging the people to tax the salt at the price fixed upon it in the name of the king, they actually obliged every individual above eight years of age to buy a certain quantity of salt whether wanted or not. But the rule was not alike all over France; in some provinces, which enjoyed certain privileges, salt was nine livres the butt, whilst in others it cost 16, and in some six livres. In some provinces the quantity required was on the head and was 22 pounds, whereas it was nine pounds. And yet the provinces, may the individual families of each country, were prohibited under the severest penalties from accommodating each other’s wants and buying the superfluous salt of the neighbours, but whoever wanted more salt than his obligatory allowance was obliged to resort to the government stores. Besides, an article of provisions that was exported from one province to another was subject to duties called Traites. Every export was charged with a tax, and the country was made the king a certain sum according to the nature of the trade and afterwards a much larger sum on his admission to practise his trade as a martyr. These few instances serve to convey an idea of the public revenue in France relative to the peasants. A very but by far the most vivid picture of the whole system is given in Breton’s Histoire Financière de la France, 2 vols. 8vo., Paris, 1825. To farmers general, as the agents of that system, coming into
immediate contact with the people, drew upon themselves a proportion to share of popular hatred. But the revolution swept away the farmers general, and put an end to the system of farming the revenues: it equalized the duties and taxes all over France; but this was followed by a great reduction of the salt herrin. The sale of tobacco has remained, as well as the duties on provisions, cattle, and wine brought into Paris and other large towns, and the right of searching by the octroi officers, if they think fit, all carriages and individuals entering the barriers or leaving the capital.

The system of farming the taxes, although generally disapproved of, is still continued in some European states. Not many years ago the customs and duties at Naples were farmed by private speculators. For the character and effects of the system see Necker, De l'Administration des Finances.

FARNABY, or FARBANE, THOMAS, a learned erudite and grammarian, was born in London in 1575. His grandfather was Truro in Cornwall; and his father, an Alderman of London, was the first of his family who settled in England. He was admitted of Merton College, Oxford, in 1590, in the station of a servitor; but being of an unsettled disposition, he quitted the university abruptly, changed his religion, passed over to Spain, and was received into one of the colleges of that country belonging to the Jesuits. Growing weary of the discipline of the Jesuits' institution, he did not stop very long with them, but in 1595 joined Sir Francis Drake and Sir John Hawkins in their expedition of Parma. He subsequently served as a private soldier in the Low Countries. Gaining no profit in these expeditions, he returned to England, landed in Cornwall, and in the urgency of his necessities descended to the humble employment of teaching children the rudiments of grammar in the rooms on Parma Stairs in the house of Thomas Bainrafe, the anagram of Farnabie. After some time he changed his residence to Martock in Somersetshire, where he established a grammar-school for youth with great success, under his own name. From Martock he removed to London, and opened a school in Goldsmith's Lane, behind Red-cross-street, near Cripplegate, where his reputation became so established, that the number of his scholars, chiefly the sons of noblemen and gentlemen, amounted at one time to more than 300. Antony Wood says, his school was so famous that many of Parma's sons, who had been trained from it than from any school taught by one man in England. Whilst here he was created M.A. in the University of Cambridge, and on the 24th April, 1616, was incorporated in the same degree at Oxford. In 1624 he quit London and retired to Kent, where he resumed his former occupation, and, with the wealth which he had accumulated, purchased landed property both in Kent and Sussex. In 1641 he became mixed up in the commotions of the last civil war. By the violence of the divorce law, he was, on receiving no other punishment than residences in prison, first in Newgate, and afterwards in Ely House. It was at one time debated in the House of Commons whether he should not be transported to America. Wood states that some of the members of parliament had been his scholars among those who urged his being treated with severity. He died on the 12th of June, 1647, and was interred in the church of the church of Sevenoaks.


FARNESE, the name of a noble family of modern Rome, who were originally natives of the town of Parma and Montalto, in the Papal States, south-west of the lake of Bolsena, and near the borders of Tuscany. The splendour of this family was greatly increased by the exaltation of Cardinal Alessandro Farnese to the Papal See after the expulsion of Clement VIII in October 1550. This Pope had a natural son, Pier Luigi Farnese, whom he determined to make a sovereign prince. For this purpose he first of all alienated part of the territory of the church in the neighbourhood of the feudal domain of his family, and ordained a duke of Farnese to hold a portion of Castelfranco, the chief town, adding to it the towns of Ronciglione and Nepi, with their territories. This district, which comprised nearly one-half of the province called Patrimonio di S. Pietro, he gave to Pier Luigi and his descendants, with the title of Duke of Farnese, a great deal larger than Holy See. He also obtained for him from Charles V. the investiture of the Marquisate of Novara as an imperial fief, and from the venetian Senate permission to be inscribed on the golden book of their nation with the title of Prince of Farnese. The cardinals of the Farnese family were not superior, to that of a feudal title. The pope also made his son Gonfaloniere, or Captain General, of the Holy See, an office which Pier Luigi dishonoured by the most depraved conduct. Lastly, Paul III. in 1546 gave his son the investiture of Parma and Piacenza, which was conquered by the title of sovereign duke of those states, on condition that the duke and his successors should pay an annual sum of 8,000 ducats to the Roman See. The emperor Charles V., however, who, as Duke of Milan, had the better right to the province of Parma, refused to accept the investiture upon Pier Luigi. The new Duke of Parma and Piacenza soon became hateful to his subjects for his vices and oppression, and a conspiracy was formed by Count Anguisola and other noblemen, secretly countermanded by Don Paolo Grimaldi, and opposed by Count Anguisola and Pier Luigi. On the morning of the 10th September, 1547, Anguisola stabbed the duke while at dinner in the ducal palace of Piacenza, and threw his body out of the window, when it was mutilated and dragged about by a mob. Ottavio dying in 1587, was succeeded as Duke of Parma and Piacenza by his son Alessandro Farnese, who distinguished himself as general of the Spanish armies in the wars against France. He was made governor of the Spanish Netherlands by his brother the Prince of Orange. He is known in history by the name of the Duke of Parma. Alessandro died in 1592, and was succeeded by Ranuccio Farnese, a suspicious and cruel prince. A conspiracy was hatched against him at Rome, but it being discovered, a number of noblemen and people were put to death in 1612. His successor, Odoardo Farnese, quarrelled with Pope Urban VIII. about the Duchy of Castro, which that pope wished to take away from him to give it to his own nephew, the Barberini. This gave rise to an absurd and tedious warfare between the papal troops and those of Parma. Ultimately, through the mediation of other princes, the Farnese were left in possession of Castro, but under the following pontificate of Innocent X. they were finally deprived of that territory in 1650, so that the house of Farnese under the pretence of its bishop having been murdered by some assassins. This occurred under Ranuccio II. Farnese, Duke of Parma, who had succeeded Odoardo. The Farnese continued to rule in Parma until 1735, when the houses of Mantua and Parma were sold to the Hapsburgs. The last Duke of Parma, Antonio Farnese, having died without issue, the male line of the Farnese became extinct. But Elizabeth Farnese, wife of Philip V. of Spain, claiming the duchy for her children, it was ultimately given, by the peace of Aix-la-Chapelle, to her younger son Don Philip, thus becoming the other heirs, however, and the personal property of the Farnese, including the rich museum and the splendid palaces at Rome, were given to his brother, Don Carlos, king of the two Sicilies, and some of the finest art treasures in the museum were removed from that inheritance. The Farnese palace at Rome, which belongs to Vol. X.—2 D
the king of Naples, is considered the finest among the numerous palaces of that city. The Farnesina or smaller mansion on the opposite or right bank of the Tiber is known for its delightful formal gardens of Raphael. The Ort Farnesiana occupy a great part of the Palatine, and include some remains of the palace of the Caesars.

Among the various families which have owed their aggrandizement entirely to a papal ancestor, the Farnese attained the highest rank among the Italian states and retained the longest. It has also produced several cardinals, distinguished for their learning. (See Ciaconius, Vitae et Gestae summorum Pontificum et Cardinalium; Moreni's Dictionary, art. 'Farnese'; and Afo's Vita di Pier Luigi Farnese.)

Farnham, a town in the parish and hundred of Farnham and county of Surrey, 94½ miles west by south from Guildford, and 38 miles south-west by west from London.

The town, which is situated near the north bank of the Wey, consists of one principal street, and retains and contains many excellent houses. Though not a corporation, it is governed by twelve masters or burgesses, from whom two bailiffs are annually chosen. These magistrates act as the burgesses of Winchester, and the manor of Farnham is acknowledgment of 12s. per annum, receive the profits of the fairs and markets, and hold every three weeks a court, which has power to determine all actions under forty shillings. Farnham once returned members to parliament. The town is debased but by the passing of a new Act, and a fine painted pulpit forms the altar-piece. The vicarage is in the diocese of Winchester; patron the archdeacon of Surrey, and average net income 430l. The other public buildings are a market-house, a free-school, and a good day-school supported by charitable contributions. The manor of Farnham was given by Ethelbald, king of the West Saxons, to the see of Winchester, to which it has ever since belonged. On the north side of the principal street, and on the summit of a hill, formerly stood the abbey of St. Mary, built by the Bishops of King Stephen, and bishop of Winchester.

This abbey was destroyed by Henry III. It was re-built, and again destroyed during the civil war. After the Restoration Dr. Morle, bishop of Winchester, expended a considerable sum in the restoration of the town. The abbey was rebuilt for Sir William Temple. On the borders of the park is Waverley Abbey, a new estanion modern mansion, which derives its name from a monastery of Cistercian monks, the ruins of which are in the vicinity. Farnham is noted for its hop plantations, which are remarkable, and the manufacture of hops; and the great mart for the Farnham hops is Weyhill fair. The largest plantations are less than 60 acres. The average produce is about 40 cwt. per acre. According to the census of 1831, the population of the parish of Farnham was 5836.

The market-day is Thursday. The fairs for horses, cattle, sheep, and hogs are held on Holy-Thursday, 4th June, and 13th November.

(Carlisle's Topog. Dict.; Stevenson's Survey of Surrey; McDouall's Commercial Dict.; Bennett's Commercial Corporation Reports; Ecclesiastical Revenues Reports; Population Returns.)

Faro in Italian and Spanish, pharos in Latin, phare in French, was the name given to light-houses in the Mediterranean. The word light-house has been used to be have that of the faro, the light-house, and in some instances it has been given to the towns near which a light-house was built. Such, for instance, is the town of Faro, in Algarve. Torre do Faro, a light-house on Cape Pelorus, in Sicily, has given its name to the strait at the entrance of which it is situated. The Italian Calavia and the Spaniards call Faro di Messina. The united kingdom of the Two Sicilies is divided, with regard to its administration, into domini di què del Faro, meaning the continental, and domini di la del Faro, that is to say, the island of Sicily.

FAROE, FAROE, or FAROREN ISLANDS, a group twenty-two in number, seventeen of which are inhabited; they are about 300 miles west of the coast of Norway, and about 200 north-west of the Shetland Isles, between 61° and 63° N. lat., and 8° and 8° W. long. They were discovered by the Danes in the time of Harold Harfager, king of Norway, and at present belong to Denmark. Their whole area is estimated at about 494 square miles, and the population at about 5000.

These islands mostly consist of steep rocks, some of them rising very steep, and the highest peak is 2460 feet in height. The most westerly island is Mygggenora, the most southerly is Vagsoy, the most easterly is Vagar, and the most northerly are Kalsoe and Vidoera. The interior is composed of hills, usually separated only by narrow ravines, in which there are brooks or rivulets which are in general very young, and only through the months of July and August yet it seldom freezes more than one month in the year, nor are the harbours ice-locked except in very severe winters. Violent storms prevail at all seasons, which prevent the growth of any large trees, and the ice-working habits of the inhabitants to fish and cut the hills. The soil is stony, and in many parts covered with earth only four inches deep. In some islands there are two maestro groups of basalt formation, similar to the caves of Great Britain. Notice the soil for climate gymnastic or any extended tillage; and the sudden variations in the temperature induce the cultivator frequently to gather in her crops in a half-ripe state, and dry them by artificial heat. They consist principally of barley and rye, the growth of which is scarce, and the corn-fields on the road to the harbor, once the small plots of corn, turnips, and carrots are partially raised, but it is extremely difficult to raise any other vegetable. Land the proportion of the cultivated to the uncultivated land to be about 1 to 60, and that the corn-fields are not more than from 8 to 10 feet wide. Where the islands are inhabited, the chief wealth of the islanders consists in their fish, often containing from 300 to 500 sheep, which graze in the open air the whole year round, and yield wool of good quality. Horses of small stature, but strong, swift, and sure-footed, are bred in considerable numbers; the horned cattle are diminutive, yet become exceedingly fat. Few swine are fed. The dog is so much request, that it is is equivalent to that of a cow. Seal-catching, and the wild, cod, herring, and other fisheries are another main source of the revenue of the islanders. The inhabitants of the islands contain only rats and mice. There is an immense number of wild-fowl, such as eider-ducks, swans, geese, pigeons, solan-goose, puffins, mornormans, plover, &c.

The island of Pharos, is one of the corals discovered in the island of Sudester in 1798. Since some mines have been opened from time to time; but the coals are of inferior quality, and the cost of working and transportating them has caused them to be abandoned. Copper is found in the bed of Nolok, and lead, copper, but it is not worked. The inhabitants are of Norman (or Norwegian) descent, and speak the Norwegian language with a Danish accent. They have in general handsome features, and are well made: those of the northern are taller, and have more brown hair, and the southern inhabitants are fairer. They are ingenious, peaceable, honest, hospitable, and simple in their manners. Their number in 1769 was 4775;
Occasionally played at the London theatres a few years back. He was married in the same year, and getting into head difficulties was forced to sell his house and home by deceiving a nobleman, who had promised to assist him. He was so deeply affected that he fell into a decline, and died in 1707. During his last illness he wrote his celebrated "Pleas Stratagem ."

The appearance of Farquhar's comedies may be regarded as an important epoch in the history of the English drama. None of his celebrated predecessors bear any resemblance to him; he was the first of his period to write in an easy and graceful style, one removed from the pedantic stiffness of Congreve and the formal courtly life of the Etheredge school. Immoral and licentious as his plays may appear to readers of the present day, those who are conversant with writings of that time must acknowledge them to be considerably more pure than those of his contemporaries, if we except his first piece 'Love and a Bottle.' Let any one who is disposed to be severe upon Farquhar cast his eye for a moment over the gross works of Wycherly, or the obscene and filthy trash of Mrs. Behn; let him compare his 'Affectionate Couple,' with the cold-blooded and brutal Dormant, held forth by Etheredge in the 'Man of Mode' as a model of what a gentleman should be, and then he will measure the former by a right standard. Farquhar attended more nearly the character that he is, better known for his variety of classes talking in appropriate language, than the person of Congreve's drama were but an assembly of professed wits, and those of Etheredge and others were only rakes, city dupes, unfaithful wives, and women of the town. Farquhar, in his best pieces, of which 'Mistress Fallowfield,' and 'The Beaux Stratagem,' events their pieces were marked by only one distinction of character, that between the lover and the injured, the former of whom was held up as a clever personage, and the latter made to talk like a fool. It is singular that the critics regarded as Farquhar's chief d'oeuvre a serious comedy called the 'Twin Rivals,' which has now sunk entirely into oblivion, or at best is only remembered by readers of the old English drama as containing a charming portrait of a procuree, under the name of 'Mother Midnight.' A next edition of his works was published in 1736.

FARRANT, RICHARD, one of the highly-venerable fathers of English church music, was born in the early part of the sixteenth century. He was a member of the chapel-royal in 1564, and subsequently organist and master of the choristers of St. George's chapel, Windsor. His death is supposed to have taken place about the year 1585. So long as solemn harmony of the purest and finest kind shall be maintained in the music of the Church, the memory of this composer will live. He was especially his two anthems, 'Hodie nolite faci' face,' and 'Call to remembrance,' be productive of the most delightful emotions that can arise out of a love of art combined with religious feeling.

FARRINGTON, town in Berkshire, in the hundred of Farrington, and in the parish of Great Farrington. It is pleasantly situated on an eminence, 36 miles north-west by west from Reading, and 694 miles west by north from London. It is governed by a bailiff and inferior officers. The market-day is Thursday. There is a fair annually here on Old Candlemas-Day, Whitson-Tuesday, and 29th October, besides a statute fair on the 18th October for hiring servants. The Saxons had a palace at Farrington, and the Normans built the manor house here built during the wars in the reign of Stephen, by the earl of Gloucester, or his son, but was totally destroyed a few years after by Stephen. In 1202 this king founded at Farrington a priory of Cisterian monks, subject to the monastery of Beaulieu, and Prince Edward passed a night in this priory, like the castle above mentioned, has long since been entirely ruined, and no vestige is left of either of them. During the civil war Cromwell made an attack upon the town, which was successfully resisted by the garrison under Sir John Marmaduke Rawdon, whose memory is commemorated by an inscription in the parish church. King Charles was at Farrington after the second battle of Newbury. Near Radcot Bridge, about
When fascines serve for the revestment of a battery, they are usually laid horizontally, one line above another, against the interior slope of the epaulement, to which they are attached by pickets driven through them into the earth.

FASCIOLA RIA. [SIFONOSTOMATA].

Fascicles. A bundle of grass. More particularly used for such abstinence as a religious observance; from the Anglo-Saxon, fæstan.

Religious fasting has been practised in almost all ages and all countries. Moses appointed that of the Day of Atonement, 5th October. The Jews, in the Middle Ages, gave us details of the Egyptian fasts. Among the fasts of the primitive Christians, the greatest was that of Quadragesima, or Lent: but they likewise observed the Jejuna quaduor temporum, or fasts of the four seasons.

The Great Fast is appointed. The Romans, when fasting, decided that the first fourteen days of Lent, called Fatme, were not to be fasted. The secular days of the week were fixed as follows: Sunday, Monday, Tuesday, and Thursday, 4th, 15th, 25th; the 1st, 11th, and 21st, were reserve days. When the Roman army was in camp, the days were distributed as follows: 1st, 3rd, 5th, 7th, 10th, 12th, 14th, 16th, 18th, 21st, 23rd, 25th, 27th; the 2nd, 4th, 6th, 8th, 9th, 11th, 13th, 15th, 17th, 19th, 20th, 22nd, 24th, 26th, 28th; the 2nd, 4th, 6th, 8th, 9th, 11th, 13th, 15th, 17th, 19th, 20th, 22nd, 24th, 26th, 28th, 30th; the 2nd, 4th, 6th, 8th, 9th, 11th, 13th, 15th, 17th, 19th, 20th, 22nd, 24th, 26th, 28th, 30th; the 2nd, 4th, 6th, 8th, 9th, 11th, 13th, 15th, 17th, 19th, 20th, 22nd, 24th, 26th, 28th, 30th.

Lewis, in his Antiquities of the Hebrew Republic, has given from Maimonides many particulars of the Jewish fasts. The greatest is the Fast of the Greek church, which may also consult Ockley's translation of Leo Africanus's Historia Christiana. 1707, p. 150, and D. Levi's Rites and Ceremonies of the Jews, 8vo. Lond., pp. 70, 71, 85, 129, 135. For those of the Greek church he may consult Leo Allatius, De Eclectica Christiana, 1676, p. 120. The fasts of the present Church of Rome will be found in Bishop Challoner's Garden of the Soul.

FASTI were marble tables at Rome, on which were inscribed the names of the consuls, dictators, censors, and other principal magistrates of the republic. The vestiges of these tables have been collected, and are ranged along the walls of one of the halls in the palace of the Conservatori on the Capitol. The deficiencies in the series of the consuls have been supplied by means of the historians, and by the moderns. The antiquities of the Roman Fasti have been modern times have compiled Fasti, or chronological tables of the Roman consuls. Among the most learned and accurate of these compilations is Sigonio of Modena, who published the Fasti antiquissimi Romani, in a manuscript volume. A recent dissertation is de nominibus Romanorum, a work of great erudition and exact criticism. Pigni published 'Annales Magistratuum et Provinciarum S. P. Q. R. ab Urbe condita,' fol. 1559. Labbe, in his Bibliotheca Nova, published Fasti Consolarii of a MS. of the college of Clermont. Other editions of the Fasti have been made from various sources. Between these lists occasional discrepancies occur as to the names of some of the consuls, and the particular years of their consulship. But the Fasti of the older and antiquarians, there is still some uncertainty about Roman chronology. The word Fasti is often used as synonymous with the annals, or chronicles of a nation.

The Romans had another kind of Fasti, which they called 'Fasti minores,' a kind of calendars, in which were registered the periodical festivals, games, official days for business, &c. Ovid wrote a poetical explanation of these Fasti, which he dedicated to Germanicus, in which he observed that, for nothing less laudable than to excite the enthusiasts, either happy or calamitous, connected with the various days of each month. The poem, as we have it, is in six books, one for each of the first six months of the year; the rest is unfortunately lost.

FASTING [ABSTINENCE].

This substance varies in properties according to the animals producing it; in all cases however it is composed of two different kinds which differ as to their melting point; these are termed deinor or elas and steurin. It is not easy to be considered that the substances to which these names
FAT are given in all cases absolutely identical; they vary as to smell, taste, solubility in alcohol, &c., but all fats agree in being insoluble in water, and in not containing any azote, which is a common constituent of most other animal matter. It has not been decided whether the differences which exist in the properties of the various kinds of olein and stearin are derived from a real difference in their elementary composition, or are owing to an admixture of substances which have not as yet been separated from them. Chevreul has, however, found that the fat of the vegetable stearin, which we shall see is so similar as to their composition, as to induce the belief that the difference depends upon some accidental admixture. There is nevertheless this difference between human fat and that of the sheep, that the stearin of the latter yields a red solution of methyl orange, whereas the former does not give a trace of it. This peculiarity may be explained by supposing the presence of another kind of stearin, which has not hitherto been separated. Olein and stearin may be separated by dissolving the fat in hot alcohol from which the stearin separates on cooling; seven-eighths of the fluid are then to be distilled, and, on adding water to the residue, a mixture of a large quantity of olein and a small portion of stearin is precipitated; when this is treated with solid alcohol of gr. 0.55, the olein is dissolved by it, and the stearin left; by distillation the alcohol is separated and the olein remains. We shall now notice the difference existing in the properties of some of the more remarkable kinds of fat.

Olive oil.--Little according to the part of the body producing it; that from the region of the kidneys, after it has been melted, is yellowish and inodorous; it begins to concrete at 76° Fahr., and is solid at 64°; it dissolves in forty times its weight of alcohol of 0°-821 when heated; the most positive observers have found that the pressure in bilious paper at 75°, is colourless, fusible at 122°, and may be cooled to 106° before it begins to congeal; its temperature, on account of the evolution of latent heat, then rises to 122°; 21.5 parts of this stearin are soluble in 100 parts of alcohol of 0°-821. The olein of this stearin is not greasy, and of a crystalline texture; it fuses at about 112°, and may then be cooled to 102°, when, on cooling, it rises to 112°. It burns like white wax. Of this stearin 15.5 parts are dissolved by 100 parts of anhydrous alcohol.

The olein of ox fat is colourless, nearly inodorous, and its specific gravity is 0°-913; boiling alcohol dissolves nearly one-fourth more than its weight.

Olive fat generally resembles that of the ox; it is however whiter, and by exposure to the air acquires a peculiar odour. After fusion it congeals at a temperature varying between 98° and 102°; it dissolves in 44 parts of alcohol of gr. 0°-821. The stearin is white, translucent, and after fusion but inodorous; the alcohol, when 16 parts are dissolved by 100 parts of boiling anhydrous alcohol; the olein of mutton suet, is colourless; its specific gravity is 0°-913; and 80 parts of it are dissolved by 100 parts of anhydrous alcohol at 108°.

The fat of lard is a soft colourless solid, which fuses between 78° and 56°; its specific gravity at 60° is 0°-938. By powerful and long continued pressure at 42°, between folds of blotting-paper, it is stated to yield its weight of colourless olein, of specific gravity 0°-915; of this, 100 parts of alcohol dissolve; the residue, when kept for a long time, is crystalline and paper thin. When it is fused, it remains liquid down to 100°, and then on cooling the temperature rises to 109°. It becomes acid by oxidation.

Goat's fat contains a peculiar fat, termed by Chevreul hiricin, and to the presence of this its peculiar odour is owing, and which remains to a great degree with the olein when this is separated from the stearin; by ordinary management this fat yields hiricin acid. [Hircic Acid.]

The fat of birds: Goose is colourless, and of a peculiar taste and smell; after fusion it congeals at 80° into a soft solid of the consistence of butter. When subjected in bilious paper to pressure at 36°, 100 parts are separable into 68 of olein, and 32 of stearin, fusible at 112°; the fat of ducks fuses at 78° and yields 72 olein, and 28 stearin, fusible at 120°; turkey's fat is separable into 74 olein and 26 stearin, fusible at 112°.

The fat of insects has been but slightly examined, and does not offer any very remarkable properties: the fluid fat of ducks fuses at 78°, and yields 72 olein, and 28 stearin, which are usually termed oils, will be considered under that head.

The olein and stearin of animal fats are highly useful and important substances in the manufacture of soap and candles, for the latter purpose stearin has been of late very advantageously employed, and to a considerable extent as a substitute for wax.

The subjoined analyses of the stearin and olein of mutton suet may be taken as examples of the general constitution of these substances, and will show that their composition is different from that which might be expected from their different properties:

<table>
<thead>
<tr>
<th></th>
<th>Stearin</th>
<th>Olein</th>
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<tbody>
<tr>
<td>Hydrogen</td>
<td>. . . .</td>
<td>11·770</td>
</tr>
<tr>
<td>Carbon</td>
<td>. . . .</td>
<td>78·776</td>
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<tr>
<td>Oxygen</td>
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<td>9·556</td>
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100° 100°

FATA MORGANA, a name of uncertain derivation given to a very striking optical delusion which has been principally remarked in the Strait of Messina and on the coasts of Sicily and Calabria. It has been differently described by different observers, which we may attribute to the different states of the atmosphere at the periods of the occurrence of the phenomenon. The indications of both of the hygrometer and thermometer should have been carefully noted, in order to obtain a precise explanation according to the known laws of optics.

The images of men, of houses, &c., are occasionally seen from the coast, sometimes rising and sometimes in the air, or at the surface of the water. The same scene has frequently two images, one in the natural and the other in an inverted position: the images of a single object are said also to be sometimes considerably multiplied.

Accounting for this phenomenon, it should be remembered that the mountains on both coasts of the strait nearly inclose a portion of quiescent or stagnant air, the temperature of which near the surface of the water is therefore easily raised above that of the surrounding objects. The rarer medium of the atmosphere causes a diminution in the planes of the images, in the same manner that a denser medium would elevate them; and the secondary images formed between the air and water are necessarily inverse. The colours which are seen in hazy weather arise from the reflection of light from the surface of the water floating above the surface of the water, and would equally accompany any real object, as a ship, under the same circumstances. [Mirage.]

The remarks of Minasi, which have been so often copied, in explanation of this phenomenon, are unworthy of attention.

FATALISM. This term is used to express an article of philosophical religion, and usually signifies that the successive actions of mankind, and even the successive operations of the powers of nature, are under the guidance of some superior allmighty power, so that these successions and actions themselves are entirely independent of each other.* This doctrine has been embodied in all religious systems, though it was originally only an accidental part of the governing power. The Greeks called it moira or ananke, and the Romans called it fate; their mythology also mentions a Demiurges, who had formed the gods. All the ancient religions of Asia recognised a similar fate, and the Greek gods, to whom nothing might be attributed, are such, for example, as the alternating governments of Oermuz and Abrimanies in the Persian mythology, &c. Among the Hebrews the Pharisees were fatalists, the Sadducees materialists, and the Essenes deists. The Ottomanic religion of Odin modified this Fate, and brought it nearer to the idea of the government of the world by a deity, identifying it with their highest god, Allfadur (Father of

* Many Physican physicians (i.e. of mental maladies) of modern times maintain the exact contrary, that all the actions of mankind are the effects of circumstances, and, that all successive consequences depend on these antecedents,
all). From this point fate changes to what is called predestination (in opposition to chance), which idea is only a mitigated fate, distinguished however from genuine fatalism in proceeding directly from God, and not from fate. This belief in predestination was taught by Mohammed, and his followers have retained it. Catholicism has no trace of this doctrine, but it is held by the Calvinists, and to a certain extent by the church of Scotland. (See John 3:16.)

The doctrine of fatalism, as is well known, has been frequently and effectively used by both antient and modern poets. The doctrine intimately related to fatalism is the doctrine of the immediate and direct intervention of Providence in the government of the world. According to this doctrine the consequences of the actions of mankind depend wholly upon the actions themselves; God, however, is able so to conduct the events of human affairs that they shall ordain what is good, and conformably to his pleasure. To comprehend this working precisely is impossible for man, since his mental powers are not sufficiently extensive, and this dogma must therefore be a matter of faith. This doctrine is held by many Christian sects, the divinity of the Bible there are passages strongly in favor of such special intervention; for example, Matthew x. 29, 'Are not two sparrows sold for a farthing: and one of them shall not fall on the ground without your Father.'

The classical interpretation of this doctrine teaches the complete non-intervention of the Deity in the affairs of the world or of mankind: we may also call this doctrine the doctrine of theological chance, which may still be consistent with that of physical necessity, according to Kant. The extreme non-intervention of Providence was advocated by Hobbes, and served for the foundation of the charges against him of deism and atheism. If we consider these doctrines in a philosophical point of view, we come to the following results:—The theological theories of fatalism, predestination, the immediate government of God, and his non-intervention, evidently bear an analogous relation to the political systems of despotism, constitutional monarchy, and republicanism. According to this doctrine one may have grounds for being an adherent of one of these political systems, so may he also have grounds for being a follower of one of these theological views. According to the ideas and investigations of the author of this article, God may have positively fixed, before any event of the world, the eternal laws, the relations of things to each other within the circle of which nature and human intelligence have to move. These ideas are (1) for nature, self-preservation, or continuance, of which the production is in the act of producing, &c.; (2) for the human intelligence, self-love, beauty and virtue. In so far as nature and humanity with all their efforts cannot move out of this sphere of ideas, so far is it from the destination extending the efforts of nature to adapt means to ends, and the endeavours of the human soul after virtue (or human happiness) appear to produce an ever-increasing progression, and in this sense they constitute an intervention of Providence—since nature being wholly bound, and God absolutely unconstrained, man stands between both; so that though he is not absolutely free, yet he is free to work his ultimate ends out of himself; he is free whenever he acts morally, and he is not free whenever he acts immorally (or rather physically), and he may thus arrive at the consciousness that his state in another world entirely depends on himself. With this conviction every species of intervention would appear less harsh towards him, and without these grounds he may be doubtful whether any direct intervention exists with respect to worldly affairs. An intervention of any other kind than that of God would lead to the doctrine of damns and spirits.

FATHER. [Parent and Child.]

Part I. THE CHURCH. This is the name given to the early teachers and expounders of Christianity, who lived between the second and the sixth centuries of our era, and whose writings are looked upon as possessing considerable authority in matters of faith. The earlier, or primitive fathers, as they are usually styled, to distinguish them from the fathers of the fourth and fifth centuries, and who followed close upon the apostolical age, namely the age in which the Apostles lived and died, are generally reckoned as follows. 1st. Clemens Romanus, bishop of Rome, who died about A.D. 100, and of whom we have an interesting epistle to the church of Corinth. (Clement I.) 2nd. Ignatius, bishop of Antioch, a disciple of the Apostles in his youth, was sentenced to death under Trajan, A.D. 107, and was taken to Rome to be executed, as he informs us in his epistles. He was exposed to the wild beasts in the amphitheatre. There are extant several of his epistles of various subjects which he wrote to the churches of the East, the North, and of Rome. His epistle to Polycarp is doubtful. 3rd. Polycarp, bishop of Smyrna, who is said to have conversed with St. John and other Apostles in his youth, and who suffered martyrdom A.D. 177, when he is said to have written his apology to Diognetus, a well-known Christian. Christianity he came to Rome in the time of Antoninus, had a controversy with Marcion, an early heretic, and wrote an eloquent apology for the Christians, which he addressed to Antoninus, and which drew from that emperor a rescript favorable to the Christians. After the death of Antoninus, and towards the close of the reign of Commodus, he is said to have written his apology for the Christians, as it is believed, to Marcus Aurelius; soon after which he suffered martyrdom at Rome. We have of him, besides his two apologies, a 'Paraphrase ad Graecos,' 'Dialogues cum Tryphone Julo,' 'Epistola ad Diognetum,' and a 'Homilia de Virginitate.' His epistle to Diognetus was addressed to Polycarp, bishop of Antioch about 169, died about the beginning of the reign of Commodus. There is extant by him a work in three books, addressed to Autolycus, a heathen friend of Theophilus, who, with the consent of the council of Nice, he desired Polycarp to send to Lyon to assist the aged Photinus, bishop of that city, whom he succeeded A.D. 179. He wrote against the Gnostics, as he is believed to have written against Severus. He is called by Tertullianus 'a very inquisitive explorer of every kind of knowledge.' His principal work, written originally in Greek, but which has come down to us in a Latin translation, is styled 'Adversus Haereses,' works are of the school of Clement, who was born about the middle of the second century, died about 220, wrote ten works. [CLEMENTS, TITUS FLAVIUS ALEXANDRINUS.] 6th. Cyprian, bishop of Carthage, who is generally considered as having written about 258. His works are numerous. [CYPRIAN, STR.] He has been confounded by some with Cyprian of Antioch, who suffered martyrdom under Diocletian. 9th. Origen of Alexandria, died about A.D. 254, died about A.D. 254. He was the author of the works of which we however contain portions which have been republished as heretical. [ORIGEN] 10th. Gregory, called Thaumaturgus, a native and afterwards bishop of Neo Caesarea, in Cappadocia, and a disciple of Origen, died soon after the death of the Emperor Alexander Severus, in A.D. 254. Of his works we have two fragments remaining. Tertullianus of Carthage, lived under S. Severus, and died at a very advanced age, under Alexander Severus. He is one of the most copious of the Fathers of the Latin church. In the latter part of his life he fell into the errors of the Montanists. [TERTULLIANUS.]

Note: We now come to those Fathers of the Church who flourished in the fourth century, after Christianity had become the religion of the Empire, on which an age when we generally style the Augustan age, for the number and the merits of the writers whom it produced. Some account of most of these fathers and their works is given under their respective heads. They are generally ranged in two classes—fathers of the Greek and Easten
FAT

Church, and fathers of the Latin Church. The former are: 1st, BENEDETUS of Cassarea, who died A.D. 340; his works get the place of fathers, not through the eloquence by which his pious conduct in the Arian controversy was so remarkable; but because they have been published repeatedly both in Greek and in a Latin translation. 2nd, ATHANASIUS, bishop of Alexandria, who died in 373. 3rd, Basilus, called the Great, bishop of Cassarea, in Cappadocia, in the reign of Valens, one of the most bitter enemies of the fathers, and whose writings have been published repeatedly both in Greek and in a Latin translation. 4th, Gregory Nazianzenus, the friend of Basilus, and for a time patriarch of Constantinople, who afterwards abdicated and ended his days in voluntary banishment. His writings, published in part, are remarkable for their beauty and imagery which distinguishes him from his brethren. 5th, Gregory, bishop of Nyssa, in Cappadocia, the brother of Basilus, died about 396; he distinguished himself in the Arian controversy. 6th, Cyril, bishop of Jerusalem, who died A.D. 386, spent all his days in controversy, and other works, in the 7th, CHERUZOSTOM, ST. JOHN, patriarch of Constantinople, died in banishment A.D. 407. 8th, EPHESIUS, bishop of Salamis, in Cyprus, died in 403. 9th, Cyril, bishop of Alexandria, who died A.D. 444, was the great opposer of the Nestorians in the East. He obtained the name from the pretensions of the founder of the dynasty, Abu Mohammed Obeidallah, who asserted that he was descended from Fatima, the daughter of Mohammed and wife of Ali. The Arab historians generally deny the truth of the pretended ancestry of the Fatimides, and regard the Fatimids as a sect, and the Fatimid Caliphate as a dynasty, of foreign origin. The first of the Fatimid caliphs was established in Egypt at the beginning of the 9th century, and his capital was called Cairo, which was the capital of the Fatimids. The Fatimids were a dynasty of mixed origin, consisting of both Arab and Berber elements. They were the rulers of Egypt from 909 to 1171, and were the first Muslim dynasty to establish a caliphate in Egypt.

FATHOM. [MEASURES.] FATIMIDES, the name of a race of kings, who assumed the title of caliphs, and reigned for many years over most of the countries of Africa and Egypt. They obtained the name from the pretensions of the founder of the dynasty, Abu Mohammed Obeidallah, who asserted that he was descended from Fatima, the daughter of Mohammed and wife of Ali. The Arab historians generally deny the truth of the pretended ancestry of the Fatimides, and regard the Fatimid Caliphate as a dynasty, of foreign origin. The first of the Fatimid caliphs was established in Egypt at the beginning of the 9th century, and his capital was called Cairo, which was the capital of the Fatimids. The Fatimids were a dynasty of mixed origin, consisting of both Arab and Berber elements. They were the rulers of Egypt from 909 to 1171, and were the first Muslim dynasty to establish a caliphate in Egypt.

The study of the Fathers is interesting not only to theologians, but to those who would examine carefully the philosophy and science of the ancient world. They are of great importance to the understanding of the development of Christian thought. The works of the Fathers have been published in many languages, including Latin, Greek, French, English, and others. They have been studied extensively by scholars in the field of church history and theology. The study of the Fathers is essential for anyone who wishes to understand the development of Christian thought and the history of the Church.
Carnot and other French engineers have recently proposed constructions which may be considered as partial revivals of the fausse-braye, but with circumstances which appear to render the work of the middle ages much more feasible in the beginning of the fifteenth century, who is not, as is frequently supposed, the same person as Faust, the assistant of Gutenberg. The popular traditions of Northern Germany give very strange accounts of this man, who, however, somewhat condescendingly chronicled his adventures, and represent him as having been in the possession of supernatural secrets, of a magic book, and other conjuring apparatus; he was said to have commanded the elements, and to have performed the greatest magical wonders, with such amazing success. But this gradual development is much more interesting than the historical personage. Some of the greatest poets of Germany have represented Faust as a man inclined by the most ardent desire for knowledge, who, after having power which includes all things, turns its mists, and arrives at the conviction that the depths of truth are inaccessible to the human understanding. The despair of a mind thus disappointed, and the fiction of the use of magic to get admission to the forbidden regions of knowledge, impart to his story an interest which makes it very old, and may be clearly traced to a primitive age. The circumstance that the wandering Punch and Judy show, those rude fathers of the drama in Germany, and even in France, have for centuries made, and are still made, is probably not to be hitherto, for the favourite entertainments of their auditors, proves how well adapted this character is to dramatic action. In modern times, Lessing, the originator of German dramatic art, undertook to dramatise the subject; it was an undertaking that unfortunately it has remained a fragment. The same idea however was taken up by Goethe, the greatest poet that Germany has yet produced. The following are the leading features of Goethe's work—his profound and persistent passion for knowledge, his intense desire for his will, in his breast the conviction of the insufficiency of his knowledge to reach the fountain of truth. Accordingly he has recourse to magic. At his command anwers the Erdgeist, the symbol of the original chaotic power, and professes opposition to the existing order of things, and Faust, reflecting his impotence when in presence of the Erdgeist, resolves to enter into a compact with the repulsive spirit, not with the expectation of satisfying his longing after knowledge and power, but with the intention of obtaining enjoyment by his agency, as the pleasures of the world have no charm for the man who is eager after knowledge. Faust is about to sell his soul, but his constant uninterrupted activity to be continually agitated by the conflict of the ever-changing elements of life is the only thing which can offer any compensation to man for knowledge which is denied. But whoever does not waste his life in thought and in labours of toil, is inevitably drawn into the vortex of sensuality, and as soon as the intellect of man loses its empire, he is carried into the abyss of material existence. This is the fate of Faust. The first volume of the work, published in 1808, contains the prose part, and the other volumes are in the hands of the printer.
within forty days after the end of that session of parliament, and that all such priests or other religious persons ordained since the same time should not come into England, or remain there under the pain of suffering death as in case of treason." It was also enacted by the same statute that all persons receiving or assisting such priests should be guilty of a capital felony. It may be said that these and other rigorous statutes were not at all times enforced; but they placed the whole body of the Catholics at the mercy of the Protestant government: for them therefore there was no liberty, persons, nor religion, such as the privy council thought proper to allow; and with regard to their religion, the law gave them no rights, and afforded them no protection.

The facts, that James I, although himself a Protestant, was born of Catholic parents, had been educated by a Catholic archbishop, and approved several of the ordinances of the Roman church, gave to the Catholics at his accession hopes of a revival of their liberties. At first, it appeared that their wishes would be realised, and the severity with which the fines paid by the recusants, which in the last year of Elizabeth had amounted to 10,333l., in the first year of James's reign scarcely exceeded 300l., and in the second they were little more than 200l. James however was no sooner firmly seated upon the throne than he overthrew all the new foundations. In 1604, by the parliament of that year, he assured his council that 'he had never any intention of granting toleration to the Catholics,' that he would fortify the laws against them, and cause them to be put into execution to the utmost. We must refer to the 2nd vol. of 'Criminal Trials,' from which this article is extracted, for a fuller account of the enactments made at this time against the Catholics: sufficient has been said to show the cause of their discontent with the government, and the King, in the Protestant, in the Church. The attempting to blow up the House of Lords, with gunpowder at the opening of parliament, and thus destroying at a single blow the King, the Lords, and the Commons, was formed about the summer of 1604. The receiver of the gunpowder, one John Guy, was put to death. Robert Catesby, a Catholic, the son of Sir William Catesby, who had been several times imprisoned for recusancy. Catesby disclosed his scheme to John Wright and Thomas Winter, the former descended from a respectable family in Yorkshire, the latter a recusant, a friend of the former, and a Catholic, of whom Father Ferrers, the former, and a Catholic, of whom Father Ferrers, the latter from the Springs of Haddington in Worcestershire, where they had been in possession of estates since the time of Henry VI. At a conversation held between these conspirators, it was agreed that Winter should go over to the Lutherans at Flushing, to meet Velasco, and if he failed to arrive at Flanders on his way to England, to conclude a peace between James and the king of Spain, and request him to solicit his Majesty to recall the penal laws against the Catholics, and to admit them into the rank of his other subjects. Winterupon the failure of Velasco, who encountered murder, in that he would stipulate in the treaty of peace for the liberties of the English Catholics, and so returned to England, having in company Guido or Guy Fawkes, who, it was thought, would be of assistance in the business: he was a gentleman of good parentage and respectable family in Yorkshire; his father, Edward Fawkes, was a notary at York, and held the office of registrar and advocate of the Consistory Court of the Cathedral. Of his education and early history nothing is known; but having entered into the service of the Earl of Northumberland, he joined the four conspirators already mentioned, and the following oath of secrecy, was administered to each, kneeling with his hands placed upon the Primer:—You swear by the blessed Trinity, and by the sacrament you now propose to receive, and in order to disclose that to which you have been or are at present bound, or the matter that shall be proposed to you to keep secret, nor desist from the execution thereof until the rest shall give you leave.' They then heard mass, and received the sacrament from Father Gerard in confirmation of their vow. Perry took the seal of confession, and was examined by William Taylor, and upon pretense that it would be convenient to him when in attendance in that capacity, he purchased of one Ferrers the remainder of a short term which he had in the lease of a house adjoining the park house.
Fawkes, who was unknown in London, and had assumed the name of Johnson, acted as Percy's servant, and took possession of the house. Parliament was soon afterwards adjourned till the 7th of February, and the conspirators having hired a house in Lambeth for the preparations, and a place of deposit for combustibles, agreed to meet in London about the beginning of November. The custody of the house in Lambeth was committed to Robert Keyes, the son of a Protestant clergyman in Derbyshire, and one of the chief persons in the plot, whom he was determined to him also. The proceedings of the star chamber during the interval of their meetings so exasperated the conspirators that they became more eager than ever about the plot. Catesby and his confederates, according to their wishes, treasured, assembled, on the 11th of December, and a mine was immediately commenced. The stone wall, however, which separated them from the Parliament House being found three yards in thickness, Keyes and the younger brother of John Wright (who was one of the other men who was called to assist, and the seven men were thus occupied until Christmas-eve without their ever appearing in the upper part of the house. During their laborious employment they had much consultation respecting the scheme to be adopted. It was supposed that the Duke of York, afterwards Charles I., would then be the next heir, and Percy undertook to secure his person, and carry him off in safety as soon as the fate of the country should be decided. If this plan failed, the prince Elizabeth was to be surprised and secured by a party provided in the country. It was the intention to proclaim one of the royal family as king. It was also arranged that Warwickshire should be the general rendezvous of the several bands of armed forces, and that the king should be sent to the houses of several of the conspirators in that county, to be used as occasion might require.

In the midst of these deliberations Fawkes brought intelligence that the parliament had again been prorogued from the 23rd to the 3rd of October following. The conspirators therefore separated for a time; and in the mean while John Grant of Norbrook in Warwickshire, and Robert Winter of Huddington, were sworn in among their number. In February (1605) the labourers were dismissed, and the stone wall nearly half broken through. One morning while working upon the wall, they suddenly heard a rushing noise in a cellar nearly above their heads. At first they feared they had been discovered; but Fawkes being despatched to reconnoitre, found that a chimney had been thrown out of the cellars below, so as to fall on his coal in order to remove. Fawkes carefully surveyed this large vault situated immediately below the House of Lords, and perceived its fitness for their purpose. The difficulties connected with breaking through the walls of the house were more than counterbalanced by the continual oozing of the stone work, and the danger of discovery from noise, disposed the confederates to abandon their operations, and to possess themselves of the cellar of Bright. The vault was immediately hired, and about twenty tons of powder were carried by night from Lambeth; iron bars and other tools that had been used in mining were also thrown among the powder that the breach might be the greater, and the whole was covered over with faggots. Number of various kinds was placed in the cellars prepared for the purpose of covering the head of the explosion. Sir William Stanley and Owen of the project. This was agreed to on condition of their being sworn to secrecy, and Fawkes was despatched to Flanders for the purpose of conferring with them. Sir Edmund Baynham was appointed a confidential person to hold the secret in the event of the explosion at Rome he might be prepared to negotiate on behalf of the conspirators, and to explain that the design of the plot was the re-establishment of Catholicism. 'Soon after Fawkes's return from Flanders the par-liament was further prorogued from the 3rd to the 5th of November. These repeated prorogations alarmed the conspirators, and led them to fear that their project was suspected. Their alarms however having been discovered to be groundless, Catesby purchased horses, arms, and powder,
however, they heard that on the 31st of October the letter had been shown to the king, their hope diminished, and their fears increased, as new ones were added. Others concealed themselves in an obscure lodging; all held themselves ready to start at a moment's warning. Fawkes alone, with the extraordinary courage which he had displayed throughout the transaction, took up his station in the cellar, where, by a note given him by some of the conspirators, he had been warned to take the precaution of making the powder and suspend. On Monday the chamberlain, with Lord Mounteagle, commenced the search, which appears to have been somewhat strangely delayed. Their suspicions were excited early by finding that Percy was the occupier of a house of which he had taken to make use, as at the unaccountably large store of gunpowder which filled the cellar, and by the side of which a tall dark suspicious-looking man (Fawkes) was standing. They therefore gave orders to bring his house to knowledge, a magistrate in Westminster, to search the house, the presence of the conspirators left London, and to take the precaution of making the powder. Fawkes at once avowed his purpose to the magistrate, and declared that if he had happened to be within the house when he took him, he would not have failed to have informed the king. He declared that in his absence the exposure were not disturbed when he was examined before the king and council. He gave his name as John Johnson, the servant of Thomas Percy, declared his intention to blow up the king, lords, and bishops, and others who should be present in St. James's church, in order to avoid the refusal to accuse any one as his accomplice, and upon being asked by the king how he could enter upon so bloody a conspiracy against so many innocent persons, declared that a dangerous disease requires a desperate remedy. He was put in a room with the rest of the confederates of Fawkes, it was agreed by the conspirators, who had assembled at Ashby Ledgers, to take up arms with the few followers they could collect, and to endeavour to excite to rebellion the Roman Catholics in the counties of Warwick, Worcester, and Shropshire, the March of Wales, and the border. This scheme was immediately adopted; arms and horses were seized upon, and different parties despatched over the country. But all their efforts were in vain (Denny), and the failure of the project so complete, that their proceedings served no other purpose than to point them out as members of the confederacy. A party of the king's troops pursued some of the conspirators to Holbeach, and here an obstinate defense was made, in which the two Wrigts, Percy, and Catesby were killed, and Rookwood and Thomas Winter were captured. Sir Everard Digby was armagged and tried separately for the same crime. Upon the trials no witness was orally examined: the evidence consisted of the written declarations of Digby's servant and of the prisoners themselves. This is reason to believe that Fawkes was tortured in order to make him confess more fully. All the prisoners were found guilty, and upon all the sentence of death was passed. Care was taken to render their execution, which took place on the following Thursday and Friday, as solemn and public an execution as could be. Of the implication of the Jesuits in this conspiracy we shall speak in the article Garnet.

The story of the design and the extent of the machieft contemplated form the principal features of the gunpowder plot; and it is possible to mention, not only the chief acts of rebellion, but the actions of the army, and the conduct of the army, and the conduct of the officers, in the suppression of the rebellion; to prejudice the whole nation against them to such an extent, that not only were the severe acts then in force against them so unchecked, but all others equally harsh were enacted. (Abridged and extracted from Library of Entertaining Knowledge, Criminal Trials, vol. ii.)

FAWN. [DEER, Vol. viii. p. 358.]

FAVAL is one of the Azores or Western Islands. It is situated in lat. 32° 30' S. and long. 29° 4' W., and is more than 24 miles long from east to west. The western Azores, it has an uneven surface, and in some places the hills rise into mountains. Though the soil is rocky, it is very fertile, and vegetation is favoured by the mildness of the climate. The island grows fruits and palms, pine-apples, lemons, oranges, cabbages, and numbers of vegetables are produced. The staple of agriculture is the vine. In good sessions, from 8000 to 10,000 pipes of wine are exported, chiefly for America; oranges are sent to England and corn to Brazil. Its harbours, Horta, is the best in the whole group. Boats alone can land on the adjacent islands of Pico, Faial, and Corvo; and the produce of these islands is accordingly brought to Fayal for exportation. Fayal has also the advantage of lying directly in the track of European ships homeward bound from South America and India, and is visited by many vessels as a port of calls or as a place of refreshment, sometimes by improperly called Fayal, is a pretty little town with 5000 or 6000 inhabitants: it is the place of export for the product of this and the neighbouring islands.

FAYETTE, MARIE MAGDALEINE DE LA VERGNE, Countess de, was an descendant of an officer and a nobleman of Provence. She took lessons in Latin of Ménage and Father Rapin, and soon made great progress in that language. In 1655 she married Francis Blincourt, and was the mother of five children. The renderings of the literary men and the wits of the age. Latour, Ménage, Huet, and Segrain were her most frequent visitors. The Duke de la Rochefoucault, celebrated for his wit and his licentiousness, became acquainted with her, and she was one of the most constant companions of Madame de Sevigné, in her letters, speaks highly of the moral character of Madame de la Fayette as well as her talents. She wrote several novels which obtained a high reputation at the time, being the first of the kind in France written in the natural style, and free from the exaggerations and affectation of former novelists. She also wrote:

1. 1. 'Mémoires de la Cour de France, pour les années 1688-89,' which contain some curious particulars. 2. 'Divers Portraits de quelques Personnes de la Cour,' being true sketches of some of the most curious characters of that period, written with that spirit of the author, noiter so interesting as the other two. Madame de la Fayette left also other memoirs of contemporary history which have not been published. Her printed works were collected and published together in 8 vols. 12mo., Paris, 1796, with a notice of her life, 1796, together with the works of Madame de Tencin. Her correspondence was published in 1805. Madame de la Fayette died in 1693.

FAYETTE, GILBERT MOTTIER, Marquis de la, was born on the 1st of September, 1757, at Chévagnes, Brioude, in the present department of the Haute Loire. He married at the age of sixteen Mademoiselle de Nouailles d'Ayen, and his wife's relations offered him a place at court, which he refused. When the American revolution broke out, La Fayette, who was deeply interested in the cause, made an offer of his services to Benjamin Franklin, which being accepted, he armed a vessel at his own expense and landed at Charleston in April, 1777. He fought as a volunteer at the battle of the Brandywine on the 11th of September, 1777, in which he was wounded. Congress having given him a brevet of major-general, he served in the north under Washington's orders, and was at the battle of Monmouth in June, 1778, in which he was wounded. Congress, in 1780 he commanded the advanced guard of Washington's army against Lord Cornwallis. Being joined by Washington and Rochambeau, he contributed to the operations in consequence of which Lord Cornwallis was obliged to capitulate at York Town. After the capture, he returned to France, and after receiving fresh reinforcements, but the peace of 1783 prevented his sailing back to America. He however revisited that country three years after, and was received in triumph by his grateful citizens, whose independence he had most faithfully contributed to establish. After his return to France he traveled through Germany, and was received with marked distinc-
When Lucien appealed to the Assembly not to forsake his brother in his adversity, La Fayette replied with great animation:—We have followed your brother through the burning and the flames of the Provençal incursions; we have expressed the woes of Russia; the blessed bones of two millions of Frencmans scattered all over the globe attest our devotion to him; but that devotion, he added, is now exhausted, as his cause is no longer the cause of the nation.

After the fall of the Legislative Assembly, Lucien joined the allied troops, La Fayette protested against that violence, and retired to his country residence at Lagnac. In 1814, he was returned after a great struggle to the Chamber of Deputies for the department of La Sarthe. During that session, the following speech was delivered in favour of constitutional liberty and against exceptional laws, but to no effect.

In 1821 he went on a visit to the United States, where he was received with the greatest enthusiasm in every state of the Union. In 1830, being in the house of deputies, he denounced the anger of former monarchs, and the arbitrary ordinances of Charles X. He then called out against the national guards and placed himself at their head. Faithful to his old constitutional principles, he proposed Louis Philippe as king of the French, stating his reasons that a monarch based on popular institutions was the government best suited to France. During the trials of the revolutionists he exerted himself zealously to save them from a popular fury. Of the subsequent differences between him and Louis Philippe concerning acts of foreign and domestic policy, he declared that he disapproved of the king being restored to the exercise of his regal office on swearing to the new constitution. Upon this the republican party broke out into an insurrection, which La Fayette and the national guards put down on the Champ de Mars. Soon after, the king gave in his resignation and retired to the country; but the war of the first coalition having begun, he was appointed to command the army of Flanders, and he defeated the allies at Philippeville and Maulbeuzee. He was however hated by the Jacobins at Paris, and mistrusted by the court. On the 16th of June, 1792, he wrote a strong letter to the Legislative Assembly, denouncing the plots of those men 'who, under the mask of democratic zeal, smothered liberty under the excess of their license.'

In 1793 he was returned to the house of representatives by the Legislative Assembly to watch the king at the Tuileries on the 20th of June. But the republic party was already preponderating in that Assembly, and La Fayette found that he was not safe in Paris. He then proceeded to the king and the royal family to take shelter in his camp at Camp des Loges, but the advice was rejected by Louis, or rather by those around him, who placed all their confidence in the duke of Brunswick and the Parians.

On the 26th of June the Jacobins of Paris burnt La Fayette in effigy in the Palais Royal. La Fayette having returned to his camp, publicly expressed to his officers his disapproval of the attack on the Tuileries on the 10th of August, and on the 13th of that month he arrested the commissioners sent by the Legislative Assembly to watch him. Upon this he was outlawed, and was obliged to cross the frontiers with a few friends. His intention was to repair to some neutral country, but he was arrested by the Austrians, and carried to the fortress of Olmutz, in Moravia, where, under the disguised name of his daughter, son-in-law, he continued in confinement. He remained in prison for five years, and was released at last by the treaty of Campo-Formio; but not approving of the arbitrary conduct of the Directory he repaired to Hamburg, and did not return to France until 1807. In 1814 he betook himself again in opposition to Bonaparte's ambition, and he voted against the conscription for life, refused all employment under that chief, and retired to the country, where he applied himself to agricultural pursuits.
visual nerve will produce absolute terror, so may a smaller degree of terror produce the more lasting sensations of dread or fear; i.e., interchanging pauses of consciousness and unconsciousness, which affect the brain and spinal system. The narrower the nerves are connected which lead to the lungs, to the stomach, to the muscles, and other parts of the body. It is therefore not surprising that dread or fear seems the most perfect place for the exciting, to and from the brain and spinal system. The production of an increased action of the heart, a disorders steep, sickness, and powerlessness of the limbs.

Fear may be also produced by a disordered action occasioned by some local affection of the heart or lungs, or through some disease of the blood, or through a general sickness, as in the cholera.

FEAR, CAPE. [CAROLINA, NORTH.]
FEAR, CAPE, RIVER. [CAROLINA, NORTH.]
FEAST or FESTIVAL, an anniversary day of civil or religious observance. Among the Jews, the feast of Trumpets, that of Expiation, the feast of Tabernacles, the feast of Dedication, the Passover, the Pentecost, and the feast of Purification, were the principal. The modern Jews have a few more, but they are of less importance.

The Greeks, and more especially the Athenians, had an abundance of festivals. Such were the Aglaia, in honor of Aglauros, the daughter of Cecrops; the Artemisia in honor of Diana; the Dionysia in honor of Bacchus; the Erechthea, in honor of Ceres; and the Panathenalus in honor of Minerva.

The Roman festivals were of two kinds: first, those which were fixed or stated; secondly, those which were appointed annually on a certain day by the magistrates or pontiffs. Of the former kind were the Agonalia, the Ludi Naenia, Matronalia, Cerialia, Saturnalia, &c., through the several months; the latter were the Feriae Latinae or Latin holidays, the Paganalia in honor of the tutelary gods of the rustics, the Sementiva in seed-time, and the Consualia of the scribes. The whole coming year's corn, so far as a portion of the year was taken up with sacrifices and holidays, to the great loss of the public, that Claudius abridged the number. The Mohammedans, in addition to their weekly feast, or sheet, which is observed on Friday, have two festivals of a more solemn kind; the feast of Victims, celebrated on the 10th day of the last month of their year, and the feast of Bairam.

There were, some of our festivals are immovable, and others moveable. The movable festivals are Christmas Day, the Circumcision, the Epiphany, Candlemas or the Purification, the Annunciation of the Virgin Mary or Lady Day, All Saints, and All Souls. The greatest part of what are known as the Christmas festivities have, however, been excepted in the Calendar. The principal of the moveable feasts, and that by which the rest are guided, and from which they keep their proper distance, is Easter; the others are Palm Sunday, Good Friday, Ash Wednesday, Shrove Tuesday, and Whit Sunday. The Four feasts from which these are usually dated, and quarterly payments made, are Lady Day, 25th March; the Nativity of St. John Baptist, June 24th; Michaelmas Day, September 29th; and Christmas Day, December 25th.

February, the second month of the year. Its name is derived from februe, to purify or cleanse. The Lupercauls were celebrated in this month. (Ovid, Fasti, ii. 1. 19, 31.) The Saxons called it Sol-Month, because the sun's meridian altitude visibly increases in it.

February was not in the Calendar of Romulus. It was added to the year by Numa, who gave it the twelfth place in the Calendar. The Decemvir transferred it to the place in which it now stands. (Ovid, Fasti, i. 1. 47.) Numa assigned twenty-eight days to it in order that the anniversary of the foundation of Rome might be celebrated on the 21st of March, according to the Julian system, or the 19th of March, according to the ancient Roman calendar. (Macrob. Sat. ii. c. 13.) In an ordinary year February has twenty-eight days; in bissextile, or leap-year, it has a twenty-ninth, or intercalary day. [Bissextile.]

FÉCAMP, a city in France, in the arrondissement of Honfleur, at the mouth of a small river on the coast of the department of Seine Inférieure, 116 miles north-west of Paris, and 40 from Rouen, the capital of the department. Fécamp is said to have existed in the Roman times in the place for which it was then termed Fines Cempi. Hence its modern name, which owes its historical celebrity to an abbey for nuns founded A.D. 664, or thereabout, by Wining, count or governor of the Pays de Caux. The Normans under Hastings, A.D. 1066, dispersed the nuns and burned the system with the ground. The abbey church was rebuilt A.D. 988, by Robert I., duke of Normandie. The abbey of Fécamp subsequently became one of the most powerful ecclesiasties of Normandie; three suffragan abbots owned his superiority; he presented the lives of fifteen hundred and thirty benefices near the abbey. He had the enormous yearly income for that period, of 40,000 marks. There was a noble conventual library well stored with MSS., and containing among its archives many deeds and charters of William the Conqueror and his successors. Casimir, king of Poland, upon the death of his throne, retired to this abbey. Fécamp was also the occasional residence of the dukes of Normandie.

Mr. Dawson Turner, who visited Fécamp in the year 1818, thus describes it:— Fécamp, like other towns in the Pays de Caux, is built on a low, unlovely, and unhealthy shore, on approaching it, threads through an opening between hills "stern and wild," a tract of "brown heath and shaggy wood," resembling many parts of Scotland. The town is long and straggling; the streets steep and crooked; its inhabitants are chiefly officials of the abbey. The income of the abbey, including the church of the abbots of Fécamp, amount to 7,000, and the number of its houses is estimated at 1,300, besides above a third of that quantity which are deserted, and more or less in ruins. The population in 1832 was 8,659 for the town, or 9,123 for the parish; the church of the abbots in 1827 was closed, and the parish church of Fécamp is not.as yet standing; it is 370 feet long, and 70 feet high, the transept, including the Chapel of the Precious Blood, is 120 feet long, and the tower 200 feet high. Some circular chapels and square chapels are probably parts of the church as rebuilt by Duke Richard in the fourteenth century, but the rest of the building is all in the pointed style, and scarcely any part is earlier than the end of the twelfth century; the choir is modern. The church of St. Etienne, one of the ten parochial churches which Fécamp had before the Revolution, has a very imposing exterior.

The inhabitants are engaged in fishing, manufactures, and commerce; a few years since (Dupin, Forces Productives de la France, p. 192) they were close to the coast engaged in the cod and whale fisheries, and one hundred and forty-eight in the mackerel, herring, and other smaller fisheries. The decline of this branch of industry has led many of the fishermen to engage in manufactures. The main articles of manufacture are woolen and silk goods, the making of which near 1,400 workmen are occupied; also linens, leather, articles of clothing for the colonies, iron wares, kelp, rape-oil, and refined sugar. The trade is chiefly coasting-trade, or the supply of the English smugglers with tea, brandy, hollands gentry, and other contraband articles. The port, which is formed by the mouth of the small river which falls into the sea at Fécamp, has been much improved. Courses of instruction are given on navigation, geometry, and mechanics applied to the arts; there are a tribunal de commerce, or commercial court, an exchange, and an hospital. Limestone is quarried, and chalk refined in the neighbourhood.

FÉCIALES, in ancient Rome, were the messengers or heralds of war; they bore arms in their hands; they were the heralds of the priesthood, and their persons were held sacred even by enemies. When the Romans had or pretended to have grievances against another state, they sent one of the feciales, who, clad in his solemn robes, entered the obnoxious territory or town, and in the presence of the assembled people, or of the magistrates and rulers of the country, stated the complaints of the Romans, and asked for reparation. A certain time, generally thirty days, was allowed for deliberation and for returning an answer, at the end of which the fecial would ascertain whether the answer was satisfactory, or whether the territory, he took to witness Jupiter and the other gods that he had religiously performed his duty, and that it was now the
business of the Roman senate and people to decide upon the question. On his return to Rome he declared to the senate that this mission, which he had recently undertaken, might now declare war if they thought proper. If war was decided upon, the fleet would sail again to the limits of the hostile state, and there, in presence of witnesses, appealing to Jupiter and the other gods celestial and terrestrial, and against the injuries of that people to the best of their ability to accomplish their ends, and declared that nothing now remained for Rome but to seek satisfaction by its own arms: he then threw a spear within the hostile boundaries, upon which war was considered as begun. When a treaty of peace or alliance was to be concluded, the presence of the civic arms was likewise required, as with the Romans all political conventions partook of a religious character. The Etruscans and other antient Italian nations had also their feacles. This institution had a beneficial effect, insomuch as it tended to humanize the system of warfare, and to prevent sudden and unexpected aggressions. (Pitisci, Hildebrandus, and the other writers on Roman antiquities.)

FEZULA, or FEZULA. [STARCH.]

FEZULS, or FEZULS. [IMPRÉGATION OF PLANTS.]

FÉDÉRATION. A federal union of sovereign states may be most easily conceived in the following manner:—

We suppose that the sovereign power in any number of states is vested individually in the several states. These sovereign persons may agree respectively with each other and with all not to exercise certain functions of sovereignty in their several states, and to transfer these functions to be jointly exercised by the contracting persons. The union of these persons in a compact will be that the contracting sovereign persons in their joint capacity will become sovereign in each state and in all the states. The several sovereign persons having for the time surrendered to the joint body certain powers, which are their several, will be sovereign in their several states. The powers so surrendered to the joint body may be determined by written contract, the interpretation of which belongs to the joint body, yet in such a manner that there can be no valid interpretation unless the sovereign persons are unanimous for if any number or majority could bind the rest, they might, by interpretation, deprive the several contracting persons of all the powers reserved to them by the contract. It follows also from the terms of the union, that any one part of it, whether it do or not, as far as it is concerned, dissolve the union; for the essence of this union is the continuing consent of all.

This is the simplest possible form of a supreme federal government; one in which the contracting sovereign persons are the real sovereigns, and in which the sovereign persons in their aggregate capacity exercise the functions of sovereignty. Such a federation may never have existed, but any federation that does exist or can exist, however complicated it may be, is but a modification of this. If the sovereign powers, instead of being in individuals, are in all the people of the respective states, the only difference will be that the functions of sovereignty, which in the first case we supposed to be exercised by the individual sovereigns in their joint capacity, must, in this case, be delegated to individual members of the sovereign body. The citizens of the several sovereign states must in the first instance of necessity delegate to some of their own body the proper authority for making the federal contract or constitution under which the contracting sovereign persons out of their own body, in the mode prescribed by the federal contract, for executing the powers intrusted by the federal contract to persons so appointed. Thus the individuals who form the federal contract act therein severally as the agents of the sovereign persons of the respective states, namely in the aggregate capacity for the purposes of the commission to which they are appointed to carry into effect the terms of the federal contract are the ministers and agents of that sovereign power which is composed of the several sovereign states, which again are composed of all the citizens. By whatever name of President, Senate, House of Representatives, or other name, the agents of the sovereign power are denominated, they are only the agents of those in whom the sovereign power resides. When the sovereign power is so distributed, the question as to the interpretation of the federal contract may in practice be more difficult, but in principle it is the same. No one state can be bound by the interpretation of the rest, for if this were once allowed there would be no assignable limit to the powers of the individual state. Therefore when the sovereignty is in each state in the aggregate capacity, it is a clear consequence of the nature of the compact, whatever the several sovereign powers are nations or individuals, that each contracting power must exercise its judgment on the interpretation in respect of which they are not the representatives of the compact from which any power dissents can, consistently with the nature of the compact, bind that power. In the case of complete dissent or disagreement by any one power, the contract is, by the very nature of its terms, at an end; for the nature of the compact is not to bind sovereigns. It is not the case that the sovereigns, by mere interpretation from which any power dissents, can consistently with the nature of the compact, bind that power.

The federal government in such a union has delegated the power of interpreting the written instrument of union to certain judiciary authorities, appointed under the federal compact for the purpose of carrying its provisions into effect, the several sovereign powers must still exercise, either by their legislatures or their judiciary authorities, their right to judge of the correctness of the interpretation, just as much as if the several sovereign persons, in the case first supposed, themselves exercised the functions of sovereignty in the supreme federal government.

We suppose that the federal government of the United States of North America is an example of a federal or federal government, or a supreme federal government.

The contracting parties were sovereign states (the sovereignty in each state being in the citizens), which in the aggregate formed a supreme federal government. The ministers for carrying into effect the federal government are the president and congress, and the judiciary of the United States. By the preamble to the constitution it is in fact declared that the people of the United States "promise allegiance to the constitution of the United States, and respect its authorities, in the belief that the union so formed is necessary to the continued existence of our federal government." The fifth article of the constitution provides that the congress, whenever two-thirds of both houses shall deem it necessary, shall propose amendments to this constitution, or, on the application of the legislatures of two-thirds of the states, shall call a national convention for proposing amendments, which, in either case, shall be valid to all intents and purposes, as part of this constitution, when ratified by the legislatures of three-fourths of the several states, or by conventions in three-fourths thereof, as the case may be." This amendment, which was proposed by congress, was ratified by that part of the congress, and, after the states were divided into three-fourths, was ratified by all the states. From this article it is clear that the framers of the constitution did not fully comprehend the nature of the supremacy, for the sovereignty of the several states may be bound without their unanimous consent, which is contrary to conditions essentially implied by the nature of the union. After all, the provision would have been apparent; but the imposibility equally exists when the contracting sovereign powers are respectively composed of many individuals; the citizenship is still the essence of the union that has been formed.

This is not the proper place to discuss the advantages and disadvantages of a supreme federal government, nor to examine into its stability. That it is necessarily different from a union of individuals is evident, namely in the necessity for all the consenting parties to continue their consent, it is evident in this respect it is like a partnership for an indefinite period, which may at any time be dissolved by any one of the partners. Such a power, which is in the nature of the union, so far from constituting an objection to it, is a great advantage. So long as all the parties agree, they have the benefit of the union: when they cannot agree, they take instead of it the benefit of the separation.

It is also foreign from our purpose to consider what is the tendency of a union like that of the United States, resulting from the powers placed in the hands of the President and Congress by the States setting in their aggregate capacity. If such power were placed in such hands by sovereign persons originally several sovereigns, the tendency is the same, as in the case first supposed, the vigil
lance of these persons in their aggregate capacity, though somewhat less than the vigilance of a single sovereign person, would probably prevent any undue assumptions of power on the part of those to whom they had delegated power. The Greek church as a whole, instead of being a federation of parishes, each with an independent clergy, who in their aggregate capacity form this federation, are removed from those to whom they delegate certain powers, and the more numerous are the individuals in whom this aggregate sovereignty resides, the greater are the facilities and the power of mischief which the church of Constantinopleavrue now has in the matter of ecclesiastical appointments, and the larger is the tendency in, their ministers and agents practically to increase those powers with which they may have been intrusted. In their capacity of ministers and agents, having patronage at their command, and the administration of the revenue, such agents usually acquire the power of influencing the election of their successors, when their own term of office is expired, and may thus imperceptibly, while in name servants, become in fact masters. That there is such a tendency to degenerate from its primitive form in several ecclesiastical organizations, as there is in all other human institutions, is sufficient reason for not forming such union and deriving from it all the advantages which under given conditions it may for an indefinite time bestow on all the members of such federation.

Those who wish to examine into the nature of the North American Union and the party questions which have arisen out of the interpretation of the federal constitution may consult the essays of Jay, Hamilton, and Madison in the Federalist, the Journal of the Philadelphia Convention, published by Gales and Seaton, 1787, where they will find ample reference to other authorities. A supreme federal government, or a composite state, is distinguished by Austin (Provisions of Jurisprudence determined and established. Fedorov's reign was the most important event of Fedor's reign was his attempt to get himself elected king of Poland in 1587. Fedor, or rather his prime minister Godonoof, promised to the states of Poland and Lithuania, that if they elected him king, he would unite Poland and Lithuania, and conquer the Crimeas for Moscow, and Wallachia, Moldavia, and Hungary for Poland. The proposed union would have easily created a power capable of accomplishing not only the projected but even much more extensive conquests. But the federation, instead of being the majority of the Lithuanians, and they found many partisans even amongst the Poles. He was on the point of being elected, when, fortunately for the peace of Europe, the overbearing conduct of the Muscovite ambassadors to the council of Poland rendered the election impossible. Fedor of Sweden, was elected king of Poland. Fedor died in 1591, and with him ended the dynasty of Ruric on the throne of Moscow, his younger brother Demetrius having been murdered through the instrumentality of Godonoof.

FEDOR ALEXEYEVICH, tsar of Moscow, the eldest brother of Peter the Great, ascended the throne after the death of his father Alexius Michaylovich, 1676, being only 19 years of age. His youth and delicate constitution did not prevent him from displaying remarkable ability in affairs of state, and he showed himself to be the most capable of the Czars, and very much more provoking than any of his predecessors, was accomplished under the performance of his brother Peter the Great. Fedor distinguished himself particularly by putting an end to a most absurd custom which had acquired the force of law in Muscovy. According to this custom, called Mostniestvo, it was the custom to put under the command of or give precedence to a person whose birth was considered inferior to his. All the noble families of the country were registered in a roll called Razriad, or Arrangement, and all the disputes which frequently arose out of the question of precedence were settled by referring to this kind of herald's office. A natural consequence of such a preposterous system was confusion, and it frequently proved very detrimental to the public service; but it was so deeply rooted, that even the celebrated Ivan Vasilievich, who deluged Muscovy with blood and decorated its nobility, was unable to destroy the Mostniestvo. Fedor abolished the absurd practice by very simple means: he assembled his boyards, or principal nobles, and having exacted of each of them a written declaration, he threw, in the presence of the assembly, all the rolls of the Razriad into the fire. This acto-de-fé, which took place in 1681, extinguished for ever the system of the Mostniestvo, and since that time the nobles of Russia have equal privileges, as a class many rights from which the other classes of the community are excluded, but neither antient family nor title legally gives in Russia any privilege to an individual belonging to the class of the nobles which any other mean-
ber of the same body does not possess. The genealogical records of the Musevitze nobles, which did not relate to their claims of precedence, were spared by Fedor, and even arranged in order by his command. Death prevented Fedor from attempting other reforms in his country; he died in 1680, at the age of 28.

FEE SIMPLE. [Estate.]

FEELING. [Touch.]

FEES, certain sums of money claimed as their perquisite by official persons under the authority of various acts of parliament, and by prescription. The right to fees, as well as the amount payable in most cases connected with the administration of justice, has been regulated by several recent acts of parliament.

Officers demanding improper fees are guilty of extortion.

[Exortion.]

The rewards paid to barristers and physicians, attorneys and surgeons, for their several services, are called fees, which may be considered as the interest of money claimed as their perquisite by official persons under the authority of various acts of parliament, and by prescription. The right to fees, as well as the amount payable in most cases connected with the administration of justice, has been regulated by several recent acts of parliament.

FEHME, or FEHMERICHT.

After the crusades, when the spirit of chivalry had degenerated from its ancient splendour, the German nobles retired to their gloomy castles, whence they darted, like birds of prey, upon the travelling multitude, and each other for the perpetration of every description of outrage. Murder, robbery, rape, abduction, went unpunished. Nor were these excesses confined to the laymen; the clergy, secular and monastic, cast off the rigid morals of their predecessors, plunged into licentiousness, and became the scourge of virtue. In the minds of those who, relying upon their power, thought themselves above the reach of the law, and for the protection of the defenceless and innocent, a secret tribunal was formed, called the sacred Fehme, or Fehmericht. According to the best critical inquiries, there can be little doubt that the commission of this tribunal was due to Charlemagne after his conquest of Saxony. A division into counties, 'grafschaften,' formed part of the general organisation which he then gave to Germany; each county had a 'freygraf,' free-count, and a 'schaffe,' sheriff, who held their commissions on Monday on the site of the birthday of the Emperor, and held a court for the administration of justice in the open air. According to the ancient German custom, the spirit of which still breathes in the laws of England, no criminal proceedings could be had by a judge unless an information was preferred. But if thesheriffs, or the bohein herr, or the bohein herr, or the保修 was present, or if there was a question of an ordinary execution, the person or persons who had induced the execution was brought before the court, and was required to answer to the charge, after which the accused and his witnesses were heard. The judges were all armed and dressed in black gowns, with a cowl that covered their faces like a mask. When the sentence was pronounced, the execution of which, in cases of capital punishment, was carried out by all the members of the court, the condemned (who came under a kind of safe conduct) was dismissed, with the warning that his life was forfeited, and that no power on earth could withdraw him from the deserved punishment. Whereas, in most parts of the world, the number of those who were brought before the court, was large enough to make the event occur, no court of law dared to take notice of the affair; every man's tongue was struck silent, for fear of incurring the vengeance of this terrible body. This punishment however was seldom inflicted upon those who resisted the payment of money, but it was used to cause the defending to redress the wrong that he had inflicted. But if the accused failed to attend the summons, which was repeated three times, judgment passed by default, and the offender was declared an outlaw. Every adverse party were the father or son of the man who was duty-bound to put him to death by the rope, the dagger, the sword, or even poison, and to revenge any insult offered to the tribunal upon man, woman, or child, noble or plebeian, fee

FEHME, or FEHMERICHT.

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The members of this tribunal, who called themselves Wissende, 'the Knowing Ones,' were chosen from the most intelligent of the clergy, and held their powers of the office of the tribunal. After the necessary inquiries into his previous course of life, the neophyte was summoned to attend a meeting of the schellen, which was held at midnight in some secluded part of a forest, and opened with all the formalities of a court of law. He was required to kneel before the freygraf, his head uncovered, with his fore-finger on the sword, and to take the following oath:— 'I swear to keep the secret from man and woman, from village and farm, from stick and stone, even from toad and frogs, or any other of God's creatures, unless I have the permission of him who heads the holy Feluin. And I will not break my oaths for pleasure or pain, for pledge or dress, for silver or gold, or any other reason. I further swear to disclose this holy chair, which presides at our sittings, every thing that concerns this secret tribunal, whether I know it to be true, or hear for truth from trustworthy persons.' As soon as the neophyte had pronounced this oath, he was informed that the object of the association was to uphold peace, virtue, and honour against the open or concealed enemies of the law; and that he was obliged to tell whether he was obliged to tell him the name of the schellen of the different counties and principalities should be known to each other, they had adopted a sign consisting of four letters, S.S.G.G., the signification of which is still involved in mystery. The neophyte was further presented with a book of rules, and he was obliged to tell him the name of the sacred tribunal for his master. The summons required the accused to appear at a certain hour at the appointed spot, within a fortnight after its delivery, to answer for his base and criminal conduct before the sacred tribunal, which was of great weight, and at the same time threatening to proceed against him for contempt in case of non-appearance. If the accused attended the summons, the schaffe who brought the accusation was called upon by the bohein herr, in the name of all the exiles and witnesses to the charge, after which the accused and his witnesses were heard. The judges were all armed and dressed in black gowns, with a cowl that covered their faces like a mask. When the sentence was pronounced, the execution of which, in cases of capital punishment, was carried out by all the members of the court, the condemned (who came under a kind of safe conduct) was dismissed, with the warning that his life was forfeited, and that no power on earth could withdraw him from the deserved punishment. Whereas, in most parts of the world, the number of those who were brought before the court, was large enough to make the event occur, no court of law dared to take notice of the affair; every man's tongue was struck silent, for fear of incurring the vengeance of this terrible body. This punishment however was seldom inflicted upon those who resisted the payment of money, but it was used to cause the defending to redress the wrong that he had inflicted. But if the accused failed to attend the summons, which was repeated three times, judgment passed by default, and the offender was declared an outlaw. Every adverse party were the father or son of the man who was duty-bound to put him to death by the rope, the dagger, the sword, or even poison, and to revenge any insult offered to the tribunal upon man, woman, or child, noble or plebeian, fee

The power of this tribunal was greater than that of the Holy Inquisition; it struck terror into all Germany, and especially in Westphalia, where it originated. Princes and nobles were afraid of the tribunal, for the fear of protection against their enemies, or to avoid the jurisdiction of a tribunal the power of which they were unable to withstand. Towards the end of the fifteenth century, the German empire having acquired more political importance, and the objects for which the tribunal had existed having ceased to exist, it gradually lost its power, without being abolished by any legislative enactment. Some traces of the revival of this tribunal appear in the seventeenth century, but its efforts to regain its former importance were checked by the public authorities. It sank at length into utter ina
The formation of these teeth is beautifully shown in four preparations in the museum of the Royal College of Surgeons in London. No. 333 is the anterior part of the right ramus of the lower jaw of a young lion, exhibiting the teeth, together with the gums in which they are imbedded, and the border of soft parts, or lip, with which they are surrounded. No. 330 is the anterior part of the upper jaw of a young lion, in which the border of the permanent incisors of the canine tooth, or cuspida tus, is pretty completely formed, and the fang showing. The incisors are cut down in the direction of its axis to expose the cavity containing the pulp on which it was forming. There is one of the molars in the set of being shed, and the adult or permanent tooth is pushing into the gum. No. 331 is the counterpart, or opposite section of the same incisor; and No. 332 is the incisor of the jaw of the opposite side of the same lion, showing the whole of the pulp on which it was forming. (Catalogue, Physiological Series, Gallery, vol. i. p. 95.)

The articulation of the condyles of the lower jaw in which this formidable apparatus is set is so contrived as to cause its operation in the most efficient manner. These processes are situated in the same straight horizontal line; they are cylindrical and firmly locked in the transversely elongated genoid cavities, the margins of which are so extended both before and behind the condyle that rotatory motion is impossible. The crowns of the molar or rather lacerating teeth are compressed and covered with enamel, as indeed is the case of all the others; the molars terminate in pointed processes, and the lower teeth shut within the upper. Thus, when called into action, the teeth and jaws operate like the antagonists of a pair of scissors upon the substance submitted to their cutting edges. The canines, the principal projecting weapons of the head, are very long and large, especially in the larger cats. If we examine the cranium of a lion or tiger we shall be at no loss to discover the machinery by which this dental apparatus is worked, and the Crista occipitalis, which is most strongly marked in the cats, is a sharp and prominent bony ridge rising from the upper and hind portion of the skull. Its chief use is for the attachment of the temporal muscle, and the size of the temporal fossa, and the strength and extent of the zygomatic arch depend upon the magnitude of that muscle. In no animal is this fossa larger than in the carnivora. It not only occupies the whole of the sides and upper part of the skull, but is still further increased by the prominent bony crest proceeding from the front, parietal, and sphenoid bones. The temporal muscles would indeed almost completely cover the cranium in many of these animals, were it not for their separation by the parietal ridge.

The zygomatic suture is so oblique that the temporal bone forms the whole superior margin, and the os malar the inferior edge of the zygoma. In consequence of the construction which we have endeavoured to explain, the lower jaw is capable of motion only upwards and downwards, and entirely incapable of that motion in a horizontal direction which is necessary to mastication, properly so called. Accordingly the cats cut and lacerate their food coarsely, and transmit it in large portions to the stomach, there to be acted on by the gastric juice. The muscles of the neck and fore-quarter of the cats are especially powerful to give full effect to this part of the organization, and to enable the animal to drag or carry away its prey.
We must next turn our attention to the other organs of prehension, the claws.

The five toes of the anterior, and four toes of the posterior extremities of the cats are armed with very strong, hooked, subcompressed sharp claws. These extremities, it seems, also to restrain and regulate the actions of the muscles that are to wield these weapons of great strength; these of the fore arm especially, which in the lion and tigress offer the same arrangement for flexion, extension, retraction, and adduction, as is observed in man. In the cat the muscles of the right forefoot of a lion, with the first phalanx retracted on the ulcer (which from the pronation of the foot is the outer side of the second phalanx) are observed in the preparation. The principal one arises from the outer side and distal extremity of the second phalanx, and is inserted into the superior angle of the first phalanx; a second arises from the outer side and proximal end of the second phalanx, and passes obliquely to be inserted at the inner side of the base of the first phalanx; a third, which arises from the inner side and proximal extremity of the second phalanx, is inserted at the same point as the preceding. The tendon of the flexor profundus muscle, which is the tendon of the flap, has been divided. No. 257 A is a toe from the left fore foot of a young lion, with the last phalanx drawn out, as in the action of the flexor profundus. The same ligaments are shown as in the preceding preparation, together with the insertion of the flexor and extensor tendons. In order to produce the full effect of drawing out the claw, a corresponding action of the extensor muscle is necessary to support and fix the second phalanx; by its ultimate insertion in the terminal phalanx, it produces a muscular action of the flexor muscle. A bristle is placed beneath that part of the extensor tendon which passes under one of the elastic ligaments to be inserted into the base of the last phalanx immediately above the articulation. In both preparations lateral processes of tendon may be observed going to the under part of the base of the phalanx, which are partly inserted there, and partly lost in the integument: they are given off from the extensor tendon as it passes over the proximate phalanx, and are joined by ligamentous fibers from the sides of the second phalanx, the elastic ligaments are differently disposed, as may be seen by comparing this with the preceding preparation. The outer ligament is of a flattened triangular form; it arises from the whole outer side of the middle phalanx, is strongest at the anterior margin, and is inserted at the superior angle of the last phalanx; the inner ligament is of a rounded form, arises from the inner side and distal end of the second phalanx, and is also inserted at the superior angle of the last phalanx, which is necessarily drawn back in the diagonal of the elastic forces.

No. 258 A is the innermost toe or pollex of the right fore foot of a young lion, exhibiting a disposition of the elastic ligaments and mode of retraction similar to the toes of the hind foot; but here the inner ligament is of the flattened triangular form, and the outer one rounded. The latter passes between a division in the extensor tendon, one part of which is inserted in the base of the last phalanx just above the articulation; the other part into the outer side of the base of the phalanx, and into the integument. (Catalogue, Physiological Series, Gallery, vol. i. p. 251) It seems scarcely necessary, adds the able author of the foregoing description, to allude to the final intention of these beautiful structures, which are, with some slight modifications, common to the genus Felidae. The claws being thus retracted within folds of the integument, are pressed constantly sharp, and ready for their destined function, not being blunted and worn away in the ordinary progressive motion of the animal; while at the same time, as it parts only are brought in contact with the ground, the effect is such as to contribute to the useless tread of the flesh tiger. (K Hindi.)

Fig. 2.

Structure of the apparatus for restraining and extending the claws of cats, as exemplified in the fore foot and hind foot of the lion.

The elastic ligaments which retain the last phalanx of the claw in a state of retraction are not the same in the foot and hind foot.

In figure 1, which is a toe from the left fore foot of a young lion, represented in a state of extension, a point to the two elastic ligaments; b, the tendon of the extensor muscle; c, a process of inelastic tendon; d, the tendon of the flexor muscle, which passes over the upper extremity of the last phalanx, as a pulley, and thus assists the powerful action of the flexor muscle.

In figure 2, a toe from the hind foot, the two elastic ligaments (5) converge to be inserted into the upper angle of the last phalanx, and draw it backwards directly up instead of by the side of the penultimate phalanx; e is a process of lateral inelastic tendon; and f, the tendon of the flexor profundus, which is strongly stripped down an annular ligament, e.

The claw is supported on the last phalanx, which is of a very peculiar form. Its two portions are united...
ach other at nearly right angles. The base of the claw is received into a groove in the body of the bone, to prevent its being pushed backwards in the violent action of the paw. The two parts of the bone form a species of hook or crotchet. The superior end of the phalanx in this state of repose is placed almost vertically; while the other extremity lies nearly parallel to the second. The articulation is at the upper end of the vertical portion, and the flexor tendon, passing over the upper part of the bone, are strongly fixed to the outer portion. The action of the flexor profundus causes the whole bone to move through 90° around the end of the second phalanx. (Dr. Traill.)

Having laid before the reader the mechanism of the parts more immediately concerned in the capture of the prey and the separation of its flesh, we must notice another organ which in the case is used for other purposes than those of mere taste and disgust. The roughness of a domestic cat’s tongue is familiar to every one, as well as the action of lions and tigers in licking the bones of their prey in order to detach any remnants of flesh that may be adhering thereto. This is effected by numerous horny papillae, which are differently arranged in different species, some having them in straight rows, others in alternate lines; but in all the parts are directed backwards. In the Museum of the Royal College of Surgeons are preparations well illustrating the structure of the tongue in these animals. No. 1509 exhibits the tongue and larynx of a young lion injected. The tongue is of considerable length, in consequence of the distance at which the larynx and os hyoides are placed behind the bony palate. The soft palate is of a proportional extent. All that part of the tongue which corresponded to the soft palate is smooth; as it advances forwards it is covered with large soft papillae directed backwards; then there are four large foveate papillae, anterior to which the simple conical papillae continue increasing in size to near the tip of the tongue; the strong cuticular spines with which they are armed have been removed, showing the vascular secreting surface beneath. With the larynx there are preserved the thyroid glands and part of the wide trachea. No. 1510 is a portion of the cuticular covering of the smaller posteriour conical papillae, from the preceding tongue. No. 1511 shows a portion of the cuticular covering of the anterior papillae of the same tongue. At the fore part of the base of each of the larger spines may be observed a group of small gustatory papillae. No. 1512 is the extremity of the tongue of a lion, with the cuticular covering of the papillae removed from one side; and No. 1513 is the anterior part of the tongue of a lion, with the cuticular and spiny covering of the papillae preserved. (Catalogue, Physiological Series, Galley, vol. iii. part ii. p. 12.)

Mr. Owen remarks, that in the cats generally the concretion of the os hyoides to the cranium is not by a long elastic ligament, as in the lion, but by an uninterrupted series of bones, and that this latter structure exists in the Cheeta (Felis jubata). (Zool. Proc. 1832.)

This leads us to the other Digestive organs.—In the cats the salivary glands are small, as might be expected where it can hardly be said that mastication is exercised. The stomach of the lion is divided by a slight constriction in its middle, into two portions. Its coat, particularly the muscular coat, are very strong, as in most of the Carnivora. Blumenbach observes, that in most carnivorous quadrupeds, particularly those of a rapacious nature, the stomach bears a considerable resemblance in the whole to that of the human subject. Col. Lawrence, in his Remarks on the Carnivorous animals, approaching in its constituent elements more nearly to those of the animal than that of the herbivorous tribes, is more easily reduced into the state which is required for the nourishment of the body in the former than in the latter. The stomach is a large, oval bag, formed of a cylindrical form, has no cul-de-sac; the oesophagus opens at its anterior extremity, and the intestine commences from the posterior, so that every thing favours a quick passage of the food, which receives no mastication, and is reduced by a very short and broad stomach to a more fine meal. The stomach has no valves, is small in diameter, but muscular, and the whole canal, when compared with the body, is extremely short, being as 3 or 5 to 1. It is worth noticing, that in the domestic cat they are as 3 to 1, but in the wild cat they are only as 3 to 1. Some of the Carnivora have no cecum, and in those that have this appendage it is constantly small and uniform in its cavity. In the Museum of the College of Surgeons are four preparations, Numbers 693 to 696 (Gallery), both including, showing the structure of the stomach of a lion. No. 741 shows the termination of the ileum of a lion, with the cæcum or caput coli injected. The cæcum is simple, resembling that of the Suscaro (Ryusse tetractyla of Illiger), with its apex similarly occupied by a cluster of glands. The bulk is in the terminal part of a circular form, but it is situated on a valvular prominence in the large intestine. No. 730 is the injected colon of a lion. The longitudinal muscular fibres are very strong, and are disposed around the whole circumference of the intestine, which can, therefore, be expanded up into a large circle. The lining membrane is smooth, and is thrown into zigzag rugae. No. 735 is a portion of the rectum of a lioness, showing the strong round fasciculi of longitudinal fibres forming the outer stratum of the muscular coat, part of which has been removed to show the transverse fibres. The intestinal glands of the ileum in the lion are shown by No. 757. No. 806 shows the liver of the domestic cat, and its subdivision, as in all carnivorous quadrupeds, into a great number of lobes. The second lobe, on the left side, or the liver, is deeply cleft for the insertion of the suspensory ligament; to the right of this cleft it is perforated for the lodgement of the gall-bladder. No. 807 is the cystic lobe of the same species, showing that the gall-bladder is situated in the middle of the substance of the large lobe. (Catalogue, Gallery, Phys. Series, vol. i.) Blumenbach remarks that the ductus choledochus forms a pouch between the coats of the intestine for receiving the pancreatic duct in the cat. No. 821 in the Museum of the College of Surgeons displays a portion of the pancreas, with the termination of the hepatic and pancreatic ducts of a lion. A black bristle is passed into the ductus communis choledochus, and a white one into the pancreatic duct; the mucous coat of the intestine is laid open to show their junction. The orifice of a distinct pancreatic duct is preserved. No. 837 is the spleen, with a portion of the duodenum and pancreas of a domestic cat. The spleen is of an elongated tridimensional form, attached to the stomach by a double attachment of peritoneum investing its vessels: this duplicature passes off from the angle formed by the two lesser sides. The splenic vein is seen passing from the spleen along the pancreas, which extends from it to the duodenum. No. 840 exhibits the stomach and duodenum, spleen, pancreas, and great omentum of a domestic animal, apparently of a cat. The parts have been injected, and show remarkably well the principal peculiarities in the form and disposition of these parts as they exist in the feline tribe. A part of the esophagus has been inverted, to show the tracts of its internal peritoneum; the stomach exhibits the broad dilated cardiac and the narrow tubular pyloric divisions, which are acutely bent upon each other; in the duodenum may be observed its regular convolutions, and the ileal communi- cation, by which much greater freedom of motion is allowed to this portion of the intestinal canal than in the human subject. The small omentum is seen attached, not in a regular line along the lesser arch of the stomach, but ad- vancing in an irregular scoliotic manner upon its anterior surface—an analagous process of peritoneum is attached...
posterior to the lesser curvature. The greater omentum anteriorly is continued from the greater arch of the stomach, from the left end of which it is continued down the spleen, and posteriorly along the pancreas, which is thus supplied, and it have an entire investment of peritoneum: from the pancreas it extends to the pylorus, where it becomes continuous with the anterior layer, completing the circle, and leaving a large aperture behind the pancreas, which is the greater omental cavity analogous to the foramen Winslowi. The form of the pancreas and its division into the transverse or greater lobe and the circular or duodenal lobe are well shown, and also the form and situation of the papilla.  

*Organ of the Voice.*—The terrible roar with which the larger animals of this family rush on their prey is well known, and well calculated to paralyze the nervous system of the victim with fear. Seizing on the victim with nois
t least tilled coughed with the care of a mother for their spring, these destroyers leap on it with a horrid sound which salutes its ear in the same moment almost that it feels the blow of the deadly talons and the murderous grip of the teeth. The cartilages of the larynx of a lion, the large size of the vocal organ, and the rounded contour of the epiglottis, may be seen in preparation No. 1172 (Gallery) of the Museum of the Royal College of Surgeons. From the narrowness of the thyroid cartilage anteriorly, there is a considerable interval at the lower end between the cartilages, an enlargement which, as the Catalogue tells us, obtains in all the feline animals. No. 1129 consists of the heart and lungs of a kitten, and shows prin
cipally the subdivision of the lungs into many lobes, especially the right lung, filling up the space which intervenes between the heart and diaphragm in this and most other quadrupeds. Viecz-D'Azry and Blumenbach notice the two delicate mem

branes lying under the ligamenta gluttidis of the cat, which produce the purring noise so peculiar to it.

*Urinary and Genital Organs.*—The structure of the kidney in *Manis*/*a*, observes Mr. Lawrence, in his notes to Blumenbach's "Comparative Anatomy," displays two very opposite varieties, which may be called the simple and the compound; whereas there is a simple pyramidal papilla, which is surrounded by an external crust of the cortical substance. This is the case in all the *fet*, and in some other animals, as *e.g.* *rodenita*. "In some animals," says John Hunter, "the kidney is a very oblong body, ex
dextensum in length for a considerable way, and very narrow, as in some fish, while in other animals it is almost globular, as in the leopard."

*In the lion kind, cat kind, as also in the hyena, we find that perhaps one-half of the venous superficial surface of the kidney is either strung or attached to or pass in a doubling of the capsule of the kidney, and then pass along like the veins of the pia mater, afterwards joining the trunks from the inside just as they pass out."

*The veins of the kidneys have in general the particular aspect of expecting to be attended and that of the arteries, excepting in the lion and cat kind, as also in the hyena, where some of the veins ramify on the surface, while the others are attending the arteries.

*The reader will find in the Museum of the College of Surgeons some beautiful preparations illustrative of the kidneys, &c., of the *Pilidae*; they are numbered 1200 to 1205 both inclusive, 1218 to 1221 both inclusive, and 1284 (Gallery)."

Blumenbach observes that in the smaller species of the cat kind the glans is covered with retroverted papilla, which, as these animals have no vesicular seminalis, may enable the male to hold the female longer in his embraces. Most of the cats are retromunential, but not, as has been so often and repeatedly asserted from the time of Aristotle, retro
copulant.

*Brain, Nervous System, and Senses.*—Blumenbach ob

serves that the bony torus cerebelli constitutes in most species of the cat kind an uniform bony partition which leaves an opening for the brain to enter. The lower part of the cranium. In the cat the brain forms *i* of the body, the proportion of the weight of the cerebellum to the brain is as 1 to 6, and the breadth of the medulla oblongata after the pons varoli is to that of the brain as 8 to 22. In the Muscidae, *e.g.* "the gallery" (Gallery) is the brain of a tiger. The pia mater has been removed from the medulla oblongata, showing the trans

verse tract of medullary matter posterior to the tuber an

nulare, called corpus trapezoidenum; this is traversed by the corpus pyramidalum. The development of the cerebellum is to be found in the large lobes of the occipital bodies, but also the anterior half of the cerebellum itself; and the surface of the cerebellum is augmented by convolutions, of which one is analogous to the single convolution in the agouti, and extends parallel with the fissure dividing the lobes in the other animals parallel with and external to the preceding, a transverse one proceeding from the mesial fissure marks off what may be regarded as the anterior lobes, which, together with the lateral regions of the hemispheres, are traversed by other affrontations.

No. 1326 is a portion of the brain of a young lion, with the vesicles of the pia mater minutely in
dected. The left lateral ventricle is exposed, showing the pes hippocampi and the closed pia vas. The former ves
tricle is also laid open, and contains a similar plexus of minute arteries. Brackets are inserted into the hollow el

factory and the optic nerves, and black threads are tied round the origins of the temporal nerve in the right side. A small quill is placed in the infundibulum; but the pituitary gland, which may be seen in both the preceding specimens is here removed. The union of the vertebral arteries to form the basilar artery, the great vertebrae in the Termes, may be traced in warming the animal in certain situations where they come in contact with any object.

*Smell.*—Blumenbach enumerates the cat kind among the animals remarkable for the case of smelling, and as affording examples of a very complicated formation of the ethmoid bone, both in regard to the elegant structure of its cribiform lamina, and to the wonderful convolutions of its turbinate parts, which occupy the whole space of the nasal cavity, for the application of the Schnei
derian membrane. The concha narina inferior is also much convoluted. There is in the Museum of the College of Surgeons (Gallery) a preparation (No. 1527) of the nose of a young lion, showing the turbinate bones of the left side in situ; and another, No. 1553, of a longitudinal section of the side of the head of a young lion, showing the ossa turbinate in situ also.

The following luminous description of the latter is given in the Catalogue (Physiological Section, vol. iii.) The su

rior bone is of a conical form, extending along the whole of the roof of the nasal cavity, with its base opposite to the frontal sinus (which is here exposed), and its apex ter
rminating above the anterior extremity of the concha sub

natea. The middle turbinate bone presents a concave or uniform surface towards the nasal cavity, as may be seen in the preceding specimen; but the lamella forming this surface has been partially removed, showing the subjacent lamella, which is rilled or tubularly. The lamella inferiorly: the section of the interior lamella of the same bone is exhibited on the opposite side of the preparation, where the surface for the extension of the olfactory membrane is augmented by a series of deep arched folds, having their convexity outward. The middle turbinate bone is, in addition, divided longitudinally, parallel with the superior margin of the bone, while the others radiate in an irregular manner from the lower point of attachment. The lateral surface of the bone is less
complicated and extensive. The inferior and anterior turbinated bone is of an elongated form, and contracted at both extremities. Its posterior and inferior extremity is attached to the outer pterygoids, the nasal passage, below the middle of the turbinate bone; from this point it extends obliquely upwards, enlarging as it crosses the anterior extremity of the middle bone, and then diminishing in size to its anterior and superior attachment behind the external nostril. Astley Cooper gives it the name of Cartilagineous part of the nose; and inspiration must first impinge upon this bone. Its nasal surface is pretty uniform, presenting only one curved groove, parallel with and near to the lower margin of the bone, in this respect differing widely from the lower turbinate bone. In its posterior portion is a small bony eminence, which is sometimes characterised. In the preparation the outer lamella has been cut away to show the subjacent fold. The whole being minutely injected, the vascularity of the pituitary membrane extended over this vast and complicated surface is well displayed. The pituitary membrane is evidently thickest and most vascular at the anterior part of the cavity, where it must receive the first impression of the external air. A portion of the pituitary membrane is reflected from the base of the middle turbinate bone, showing the fibres of the ethmoidal nerves joining it a long and a short axis, the long axis being vertical. In the Museum of the College of Surgeons there is a preparation (No. 1660, Gallery) of the brain of a young lion, including the organ of hearing of the left side. A part of the meninges is preserved with the membrana tympani, and the cavity of the tympanum is laid open, showing the convexity of the meninges turned towards it, as in most mammals. (Cat. vol. iii.)

Sight.—This sense is acute in theFelidae, and they have the nictitating membrane very large and movable. The pigment, as far as is known, is, generally speaking, of two tints, brown, and the anterior portion of the iris is formed of two segments of large circles; giving it a long and a short axis, the long axis being vertical. In the Museum of the College of Surgeons (No. 1710, Gallery) is the eye of a lion minutely injected by the ciliary arteries, and the retinal vessels, showing the retinal vessels and the choroid, and to show the vascularization of that tunica. No. 1730 is a preparation of the eye of a lion, showing the broad patch of tapetum lucidum below and also a little above the insertion of the optic nerve. The succeeding numbers to No. 1733 include a preparation of the eye of a lion, showing the irid, in the lion and the leopard. John Hunter, Observations on certain parts of the Animal Economy, 2nd ed. (p. 243) remarks, that when the pigmentum is of more or one colour in the same eye, the lighter portion is always placed at the bottom of the eye, in the shape of a half-moon with the circular arc upwards; the straight line or diameter passing almost horizontally across the lower edge of the optic nerve, so that the end of the nerve is within this lightest part, and the fainter portions of it sweep above it; and he observes that the shape is peculiar to the cat, lion, dog, and most of the carnivorous tribe. Mr. Owen observes that the Cheetah has the circular pupil of the Lion, Tiger, Leopard, and Jaguar. (Zool. Proc. 1833.)

NATURAL HISTORY.

The osteology of the Felidæ presents little for the distinction of species, except size, and in no animals does specific difference so completely determine the specific characters than it does in this family. There are indeterminate differences: such, for instance, as that pointed out by Mr. Owen between the skull of the lion and that of the tiger; but, taken as a whole, the skeleton of a cat is very nearly the miniature representation of the canine skeleton; the only difference being that the disposition of many leading zoologists has been to bring all the numerous species under one genus. Linnaeus arranges them under Felis, the third genus of his order Ferae, placing them between the dogs (Canis) and Viseera. Illiger assigns to them a position in his order Felocata, with the title Sanguinaria. Cuvier places them under the order of Carnivora (Felis, Linn.) among his Carnivores, the third family of his Carnassiers, between the Hygenas and the Selmas. Temminck regards the genus Felis as an indivisible group zoologically, but separates them into two sections, the first comprising those which are found in the Old Continent and Asia, the other giving the names of the New number; the second those which occur in the New World, of which he enumerates nine species. C. L. Bonaparte, prince of Musignano, admits into his family Felina the genera Proteus, Hyena, and Proionodon, a very questionable distinction with the name of Leo. The Lynxes are separated as a genus by Mr. Gray, under the title of Lyncheus; and the Hunting Leopards, Felis jubata, is characterized, generally by Wagner as Cynallurus. The whole family may be popularly divided into Lions, Tigers, Leopards, Lynxes, and Wild Cats, or Cats properly so called, the latter terms being more particularly applicable to the smaller forms. Under the first four titles will be found in this work the notices of those subdivisions, and we shall in the present article treat specially of the latter subdivision only.

Geographical Distribution of the Felidae.—The form is widely spread over the face of the earth; but reaches its greatest development in the Warm Temperate Zone. The exception, however, is New Holland and the islands of the Southern Pacific, species are found in every part of the world, except in the arctic regions; and some extend far beyond the limits of moderate temperature and even into the arctic districts which the severity of the cold is almost arctic. No species has yet been discovered common to the Old and New World.

CATS.

Among the smaller species of the great feline family our attention is naturally first directed towards that domestic animal which is found in almost every house. In this case," says the author of that interesting little book The Anglers of the World (1870), "there is no doubt which is the original of the domesticated stock. The wild cat of the European forests is the tame cat of the European houses; the tame cat would become wild if turned into the woods; the wild cat at some period has been domesticated, and its species has been established in almost every family of the Old and New Continent. There is good authority for this assertion; but the origin of the domestic cat has been attributed to a very different source, and there are not wanting zoologists who even now hold that the parent stock of that useful animal is still undiscovered.

Rupell during his first travels in Nubia discovered a cat (Kleinfußige Katz, Felis manulutana) of the size of a large-sized or middle-sized domestic cat, but smaller than the European wild cat (Felis Catus furus, Linn.). All the proportions of the limbs were on a smaller scale, with the exception of the tail, which is longer in Felis manulutana. The woolly or ground hair is in general of a dirty brown color, darker on the back and posterior parts, and becoming gradually lighter on the anterior and lateral parts; longer hair of a swarthy dirty white, so that the appearance of the animal is greyish-yellow. Skin of the edges of the lips and of the nose bare and black. Beard and bristles of the same eye, brown, with a white tip; eyebrows the same. eyelids black; irises yellow. From the inner corneal near the eye there is a dark-brown streak running in the direction of the nose, and there is a white streak as far up as the arch of the eyebrows; another greenish, extending on the forehead and the side of the ears, and under the eyes. Outside of the ears grey, inside white and without tuffs of hair. Eight slender black undulating lines arise on the forehead, run along the occiput, and are lost in the upper part of the neck. Cheeks, throat, and anterior part of the neck shining white. Two ochreous-yellow lines spring, the one from the outer corner of the eye, the other from the middle of the cheek, and meet both together under the ear; and two rings of the same colour below these two stripes on the underside of the chin. Chest and belly dirty white with similar spots or semicircular lines. A dark streak along the back becomes lighter as it rises over the shoulders, and darker on
The cross. This streak is gradually lost on the upper part of the tail, the lower surface of which is white-yellow. The tail is almost of an equal thickness throughout, and with dark rings at its points. The extremities, which have less hair in proportion on the outer side, are of the general colour, with besides five or six blackish semicircular bands on the fore-legs, and six distinct dark cross streaks on the inner side of the outer extremity; the lighter in each of the 't' black spots or streaks on the upper parts of the fore-legs, and the hind extremities show the cross streaks winding around the thighs towards the inside. Foot, soles, hind parts of ankles, and wrists shining black. Length two feet long, tail being large, and original height of the shoulder about 94 inches. The description was taken from an aged female. M. Rüppell, who found this cat west of the Nile, near Ambukol, in rocky and bushy regions, is of opinion that there can be no doubt that it is descended from the domestic cat of the then Egyptians, now to be traced in the cat-mummies and their representations on the monuments of Thebes. In the 'Description de l'Egypte, Hypogées de Thebes,' vol. ii, p. 45, No. 14, is the representation of a cat. Pl. 51, No. 3, shows a cat's mummy, and pl. 54, No. 5, one of a cat's mummy which in size of body, form of head, and length of tail accords perfectly with Felis maniculata. The question then arises whether this domestic cat might not have been transferred or crossed with another, contemporary with the Egyptians, and the superintendents of the Frankfort collection agree that the general facts strongly favour the opinion that Felis maniculata is the type of our domestic cat. M. Temminck concurs in opinion with M. Rüppell that this is the true species, and which it is the streak. Sir William Jardine, in his able Natural History of the Feline (Naturalist's Library, Mammalia, vol. ii, small Svo., Edinburgh and London, 1834), states that the opinion generally accepted before this by most naturalists was, that the wild cats of Europe was the original stock. But, he adds, that although, since the introduction of our house cat to this country, there may have been an accidental cross with the wild native species, an attentive examination of the greater numbers will at once show a very great difference from that of the true domestic cat; the most prominent distinctions being the shortness of the legs and shortness and thickness of the tail in the latter. 'The domestic cat, continues this author, is the only one of this race which has been generally used in the economy of man. Some of the other species have shown that they might be applied to similar purposes; and we have seen that the general disposition of this family will not prevent their training. Much pains would have been necessary and not one species of European nature was likely to have attempted it. The scarcity of cats in Europe, in its earlier ages, is also well known, and in the tenth and eleventh centuries a good mouser brought a high price. Although, however, our opinion coincides with that of the above-mentioned authors, we are indebted to the superstition of the ancient Egyptians for having domesticated the species described by Rüppell, we have no doubt that since its introduction to this country, and more particularly to the north of Scotland, there has been occasional crossing with our own native species, and that the results of these crosses have been kept in our houses. We have seen many cats very closely resembling the wild cat, and one or two that were very tame, which could scarcely be distinguished from it. There is perhaps no animal that so successfully loses its cultivation, returns apparently to a state completely wild. A trifling neglect of proper feeding or attention will often cause them to depend upon their own resources; and the tasting of some good and living food, will tempt them to seek it again, and leave the harmless habits. They then proceed in the same manner as their congeners, coveting among cover, and carefully concealing themselves from all publicity. They breed in the woods or thickets, and support themselves by hunting. Few exterminate these Warrens want two or three depredators of this kind, where they commit great havoc, particularly among the young in summer. They sleep and repose in the holes, and are often taken in the snare set for their prey. I once came upon a domestic cat from which had thus left her home: she had newly killed in the ride of an uncultivated field. Upon approaching her showed every disposition to defend her progeny, and beside her lay dead two half-grown leverets.'

Before we quit this part of the subject we must not forget that among the animals seen by Rüppell in Kordofan he described a species of cat, rather slender, and with legs of dark rings at its point. The extremities, which have less hair in proportion on the outer side, are of the general colour, with besides five or six blackish semicircular bands on the fore-legs, and six distinct dark cross streaks on the inner side of the outer extremity; the lighter in each of the 't' black spots or streaks on the upper parts of the fore-legs, and the hind extremities show the cross streaks winding around the thighs towards the inside. Foot, soles, hind parts of ankles, and wrists shining black. Length two feet long, tail being large, and original height of the shoulder about 94 inches. The description was taken from an aged female. M. Rüppell, who found this cat west of the Nile, near Ambukol, in rocky and bushy regions, is of opinion that there can be no doubt that it is descended from the domestic cat of the then Egyptians, now to be traced in the cat-mummies and their representations on the monuments of Thebes. In the 'Description de l'Egypte, Hypogées de Thebes,' vol. ii, p. 45, No. 14, is the representation of a cat. Pl. 51, No. 3, shows a cat's mummy, and pl. 54, No. 5, one of a cat's mummy which in size of body, form of head, and length of tail accords perfectly with Felis maniculata. The question then arises whether this domestic cat might not have been transferred or crossed with another, contemporary with the Egyptians, and the superintendents of the Frankfort collection agree that the general facts strongly favour the opinion that Felis maniculata is the type of our domestic cat. M. Temminck concurs in opinion with M. Rüppell that this is the true species, and which it is the streak. Sir William Jardine, in his able Natural History of the Feline (Naturalist's Library, Mammalia, vol. ii, small Svo., Edinburgh and London, 1834), states that the opinion generally accepted before this by most naturalists was, that the wild cats of Europe was the original stock. But, he adds, that although, since the introduction of our house cat to this country, there may have been an accidental cross with the wild native species, an attentive examination of the greater numbers will at once show a very great difference from that of the true domestic cat; the most prominent distinctions being the shortness of the legs and shortness and thickness of the tail in the latter. 'The domestic cat, continues this author, is the only one of this race which has been generally used in the economy of man. Some of the other species have shown that they might be applied to similar purposes; and we have seen that the general disposition of this family will not prevent their training. Much pains would have been necessary and not one species of European nature was likely to have attempted it. The scarcity of cats in Europe, in its earlier ages, is also well known, and in the tenth and eleventh centuries a good mouser brought a high price. Although, however, our opinion coincides with that of the above-mentioned authors, we are indebted to the superstition of the ancient Egyptians for having domesticated the species described by Rüppell, we have no doubt that since its introduction to this country, and more particularly to the north of Scotland, there has been occasional crossing with our own native species, and that the results of these crosses have been kept in our houses. We have seen many cats very closely resembling the wild cat, and one or two that were very tame, which could scarcely be distinguished from it. There is perhaps no animal that so successfully loses its cultivation, returns apparently to a state completely wild. A trifling neglect of proper feeding or attention will often cause them to depend upon their own resources; and the tasting of some good and living food, will tempt them to seek it again, and leave the harmless habits. They then proceed in the same manner as their congeners, coveting among cover, and carefully concealing themselves from all publicity. They breed in the woods or thickets, and support themselves by hunting. Few exterminate these Warrens want two or three depredators of this kind, where they commit great havoc, particularly among the young in summer. They sleep and repose in the holes, and are often taken in the snare set for their prey. I once came upon a domestic cat from which had thus left her home: she had newly killed in the ride of an uncultivated field. Upon approaching her showed every disposition to defend her progeny, and beside her lay dead two half-grown leverets.'

Egyptian Cat. Felis maniculata
The arguments derived from the difference between the tails of the wild cat, of the domestic cat, and of Felis marmota, do not seem to carry much weight. We cannot shut our eyes to the effect of domestication on this organ among the dogs, which gives us every variety, from the wolfish tail to the Newfoundlander, and even to that of the greyhound, which is so scantily furnished as to owe one of its excellencies to being "tailed like a rat;" nay, in some varieties, that long tail is reduced to almost no tail at all. There are also tail-less cats, as Mr. Bell himself observed.

Still the doubt thrown on the question by a zoologist of so much experience and skill as Mr. Bell is deserving of the most serious consideration, and should stimulate those who have the opportunity to investigate the subject upon every occasion offered to them.

The domestic cat is Le Chat of the French, Gatto of the Italians, Gato of the Spanish and Portuguese, Katzze of the Germans, Cypser Kat and Huyskat of the Dutch, Katta of the Swedes, Kat of the Danes, Cath and Gier Cat of the Norwegians, and Felis Wildcats, of Ray. The varieties, as in all cases of domestication, are endless: among the most noted are the Tabby, the Torrisseshell, the Chartreux, which is bluish, and the Angora cat with its long silky hair. The domestic cat is but too familiar to us as the art of domesticating it, and it is difficult to say what end is answered by the prolonged agencies of fear and torture which the poor mouse is made to undergo before it receives the coup de grace. This refined cruelty appears to be confined to mice, yet it is not unknown among the larger rodents: if a field mouse were caught in a bird, she does not trifle with it, but, conscious of its chances of escape, bites off its head or wounds it mortally at once.

We insert the following from Pennant, though it has been often quoted, not only as illustrating the manners of a people, but as a standard of the domestication of the animal. That excellent prince, Howel Dda or Howel the Good, did not think it beneath him, among his laws relating to the prices of particular kinds of animals (Laws of Howel, p. 247, 248), to include that of the cat, and to describe the qualities it ought to have. The price of a kitten before it could see was to be a penny; till it caught a mouse, twopence. It was required besides that it should be perfect in the use of hearing and the sense of smell; for the claws, it was said, should be a good nurse; but if it failed in any of these qualities, the seller was to forfeit to the buyer the third part of its value. If any one stole or killed the cat that guarded the prince's granary, he was to forfeit a much higher fine, its food for three days, and be amenable in a court of law as if it had been the cat suspended by its tail (the head touching the floor) would form a heap high enough to cover the tip of the former. This last quotation is not only curious, as being an evidence of the simplicity of antient manners, but it almost deserves a demonstration that cats are not aboriginals of these islands, or known to the earliest inhabitants. The large prices set on them (if we consider the high value of specie at that time) and the great care taken of the improvement and breed of an animal that made such a centre of interest, and their being "little known at that period." (British Zoology.)


Description.—Head triangular, strongly marked; ears rather large, long, trianguIar, and pointed. Body strong, rather more robust than that of the domestic cat. Tail of moderate length, and tapering towards the extremity. Fur soft, long, and thick; colour of the face yellowish gray, with a band of black spots towards the muzzle; whiskers yellowish white; forehead brown; * It is worthy of remark that all these names are the same as the Latin cat, Felis.
power and show a considerable degree of caution in encountering it a second time. It is frequently found in such flats as chance to be covered with long grass or with a moderate growth of brushwood; and when disturbed by the approach of men or dogs, usually seeks shelter in thickets, or runs through the forest with the speed of animals. Pelicans fly upon small game, birds, and is an especial enemy to those of the latter which have their nests upon the ground. (Catalogue of South African Museum.)

FOSSIL FELIDAE.

In the second or Miocene period of the tertiary formations we have hitherto found the first traces of large fossil cats. There are no less than four species of these great cats, some as large as a lion, enumerated by Professor Kaup from the beds near Altai, about twelve leagues south of Mayence. These remains are preserved in the museum at Darmstadt. The professor names these Felis aphanista, F. priscia, F. aegyptia, and F. antelidiana. In the third and fourth (or Pliocene), divisions of the tertiary period, we find that the number of terrestrial herbivorous quadrupeds become more abundant; and, with their numerical importance, the Carnivora, whose agency was required for keeping them down, increase also. The remains of Felisidae are in the fossil caverns, such as those of Kirkdale, Caithness, &c., and also in the oseous brecias (Nico, &c.). In the cave at Kirkdale the only remains that had been found of the tiger species, according to Dr. Buckland, were two large canine teeth, each 4 inches in length, but with animal teeth these remain in sixteens of the largest lion or Bengal tiger. Mr. Cottle of Bristol procured from Oreston Cave, Plymouth, among many other remains, two tusks of a tiger, one 34 inches long, the other 31, one from the upper, and one from the lower jaw. Dr. Buckland in the same work (p. 275) mentions that Cuvier had then lately found the tusks of an extinct lion or tiger in the breccia of Nice, and that Mr. Pentland had discovered the tooth of the same extinct tiger in the breccia of Antibes. Bovard, the Abbé Croizet, and Jollain, in the works on Fossil Cats found, among the remains contained in the osseous rocks of Auvergne (Puy de Dome) the following species: Felis Isidoreni, F. breviscrota, F. pardinensis, F. Acerentus, and F. megantherum.

FELIX I., a native of Rome, succeeded Dionysius the Caesarian as bishop of that city a.d. 271, and suffered martyrdom in 275. He was succeeded by Eutychianus, bishop of Luna. There is extant an epistle of Felix to Maximus, bishop of Aquileia, ancient bishop of Samosata.

FELIX II. (Pope Sixtus III.) was one of the number of an anti-pope who assumed the title of Felix II. in the schism against Liberius (A.D. 355-66), was a native of Rome, and succeeded Silvester in the year 463. He had a dispute upon questions of liturgical supremacy with Aegius, bishop of Constantinople, who was supported by the emperor and most of the eastern clergy; in consequence of which a schism ensued between the Greek and Latin churches, which continued after the death of Felix, which happened in 492. He was succeeded by Gelasius I.

FELIX III. also called IV., a native of Beneventum, succeeded John I. a.d. 526, and died in 530. He was succeeded by Boniface II.

FELISHAM (Middlesex VIII.)

FELISHAM, in the books of arithmetic, the rule by which profit or loss is divided among those who are to bear it, in proportion to their investments or interests in the transaction. It is usual to divide this rule into two parts, of which the first supposes all the investments to have been made at the beginning, and the second the amounts which the persons having employed their money during different times. One simple case of each will be sufficient.

Question 1. A, B, and C embarked 10l. 9s. 6d. in a venture which yielded 30l. of profit. How much belongs to each?

If 10l. 9s. 6d. be divided among 3 men, we have the case in question. That is, A, B, and C have 10l. 9s. 6d. each, or 10l. 9s. 6d. in all.

Question 2. A profit of 30l. was realized by A embarking 10l. for two months, B embarking 9l. for three months, and C embarking 8l. for four months. How much ought each to gain?

Here the 1l. of A and the 1l. of B are differently esteemed: the second was employed half as long again as the first, and consequently should gain half as much again. Now let one pound sterling employed during one month be called a share: then A invested 20 shares, B 27 shares, and C 32 shares. Hence as 20 : 27 : 32, or 20 : 27 : 32 being 72, A should have 20-72ths, B should have 27-72ths, and C 32-72ths of the gain.

The first is a rule of very frequent occurrence, but the second is rare, for it seldom happens that money is withdrawn in an undertaking, except upon some special agreement.

FELLOWSHIP (in a college) is an establishment in the college entitling the holder to a share in its revenues. The fellows are a part of the corporation. [Colleges. Fellows are the holders of a fellowship or scheme of the original founder; or ingrafted, that is, endowed by subsequent benefactors of a college already established. Where the number of fellows is limited by the original foundation, new fellows cannot be made members of the college until a vacancy happens by death and the number is not limited by the charter, it seems that the corporation may admit new fellows as members, who will be subject to the statutes of the original foundation in all respects. Graduates of each college are in general only eligible to fill a vacant fellowship in the establishment to which they are elected after having undergone an examination by the master and fellows in being. But in some cases special rules which control the election are inserted in the foundation charter. One example may be seen in the charter of the University of Oxford. The statutes of the college are modified in some cases by the bye-laws of the several colleges. Some few fellowships may be held by laymen, but in general they can be retained only by persons already in holy orders, or who are ordained within a specified time. Fellowships of a college of not less than 20l. a year, and less than 250l. a year, and upwards, the senior fellows being in general the most lucrative; but all confer upon their holders the right to apartments in the college, and certain privileges as to commons or meals. They are in general renewable for life, unless the holder marries. In hereditary estates which afford a larger revenue, or accept one of the livings belonging to the college which cannot be held with a fellowship. These livings are conferred upon the fellows, who in general have the option of taking them in order of seniority. The livings, and in some cases particular offices have priority of choice, as for instance in Trinity College, Cambridge, where the vice-master has such right by a bye-law of the college.

FELTHAM, OWEN, lived in the time of James I.; the details of his life are entirely unknown. To the lover of English literary antiquities he is known as the author of a curious book called 'Resolves,' consisting of pious and moral treatises collected into centuries. It somewhat resembles Lord Bacon's essays, and exhibits the noble skilful, and at times astonishing Metaphor follows Metaphor; and they are not merely introduced as an idle and unmeaning sport, but are the exponents of thoughts in themselves acute and profound. Felix's moral and religious views are not uninteresting. An excellent account of the book with copious extracts, will be found in the Retrospective Review, vol. x.

FELO-DE-SE (a felon of himself) is a person who, being of sound mind and of the age of discretion, deliberately refuses to repose faith in any mutual aid; and also a person who, by a malicious attack attempts to kill another, and in pursuance of such attempt unwillingly kills himself, he is adjudged a felo-de-se (1 Hawk. P. C. 27, 3). When the deceased is found by the coroner a felo-de-se, all the persons real and personal, are found to be entitled to compensation, we believe, usually restored upon payment of moderate fees, and therefore a will made by him is void as to his personal estate, though not as to his real estate, nor is his wife barred of her dower. Formerly he was buried in the highway with
FELSPAR, a mineral which occurs in every part of the earth, and one of the constituents of granite.

It occurs crystalline and massive. The primary form of the crystal is an oblique rhombic prism. Colour white, grey, green, red, of different shades. Transparent, translucent, or opaque. Lustre vitreous. Sp. gr. 2.5, 2.6. Hardness 6.0. streak greyish. It forms a nearly parallel to the terminal plane and oblique diagonal. Fracture conchoidal, uneven.

The variety known by the name of *Adularia* occurs in large crystals, especially in Mont St. Gothard. *Moonstone* is a variety which has a pearly lustre, and when cut and polished is chalcyony, the finest specimens of this are from Ceylon.

**Massive varieties.** - Amorphous. Structure granular, compact. A green variety has been found in Siberia. The several varieties differ but little in composition, *Adularia*, which is one of the purest varieties, according to Vanquelis, consists of:

- Silica: 64
- Alumina: 15
- Potash: 14
- Lime: 2

FELT, FELTING. [Hat.]

FETON. [BUCKINGHAM, DUKE OF.]

FELTRE. [BELUNO.]

FELUCCA (Felucca in Italian, Felouque in French, Foulka or Fulka in Spanish), a vessel or small craft used in the Mediterranean for coasting voyages, being propelled both by oars and sails. It may be said to be a small galleon. The feluccas carry two masts, main and fore, with lateen sails. They are very frequent on the coast of Italy, Spain, and the Levant. There are also armed feluccas which carry two guns, and which are in fact a kind of gommata, and larger and sturdier than the merchant felucca. (*Encyclopédie Methodique, Marine, art. Felouque.)*

FEMME SOLE. [Wife.]

FEMENIR. [SCHLEESWIG.]

FEMININE. [Gender.]

FENCES. - A wall or hedge, or whatever is used to prevent men or cattle from trespassing over them, they are formed of various materials and dimensions.

When a park is inclosed to keep in deer and game, the best fence is a stone or brick wall, well built with lime-mortar: but as this is expensive where stone and lime are not at hand, the common *park-paling* is more frequently met with. This is composed of posts and rails of oak mortised together, and points of the same material nailed upon these in an upright position. The poles are split out of the trunks of oaks, where there are no branches or knots, when the sap is still in them. They are about half an inch thick and with feather edges, that is each pole has a smooth, thickish side, and a feather or pointed edge, their usual width is five inches. When they are nailed on the rails, which are usually of a triangular form, the thickest edge of one pole is nailed over the thinner edge of the preceding, forming thus a very close fence. Every alternate pale is placed three or four inches higher than its neighbour, which gives the top of the fence a castellated form. This is not done merely for the appearance; but it makes it more difficult to climb over, and the deer are not apt to leap at it as they may were a straight line. The distance between the posts is usually nine feet; and the three rails with the pales nailed on them is called a pannel, and may be conveniently moved at once when any alteration in the fence is required. A whole fence may be moved at a small expense merely by digging out the posts, and placing them elsewhere. The panels come in regularly, and are pinned into the old mortises in the posts. Sometimes the pales are nailed at a distance from each other, which makes the *open-faced paled fence,* and the pales are then placed in the ground, either crosswise or lengthwise, in Great Britain and Ireland and is very seldom found on the Continent.

In the Jura and the Alps, where wood abounds, a rough fence is frequently made with it, a split pole with a small pole which are fixed obliquely in the ground and supported at the upper end by two others placed in the form of a cross. It is not a very strong fence, but it is sufficient to prevent the cows from straying; for unless a bull with his horns makes a gap in it, they will not attempt to pass it.

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In wild mountain pastures in Scotland and Ireland it is usual to separate the properties of different individuals or of that of parishes by rough stone walls set up together without any mortar. The materials are generally the land, and a rough and efficient fence is made without much labour.

Some of these walls are built with considerable skill, and are very durable; especially if the stone is of a nature to split with a stone saw; in which case the dry wall may be built, which has the appearance of one built with mortar.

Sometimes a layer of mortar is laid on the stones at a little distance from the ground and another near the top. The coping is usually made of flat stones, which are sometimes put on in a direct line, and sometimes wedged together along the top of it or set in mortar, forming a very rough coping, which is not easy to get over.

Where stones are not at hand, or less trouble is taken, a high bank of earth faced with sods of grass is substituted for a wall. This is not so durable and is more easily surmounted, unless a hedge of some kind be planted along the top. Pile seed is often sown for this purpose, and soon forms an excellent fence, which by proper care and clipping will last a long time. But the most common kind of fence for fields is the hedge and ditch. The bank being raised with the sods and earth taken out of the ditch, and the hedge planted in the side of the bank towards the ditch, or on the top. Sometimes there is a ditch in front of the hedges.

In water meadows this last is extremely useful, not only as a fence but a drain for the superfluous water. Where the ditch is intended to carry off the water, and there is only one, it is of consequence that it should be so placed as to answer this purpose. But it should be at the side of the bank where the ground rises, for otherwise the bank will impede the natural flow of the water, and it will be necessary to cut through it in different places to let the water running from above have an outlet into the ditch. In this manner the meanders of the channel are thus diverted.

A hedge is planted on the top of the bank, which makes but far the most efficient fence, there are usually two fences, one on each side of the bank. These fences are made of rough posts, and rails morticed into the posts. The posts are set a foot or 18 inches, and laid at 4 feet or 6 inches out. They are placed in the side of the bank, inclined somewhat outwards, about 4 feet 6 inches asunder. The posts are set in mortises in the alternate posts, and nailed to the middle post, which is rather slender. Thus a fence for deer, at least to a certain degree, and by the diversion of hunting, and are not very well mounted, dead to encounter. If there is only a single ditch, it is usual to plant the hedge in the side of the bank a little above the level of the ground. To protect the young thorns from being stopped by the cattle, it is usual to make the hedgerow stakes with bushes and branches interwoven on the top of the bank; and if there is pasture land on the side where the ditch is, a post and rail fence is put up along the edge of the bank, with the top of the fence above the height of the sheep or cattle that might be injured by the cattle. When branches of thorns and bushes only are used without stakes, it is called a foot hedge. When the branches are interwoven, and the top of the hedge is finished with rods wattled in, it is called a stake and edger hedge.

Besides these common fences, there are various others of a light or temporary nature, which are chiefly used in gardens and pleasure grounds, and also when sheep only are to be kept out, or when a quick hedge along an orchard or garden has been planted. A cheap and neat fence of this kind is made with stakes only planted in the ground, forming a series of St. Andrew's crosses; or with osier or wattle stakes which are cut seven stakes like basket work, either horizontally and lightly or with the edges of the rods split, the appearance is still neater and lighter. A variety of light iron fences made of slender rods or wire have been invented to protect flower gardens or shrubberies from the depredations of three or four large dogs, and which vary according to the fancy and taste of individuals.

FENELO, FRANCOIS DE SALIGNAC DE LA MOTHE, was born at the Château de Fénelon, in Pons- son, in the year 1651. So rapid was his progress that he was elected to the Académie Française at an early age. He afterwards went to the select assembly at Paris, where he had been called by his uncle, the Marquis de Fénelon, who afterwards fearing lest the prases of the world should create pride and vanity caused him to enter the seminary of St. Sulpice, and there for seven years engaged in the study of the law, before he took orders. His first work was a treatise, 'De l'Education des Filles,' which is well known, and has been translated into our language. The intimacy which he formed with
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Bousset, and Bousset's example, led him to write a treatise against heretics, entitled 'Du Ministère des Pasteurs,' in which heretics are attacked, though with more moderation than they had been by Bossuet. Fenelon being intrusted by Louis XIV. with a mission to Poitou, to convert the Protestants, nobly refused the aid of dragoons, and employed persuasion alone as an instrument of conversion. His conduct on this occasion gained him many friends. In 1689 he was appointed chaplain to the Dauphin, and from that time on he was exalted rather freely on the character of the king. Notwithstanding this, after he had been tutor for five years, Louis made him archbishop of Cambrai. Unfortunately, at every moment when he had gained this elevated post, that series of events commenced which caused his future disgrace. He formed an acquaintance with the celebrated priest, M. Guyon, who was at first in high favour with M. de Maintenon, and who was encouraged by her to go back to the church. This lady, as afterwards persecutor by Bousset; and as Fenelon was suspected of favoring her doctrines, Bousset required him to condemn them. Not only did Fenelon refuse, but he published a book called 'Explication des Maximes des Saints,' in which the doctrine of the Church, and many of those whom he condemned, Bousset denounced him to the king as a heretic. To increase his troubles, his palace caught fire about the same time, and all his MSS. and books were destroyed. The persecution of Bousset continued; and the protection of Louis became a subject of calculation to him. His wife, obstinately, was withdrawn. Fenelon required that the difference should be settled by a controversy: Fenelon would not accede to these terms, but offered to submit his book to the tribunal at Rome. His persecutor, however, suc- ceeded so far to carry his point, and made the book withdrawn from the court, and endeavoured, though unsuccessfully, to involve Beulaville, governor to the duke of Burgundy, in his disgrace. Pope Innocent VIII., though strongly urged by Louis, was not willing to once condemn a prelate so noted for learning and piety, and the whole was at last sealed by both parties. At last the papal letter arrived, and the archbishop of Cambrai was forced to submit; he signed a renunciation, and would have been restored to regal favour, had not the celebrated romance of Telemaque, which he had written, been published. A bill against his will through the treachery of a servant. Several passages in this work were suspected by Louis to be directed against himself; it was suppressed in France, and circulated in Holland. Hearing of the unfortunate circumstances which his good Fenelon resolved to remain quietly in his diocese. Cambrai being situated on the frontiers of France, he was visited by many illustrious foreigners. Fenelon's sets of books were burnt, and the friendship of 2000 persons against the French army at his own expense. It has been already remarked that his political opinions were liberal; he had always conceived it just that the people should have a share in the government, and it was expected that the duke of Burgundy would accept an invitation from the court. Several, however, were refused to him, and he was at last cut off by the sudden death of that prince. Fenelon himself died in 1517.

The works of Fenelon are very numerous; consisting, besides the romance of 'Telemaque,' of a variety of religious and philosophical treatises, which have been translated into every European language, and is read at almost every European school. Had it been written in this age, it is questionable whether its popularity would have been so great; the spirit of the Greeks is much better understood and appreciated in our day; and although we may admire the language of 'Telemaque,' as well as the general accuracy of the writer's information on matters of ancient history and geography, we shall find it strange that the sentimental and elegant style, though good in themselves, should live in the mouth of Homer and the word of Jesus. They were the least moralising, in the modern sense of the word. His religious and moral essays are only calculated for persons in whose mental constitution warmth and susceptibility are predominant; and what is written on that subject is too dry and cold to be understood by the fervour and eloquence of the author. To the cool and more intellectual inquirer after truth his works will be diffuse and tedious. So much use does he make of the imaginative faculties, that he exhorts teachers to impress on the minds of children that the Deity is sitting on a throne, with very bright eyes looking through everything, and supporting the universe with his hands. Hence his natural theology is chiefly the ejaculations of a pious man admiring the works of Nature. In politics, Fenelon's opinions are far in advance of his age and country: in one he is found to be wrong; his system, according to his own parti pris, was a system of universal conscience, and boldly proclaims the injustice of levying taxes without the sanction of a parliament. A handsome quarto edition of his works was published at Paris in 1767.

FENNEC. [FOX.]

FENTON, ELIJAH, was born in Staffordshire in the year 1683. Being designed for the church, he was admitted a pensioner of Jesus College, Cambridge, in 1700. After taking a bachelor's degree, he was forced to leave the university in consequence of being a non-juror. He became secretary to the earl of Orrery, and accompanied that nobleman to Flanders. After his return to England in 1705, he accepted the situation of assistant at Mr. Bonwicke's school at Ipswich. In the same year he began the free grammar-school at Sevenoaks in Kent. Mr. St. John (afterwards Lord Bolingbroke) persuaded him to retire from this school, promising to do great things for him, which promises were never fulfilled. Lord Orrery again befriended him, and in 1718, he was set at the head of the English school in Paris. This office lasted for six or seven years, during which Fenton became acquainted with Pope, and assisted him in the translation of the 'Odyssey.' The first, fourth, nineteenth, and twentieth books are said to be the work of Fenton. In 1723 he was employed in the English school in Paris, and produced a tragedy called 'Marriamne,' which was so successful that he is reported to have gained 1000l. by its representation, and to have employed great part of the money in paying off the debts which St. John's conduct had caused him to incur. In 1725 he retired to London, and prefixed a life of the author; and in 1726 he published a fine edition of Waller. Through the recommendation of Pope, he became tutor to the son of Lady Trumbull, and when that occupation came to an end, she made him auditor of her accounts. He died in 1750.

All biographers bear testimony to Fenelon's character as an upright and honourable man. His poetical works are but few in number, and consist of short pieces, chiefly paraphrases from the Latin poets. They have a sketchy air, but that of correct versification, they will probably never be rescued from the neglect into which they now have sunk. The tragedy of 'Marriamne,' like most of that time, is totally forgotten.

FENUGREEK. [TRIGONIUM.]

FEOD. [FEUDAL SYSTEM.]

FEODOSIA. [KAPTA.]

FEOFFMENT (in law) is that mode of conveyance of lands or real hereditaments in possession where the land passes by force of a simple promise, without the delivery of any writing, or any delivery of any writing is necessary to vest the title. The word 'feoffment' is used, when the conveyance is made by delivery of a writing, and 'feoffment' is used to signify the conveyance of any estates in fee to the grantee, without the delivery of any writing. (See Feoffment.) Feoffment is essential to every conveyance of any estate in fee simple, and is necessary to vest the estate in fee Simple in the grantee. (Gibb. Trs. 386.)

It prevailed amongst the Anglo-Saxons, who gave possession by the delivery of a thing or a thing, a mode still continued in some cases, particularly in the conveyance of tenants of copyhold lands. The form of an ancient feoffment was singularly concise. There is a copy of one in the Appendix to the 2nd vol. of Blackstone's Commentaries, No. 1.

The essential part of this mode of conveyance is the delivery of possession, or, as it is technically called, 'livery of seisin.' In former times land was frequently conveyed without any deed or writing, by simple delivery. Subsequently...
it became the custom to have a written instrument called the charter or deed of feoffment [Charter], which declared the intention of the parties to the conveyance. But now, since the Statute of Frauds (29 Car. II. § 3), a written instrument is necessary. Still, however, the land passed and the deeds, if a deed of feoffment is made without livery, an estate at will only passes [Estate]; though if livery is made, and the deed does not express that the land is conveyed to the feoffor and his heirs, an estate for the life of the feoffor is given. No less than the freedom of the ancients to pass the right of the freehold by a feoffment with livery, the livery being in fact the investiture with the freehold.

Livery of seisin, of both the kinds previously mentioned, was at first performed in the presence of the freeholders of the county, and of the officers of the feudal lord; because any dispute relating to the freehold was decided before them as parens patriae, "equals of the court," of the lord of the fee. But afterwards, upon the decay of the feudal system, the livery was made in the presence of any witnesses; and where a deed was used, the livery was attested by those who were present at it.

Livery in deed may be made by the feoffor or his attorney, to the feoffee or his attorney. When lands lie in several counties, as many livery of seisin must be made as there are counties, for no livery can be made by the consent of the tenant in possession, and the consent of one will not bind the rest. But livery in law or within view can only be made by the tenant in possession, the part thereof being in several counties may pass if they all be within view. Livery of this nature requires to be perfected by subsequent entry in the lifetime of the feoffor. Formerly, if the feoffor durst not enter for fear of his life or bodily harm, his claim, notwithstanding the performance of the ceremony of seisin, was not admitted, and the court of chancery would not give the feoffee a legal or equitable title.

SECTION III. Of Feoffments (Feoffment). No less than the freedom of the ancients to pass the right of the freehold by a feoffment with livery, the livery being in fact the investiture with the freehold.

It has been usual to make corporations convey their own estates by feoffment, in consequence of the supposition that a corporate body cannot stand seised to a use, though, it seems that this doctrine only applies to the case of a body being created by an act of Parliament.

Fee simple was held, though a tenant in fee simple, to be entitled to the exercise of his estate, and to the revenue accruing therefrom, so long as the tenants in fee simple held their estates by the tenure of the fee simple. Such a tenure was held to be hereditary, and the fee simple was inheritable by the tenant in fee simple and his assigns, and not by the tenant in fee simple and his assigns.

There is a distinction, however, between a fee simple and a fee simple by the law of the land. The former is hereditary, and the latter is not.

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however, moderate as he was, would not listen to these two concessions, especially the latter, and the negotiations were still pending with regard to the former, when the emperor died at Vienna in July, 1564. He left three sons: 1. Maximilian, who succeeded him as emperor, archduke of Austria, and king of Bohemia and Hungary; 2. Ferdinand, whom he made count of Tyrol; 3. Charles, whom he appointed duke of Styria, Carinthia, and Carniola. Upon the whole, the administration of Ferdinand was able and enlightened; he did not continue the wars, but the victory of Schweinsberg, gained by Ferdinand, eldest son of the emperor, had the effect of detaching the elector of Saxony from the Swedes, an example followed by almost all the other German states. Ferdinand died in February, 1567, after having witnessed the election and coronation of his son Ferdinand as king of the Romans.

Ferdinand II. reigned in very troubled times; his bigotry and intolerance were the cause of most of his troubles, but he was not deficient in abilities or perseverance. His conduct at the assassinations of his best generals, a man whose ambition and arrogance had made him suspected, and feared, is an everlasting blot on his memory.

Ferdinand III., son of Ferdinand II., had to continue the war against the Swedes, who had been joined by the French, for several years more, until the death of Wesselphalia, 1568, put an end to the desolating struggle. This celebrated treaty forms an important epoch in the history of Germany and of Europe. The remainder of the reign of Ferdinand III. was spent in wars of conquest, 1567, leaving behind him the character of a wise, temperate, and a brave prince. He was succeeded by his son, Leopold I.

Ferdinand I. of Naples was the natural son of Alfonso V. of Aragon and of Sicily. His father, the Neapolitan parlia-ments in baronial assembly, in 1442, the acknowledgment of Ferdinand, as duke of Calabria and heir to the crown of Naples, thus securing to his favourite and only son one of his several kingdoms, as Aragon, Saracinesi and Sicilia. John, however, had his son Alfonso's brother. In 1458, after the death of his father, Ferdinand II., assumed the crown of Naples. Pope Calixtus III., refused him the investiture, which however was granted to him by Pius II., the successor of Calixtus. His reign began well, but conspiracy among his subjects aroused a conspiracy of the n. of Anjou, who had some remote claim to the throne, thence the coun-try into a civil war. Ferdinand, assisted by Scanderbeg, prince of Albania, gave battle to John near Tr sza in Apulia and defeated him completely, in the year 1462. After the death of John, he concluded a treaty of conciliation and conciliatory terms, but in a short time, breaking the treaty, he put to death two of them, an act which, kept alive the jealousies and fears of the rest. In 1460, Ferdinand II. sent an embassy of three ambassadors of Apulia, which took the town of Otranto and caused great loss of life. Ferdinand however, quickly recalled his son Alfonso, duke of Calabria, who was then in Tuscany at the head of an army, and who retook Otranto. A fresh conspiracy of the barons broke out, encouraged by Pope Innocent V. III., but it was again repressed, and Ferdinand solemnly promised not to make any attempt on the French. But he kept his word better than before, for having contrived, on the occasion, of the marriage of his niece, to collect at Naples most of the leading barons, he arrested them all, and threw them into prison, where most of them were strangled. The whole country was attended by circumstance of so fearful treachery and cruelty, is eloquently related by Porzio in his work, La Con-giura dei Baroni contro il Re Ferdinand I. Ferdinand was at the end of the year 1462, at the age of 71. He was succeeded by his son Alfonso, a gloomy and cruel prince, who, terrified at the approach of the French, abandoned in favour of his son Ferdinand, and contented himself with a conquest, in 1465.

Ferdinand II. was very young when he found himself occupying a throne threatened by enemies from without and by disaffection from within. He endeavoured to rally his troops against the French, but being forsaken by all, he withdrew to Sicily with his uncle, Frederic. The French
occupied Naples, where their conduct soon disgusted the Neapolitans, while the other states of Italy formed a league against them in the North. Ferdinand seized the opportunity to ask assistance from Ferdinand V. of Spain, who sent him his great Captain Gonzalo de Cordova with a body of troops. Ferdinand conquered the city and the island of Naples, Ferdinand returned in triumph to his capital, but did not long enjoy his prosperity; he died suddenly in 1496, at the age of 28 years, regretted by his subjects, who had formed great hopes of him from his amiable qualities and abilities. He was succeeded by his uncle Frederic, who was soon after treacherously deprived of his kingdom by his pretended ally, Ferdinand of Spain.

FERDINAND III of Naples is the same as Ferdinand V of Spain.

FERDINAND IV of Naples, afterwards styled Ferdinand I. of the United Kingdom of the Two Sicilies, born in January 1751, was the son of Don Carlos of Bourbon, king of the Two Sicilies, afterwards Charles III. of Spain. The life of Ferdinand is remarkable, not so much on account of his personal character, as from the uncomromising spirit of his reign and his valiant struggles with little or no exertion on his part. The education of Ferdinand was greatly neglected. He was never more than eight years of age when his father Charles, being called to the throne of Spain by the death of his brother Ferdinand VI., made over to him the kingdom of Naples and Sicily, appointing a council of regency, at the head of which he placed his sister, Maria Theresa. Ferdinand was a very clever, ambitious, and in fact under her husband’s name till her death, assisted by the various ministers who succeeded each other at the helm of affairs, the king himself being generally passive, and his time being much employed in carousing, shooting, and diversion. Ferdinand was by no means deficient in good sense or natural penetration; he often saw things more clearly than those around him, which is manifest from many of his shrill though blunt remarks which are still remembered at Naples; but his want of instruction, and of the care with which he was aware, and his dislike of application, prevented him from exerting or enforcing his own judgment. The first 30 years of his reign, those of the regency included, were for Naples years of peace and comparative happiness; many useful reforms were effected by his ministers, and the country, leaving behind him, who continued at the head of affairs till 1777. A detailed account of these reforms, in the various departments of public education, ecclesiastical discipline, feudal jurisdictions, fortifications, and the like, is given by Colletta, in his able and impartial ‘Storia del Regno di Napoli,’ 1834, and also by Count Orloff in the 2nd volume of his ‘Mémoires sur le Royaume de Naples.’

Ferdinand was very popular, especially with the lower classes; and as he was the first king born at Naples for centuries past, they called him emphatically ‘our king.’

Tanucci being dismissed in 1777 for having objected to the queen taking her seat in the council of state, Caracciolo was followed for a short time, until John Anton, an Englishman, and a native officer in the service of Lord of Tuscany, was sent for to organize the Neapolitan navy and army, which had fallen into decline during a long season of peace. The advancement of Anton was extremely rapid; he was then captain-general of the kingdom, and lastly minister, or rather sole minister, (since the other ministers were merely his creatures), and in this office he remained for many years. His administration was neither so economical nor so wise as that of Tanucci. Things went on in an extremely bad and smooth manner, in a consider-able degree of liberty of speech, and even of the press, prevailed at Naples, and the country was prosperous and the people contented until the breaking out of the French revolution, which Naples, however remote, felt the shock. The queen being the sister of Marie Antoinette, was indig- nant at the treatment her relatives of France met with at the hands of the revolutionists; and as many young men at Naples, mostly belonging to the higher ranks of society, seemed to approve of the principles of the revolution, the court took alarm, and the men who had always been averse to reform and improvement seized the opportunity to regain the ascendency. This was an epoch of a re-action in the internal politics of Naples. Arrests were made, and a garrison, or state tribunal, was formed to try the real or pretended conspirators, three of whom were sentenced to death, otherwise penalized with disfranchisement, and their property, on whom the judges, notwithstanding all the exertions of the attorney-general, Vanni, could find no evidence, were confiscated after four years’ confinement.

The court of Naples had joined the first coalition against France in 1792, to withdraw some troops to join the Austrians in the North of Italy, and others with a squadron to the expedition against Toulon. In 1796, however, alarmed by the successes of Bonaparte, a peace was concluded with the Directory by paying a few millions of francs. In 1798, the French, having occupied the islands of the Southern Ne-apoli-ans formed a secret alliance with Austria, England, and Russia, and, instead of waiting for the opening of the campaign in Lombardy, which was to take place in the following spring, the Neapolitan army, 66,600 strong, marched upon Rome, which it occupied only for a few days, as the French generals, having collected their forces, attacked and routed several divisions of the Neapolitans, and cut off the communications between the rear; a general panic and flight ensued, and the Austrians and Russians followed them closely. The greatest con- fusion prevailed at the court of Naples; the queen, beset by informers, fancied that the capital was full of conspirators. The whole army was accordingly marched upon Sicily, which was easily persuaded to do the same, and the royal family left Naples on the 21st of December, 1798. The French meantime were approaching, and the populace, left without a government and excited by denunciations against the monarchy, demanded the restoration of the Bourbons, and for three days fought desperately against the advancing French in the streets of the capital. The events of Naples in 1799 form a romantic but most tragic episode in the history of the Continental war, and they have become the theme of numerous narratives. The first accounts are given by Colletta, already mentioned, by Cuoco, ‘Saggio Storia sulla Rivoluzione di Napoli,’ and in a work called ‘Skelet of Popular Turbulents,’ London, 1837. The reverses of the French in Lombardy in the spring of 1799 only enabled the Neapolitans to regain their small garrison in it. The native republicans, or patriots as they were called, were few, and disliked by the lower classes. Cardinal Russo fled in Calabria from Sicily, and preaches a sort of political and religious revolution of plutocratic principles. The government, and the whole kingdom was re-conquered for Ferdinand in a short time. A dreadful re-action took place, in which thousands lost their lives, either murdered by the royalists or condemned by the courts instituted to try all those who were accused of republicanism.

Ferdinand returned to Naples, and in 1801 he concluded, through the mediation of Russia, a treaty of peace with France. But the past events and the proscriptions that had taken place in his name had destroyed all confidence between the government and the more enlightened part of the nation. In 1805 the court of Naples committed a second political error, worse than that of 1798. While professing to be at peace with France, it entered secretly into the coalition against that power; and while Napoleon was subduing the Austrians and Russians in the north, and the whole kingdom was re-conquered for Ferdinand for the avowed purpose of attacking the French in the north of Italy. The consequence was, that Napoleon, after his victory at Assaye, decided, a few years later, to fly to Naples, and sent a force under Massena to occupy that kingdom. Ferdinand and his court withdrew to Sicily a second time, where, being protected by the English forces, they remained till 1813. The desolation but cruelly felt in the South, was a terrible calamity in Calabria between the partisans of Ferdinand and those of Murat, whom Napoleon had made king of Naples, the details of which are vividly described by Botta, ‘I Claudii d’Italia,’ 4th book, towards the end. But even in Sicily the reign of Ferdinand did not run smooth. The court wa
FERDINAND, after some delay, obtained leave of the parliament to proceed to the congress in December, 1820, leaving his son Francisco to succeed him. In 1821, Ferdinand, by a letter written to Laybach, signified to his son that the allied sovereigns were determined not to acknowledge the actual constitutional government as valid, but to unite in force with the peace of that country and the security of the neighboring states; but that they wished Ferdinand himself, assisted by the wisest and most able among his subjects, to give to his kingdom institutions calculated to secure peace and progress. Soon afterwards, the Austrian army passed the Po, moving on towards Naples. The parliament of Naples determined upon resistance, but at the first encounter, near Rieti, a Neapolitan division was defeated, and the rest of the army being alarmed at the thought of fighting against the will of their own king disbanded, and the Austrians entered Naples without any further opposition at the end of March, 1821. Ferdinand soon afterwards returned to his capital on what may be styled his third restoration. The leading constitutionalists were allowed to emigrate; kings of those who remained were tried and sent to the Presidio. The government again became absolute, but not so lenient or liberal as it was before 1820. After reigning four years longer, Ferdinand died suddenly on the morning of February 4, 1825, aged seventy-six, having been king sixty-five years. He was succeeded by his son, Francis I.

FERDINAND, or FERNANDO I., styled the Great, the son of Sancho, called Mayor, king of Navarre and Gascony, in 1074, against the will of his father, and killed Verenund, king of León, in 1038, succeeded him as king of León and of Asturias. Navarre became the apanny of Ferdinand’s brother García. Ferdinand, called the Great, made war against the Moors, whom he drove away from the northern part of Portugal as far as the Mondego. He died in 1065, leaving three sons, Sanctius, to whom he gave Castile; Alfonso, who had León; and García, who retained Galicia.

FERDINAND II., second son of Alfonso VIII of Castile and León, succeeded his father in the latter kingdom only in 1157. He was inured in wars with Alfonso Henrique, king of Portugal, and also with his own nephew, Alfonso of Castile. He died in 1187.

FERDINAND III., called the Saint, son of Alfonso IX., king of León and of Bercugaria of Castile, inherited both crowns after the death of his parents. Ferdinand was successful in his wars against the Moors beyond any of his predecessors: he took them Badajoz and Merida in 1230, and conquered them in 1248, 1250, 1252, and 1264. He was making preparations for carrying the war into Africa when he died, in 1252. Ferdinand collected the laws of his predecessors into a code; he established the council of Castile; he cleared his states from robbers, and reduced the Basques to obedience; and he was the most illustrious sovereign of the old Spanish monarchy. His son Alfonso X., called `the Wise,' succeeded him on the throne.

FERDINAND IV. succeeded his father, Sancho IV., in 1296, while yet a minor. His reign was reigned chiefly by wars with the Moors; he died in 1312, and was succeeded by his son Alonzo XI.

FERDINAND V. of Castile and II. of Aragon, son of John II. of Aragon, married in 1459 Isabella, daughter of John II. of Castile, and heiress to that crown, by whom he had several daughters, one of whom married Emunuel, king of Portugal; another, Caterine, was married to Henry VIII. of England, and the other, Joanna, married Philip, archbishop of Canterbury. Ferdinand succeeded to the crowns of Aragon and of Sicily by the death of his father, Henry II., in 1472. The two great divisions of Spain united, though the two kingdoms remained under separate administrations, Castile was still governed in the name of the queen until the death of Isabella in 1456, followed by that of Ferdinand in 1492, when Ferdinand, owing to the insanity of his daughter Joanna, assumed the government of Castile, which he retained till his death, when his grandson, Charles V., succeeded to the whole splendid inheritance.

Ferdinand took from the Moors the kingdom of Granada.
nada, their last possession in Spain, in 1492, after a war of several years; at the same time Columbus was discovering for him the western world, and the maritime powers of the Old World were opening up a new era of commerce. Ferdinand's general, Gonzalo de Cordova, conquered for him the kingdom of Naples, partly by force, and partly by treachery. By similar means Ferdinand conquered Navarra, which he added to his other domains, thus forming the most powerful monarchy of his times, and was also the cleverest; but his abilities were disgraced by a total want of faith, and a recklessness of principle of which he made no scruple of boasting. He was the style of a Catholic, a title which the kings of Spain have come; and the consequences of the Algerian war were of great service. Ferdinand established the Inquisition in Spain, which fearful tribunal continued till 1820, when it was finally abolished. Acting from the same intolerant principle he drove away the Jews from Spain; but he also established a severe system of police throughout his dominions by means of the association called the Santa Hermandad, which did summary justice upon all offenders without distinction of rank. He also forbade any papal bull to be published in the previous period of the municipal council. He may be considered as the restorer, if not the founder, of the Spanish monarchy. Ferdinand died in January, 1516, at sixty-three years of age.

FERDINAND VI., eldest son of Philip V. of Bourbon, king of France, and Mary of Austria, was born in 1747. He received several useful reforms in the administration, and gave encouragement to commerce and manufactures. He had the character of a good and wise prince, willing to administer impartial justice, and willing to redress the grievances of his subjects. He died without issue in August, 1798, and was succeeded by his brother Don Carlos, king of the Two Sicilies, who assumed the title of Charles III. of Spain, and continued the same laudable system as his predecessor.

FERDINAND VII., eldest son of Charles IV., king of Spain, and of Maria Louisa of Parma, was born on the 14th of October, 1784. When six years of age, he was proclaimed prince of Asturias. At that time Godoy, afterwards called the Prince of Peace, was the favourite minister and ruler at the Spanish court. Both he and the queen kept young Ferdinand, who was of a sickly constitution, in a state of thraldom and seclusion little suited to the heir apparent of the throne. He had however some well-informed predecessors; among others the canon Escuquiz, who figured as a great political event in the life of the child. Ferdinand married his first cousin, Maria Antonieta, daughter of Ferdinand IV., king of the Two Sicilies, a princess of a superior mind, who endeavoured to restore her husband's independence, and to have a proper sphere and influence at court; in attempting which she encountered with great obstacles. She was unlike the queen and of the favourite, and from that time both she and her husband were kept in a state of retirement and humiliation. She died suddenly in May, 1806, under suspicious circumstances, and left no issue.

In the mean time the administration of Spain was in a wretched state; everything was done through bribery or favour; the monarchy was sinking lower and lower in the estimation of Europe, having become a mere dependent of France; and the people were highly discontented. Some friends of Ferdinand, and among others his preceptor Escuquiz, formed a plan for overthrowing the favourite Godoy. In being in want of powerful support, they unwarily advised Ferdinand to address himself to the Emperor Napoleon, to whom they wrote a letter on the 16th of April, 1807, in which he complained of Godoy's influence and the state of thraldom in which both the king his father and himself were kept, and expressed a desire to form a connection of Napoleon with Ferdinand in order to place himself under his protection. A memorial was at the same time penned by Escuquiz, and copied by Ferdinand with his own hand, pointing out in vivid language the mal-administration of the kingdom, and asking, as the first remedy, the abdication of Godoy. The king was to hand over this memorial to the king his father, but Godoy being apprised of the plot, hastened to Charles, and told him that his son was conspiring both against his crown and his life. Upon this Ferdinand was arrested, his papers were seized, and after some days of close confinement he was frightened into an acknowledgment of what he really was not guilty of. The news of this common and disgraceful affair caused great excitement in the country, and the people in general, who disliked Godoy, took part of the young prince, who from his infancy had been the victim of court intrigues. Meanwhile French troops had entered and invested the city of Cadiz, where the king had taken possession by surprise of several fortresses, and Napoleon's further intentions becoming more alarming, the court decided upon abandoning Spain and retiring to Mexico. The 17th of March, 1808, was fixed for the departure, when a revolution occurred. The people of Cadiz declared their king to be in danger of his life; but Ferdinand himself came to rescue him from the hands of the mutineers, saying that he would answer for his appearance before the proper court. King Charles being alarmed for his own safety, and perceiving the popularity of his son, rather, the courters decided upon the 17th of March in favour of Ferdinand, who assumed the title of king of Spain and the Indies. But this did not suit Napoleon, who contrived under specious pretences to draw both fathers and sons to Bayonne, and to insinuate them both to resign. Ferdinand and his brother Don Carlos were sent to Talleyrand's country residence at Valency, where they were treated with outward marks of respect, but kept under strict watch. There Ferdinand remained passing the rainy months of 1808 and 1809. He arrived in the French both in Spain and in Germany induced Napoleon to restore Ferdinand to the throne of Spain, on condition that he should send the English out of the peninsula, who were, as Napoleon said, spreading anarchy and revolution in the two Sicilies. Ferdinand, however, signed at Valency between the two parties, but the Cortes of Madrid refused to ratify it, and wrote to Ferdinand that they would receive him in his capital as their lawful king, provided he would sign the constitution which had been presented to him at Cadiz. This Ferdinand did, and, on the 4th of May, he was restored to the throne of the nation. (Corros, and references therein.) Ferdinand set off from Valency in March, 1814, and it was only on the road that he read for the first time a copy of the new constitution, having been kept in ignorance of the contents of the Cortes. He had read in the garbled accounts of the French newspapers. On arriving at the frontiers of Spain, instead of proceeding direct to Madrid, he went to Zaragoza, and thence to Valencia, where he was surrounded by a host of people, military and civil, and of all ranks and denominations, who were hostile to the constitution, and who advised him to resign, as his father had done before him, an absolute king. The lower classes, excited by the clergy, and especially by the friars, were loud in their cry of "reign as your father did," and "reign as the Holy Roman Emperor," and "reign as the Neapolitan monarch." Ferdinand easily persuaded himself that the constitution was unpopular, determined not to sanction it. At Valencia he appointed a ministry from among the serviles, or absolutists; and on the 4th of May, the Cortes were put into an absolute and despotical state, and the decrees of the Cortes of March, 1812, and the enactments of the Cortes made in his absence. Soon afterwards he made his entrance into Madrid among the accolades of the populace and of the absolutists, or clergy party; an event which was speedily followed by a visitation of constitutionalists, or liberals, as they were styled, including the members of the Cortes. As the British ambassador had obtained from Ferdinand at Valencia a promise that the punishment of death should not be inflicted for past political conduct, the court was appointed to try the leading constitutionalists resorting to every kind of subterfuge in order to find them guilty of some imprudent demonstration or expression since the king's return, and sentences of imprisonment, banishment, and confiscation, were freely awarded. The military insurrections of Portier, Lacy, and others, came to add fresh fuel to the spirit of persecution. All the abuses of the old administrative and judicial system now reappeared; and, in a word, it is said that the American colonies were in open revolt, and Ferdinand was either kept in ignorance of the true state of things, or his natural indecision of character prevented him from altering his policy. He was prevented from going to the scenes of action at that time, seemed to have on their side the great mass of the population, and he feared and hated the liberals, whom he looked upon as the enemies of his throne. On the 1st of January, 1820, part of the troops stationed
in the Ila of Leon, near colonels Quiroga and Riego, proclaimed the constitution of 1812; the example was followed by other garrisons; the Ministers at Madrid hesitated, and Ferdinand, on the 9th of March of that year, swore his adherence to the constitution. The Cortes were speedily summoned, and the revolution was acknowledged by the constitutional system, but now and then some fresh insult or act of violence of the more zealous liberals came to raise old fears and antipathies; whilst, on the other side, the partisans of absolutism, who still lingered near the king in power, seemed complacent, whilst the moderate and even of the moderate constitutionalists. Of this period of Ferdinand's reign there is a pretty accurate sketch in a work written by a Spanish emigrant at Paris, styled *Revolucion de Espagne, Examen Critique*, 1836.

At the beginning of 1833 Louis XVIII. declared to the French ministers that he was going to send his nephew, the Duke of Angouleme, with an army of 160,000 Frenchmen to Spain to deliver Ferdinand VII. from the slavery in which he was kept by a factious party, and to restore him to the throne. He ordered him in a secret address, under threat of interference, and the Cortes of Spain, on their side, rejected the mediation of the northern courts, who, to prevent the entrance of the French, required certain modifications in the constitution of 1812. The Cortes, on the 20th of June, resolved to address such a message to the Duke of Angouleme. The Cortes, not judging themselves safe at Seville, removed to Cadiz, and, as Ferdinand refused to quit Seville, they passed a resolution, after a stormy debate on the 11th June, declaring the king in a civil liberty of the State and Cortes, and giving him the address of the Cortes of Spain.

In the evening of the 12th, under a strong escort, for Cadiz, where he arrived on the 13th. In the following September the French besieged Cadiz, and after some negotiations Ferdinand was allowed by the Cortes to repair to the French camp to treat with the Duke of Angouleme. Before leaving Cadiz Ferdinand published a proclamation on the 30th September, in which he promised a general amnesty for the past; he acknowledged all the debts and obligations contracted by his father during his reign, and expressed his own free and spontaneous will that if it should be found necessary to make alterations in the actual political institutions, he would adopt a system of government which should guarantee the security of persons and property and the liberty of the press. After having thus addressed the Cortes, the crown prince was addressed by a congress of the Cortes, which declared that they understood that the promises were kept. The liberals were persecuted worse than before, the debts contracted under the Cortes were disallowed, and the old system of absolutism with all its mal-administrations was resumed. The sequel is well known. Ferdinand continued to govern at least nominally, checked one side by fear of the liberals, and on the other by mistrust of the more violent absolutists, or apostatical party as it was called, who found Ferdinand too moderate for them, and who would have re-established the Inquisition and the system of the old Spanish monarchy.

In the latter years of Ferdinand he seemed to take little or no interest in public affairs, leaving things to go on as they could. Having lost his third wife, who was a Savoy princess, and having yet no children, he married in November 1829, Maria Christina, daughter of the Two Sicilies, and his own niece by her mother's side. By her he had two daughters—Maria Isabella, now queen of Spain, born 10th October, 1830, and Maria Louisa Ferdi-
nanda, born 1832. Ferdinand died on the 29th Septem-
ber, 1836. He had little to use in his old age, and at the age of 49 years. He was buried with great pomp in the royal vaults under the chapel of the Escorial.

Counts more or less accurate of the various periods of his reign may be gathered from the numerous contemporary works. The following works are entitled to this information:

- *Memories of Ferdinand VII. king of Spain, translated from the Spanish original MS.* by M. J. Quin, London, 1824; Torrence, *Historia del Levan-

- *P. C.* No. 624.

- *Guerra y Revolucion de España; Inglis's Spain in 1830,* and a very interesting article on *Spanish Affairs in No. 1 of Cochrane's Foreign Quarterly Review*, March, 1833, from which something like a correct estimate of Ferdi-
nand's character may be formed.

FERDUSI, the liberal, who had been exiled or imprisoned, re-appeared on the political stage. The events of the following three years are matters of contemporary history, upon which it is difficult as yet to pronounce a final judgment. Errors were committed by all parties. At one time Ferdinand appeared reconciled to the constitutional system, but now and then some fresh insult or act of violence of the more zealous liberals came to raise old fears and antipathies; whilst, on the other side, the partisans of absolutism, who still lingered near the king in power, seemed complacent, whilst the moderate and even of the moderate constitutionalists. Of this period of Ferdinand's reign there is a pretty accurate sketch in a work written by a Spanish emigrant at Paris, styled *Revolucion de Espagne, Examen Critique*, 1836.

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instructed in drawing, but a premium having been unexpectedly demanded, he boldly commenced the practice of his art at once. The Marchioness of Douglas having assisted him with her patronage, he succeeded so well, that he obtained money enough not only to defray his own expenses, but to contribute largely to the support of his art. 

He then followed this profession for about twenty-six years; he seems never to have given his mind to it; and indeed, after having been two years in Edinburgh, he returned to the country with a supply of drugs with the intention of practising medicine, but soon found himself totally unqualified for the pursuit. He then went to Inverness, where he remained about three months. While there he drew an Astronomical Rotula, for exhibiting the eclipses of the sun and moon, which he transmitted to Professor Maclaurin at Edinburgh, who highly praised it, and wished he had been written in his own language. The Professor had the Rotula engraved, and it ran through several impressions, till, by the change of the style in 1753, it became useless. While at Edinburgh he made a wooden orrery, and delivered a lecture on it before the mathematical class.

In 1748 he published his first work, "A Dissertation on the Phenomena of the Harvest Moon," having been previously one of the sitting members of the Royal Society by Mr. Polkes the president. In 1749 he read lectures on the eclipse of the sun which happened in that year. From this period he began, under the patronage of the prince of Wales, afterwards George III., to rise in the astronomical sciences; 1752 he was published and repeatedly attended, and he now relinquished his former profession altogether. From this time to the end of his life he continued his lectures, and wrote several works on astronomy and mathematics. An edition of 1759, on Ptolomy's, was granted him out of the privy purse. In 1763 he was elected a Fellow of the Royal Society, and in 1770 was chosen a member of the American Philosophical Society. He died in 1776, aged 66, leaving an only son, to whom he left a considerable sum acquired by his lectures and his writings. Ferguson has contributed more than perhaps any other man in this country to the extension of physical science among all classes of society, but especially among that largest class whose circumstances preclude them from a regular course of scientific instruction. Perspicuity in the selection and arrangement of his facts and in the display of the truths deduced from them was his characteristic both as a lecturer and as a writer.

Some of his principal works: "Astronomy explained upon Sir Isaac Newton's Principles, and made easy to those who have not studied Mathematics," 4to. 1756. There have been many editions of this work; one by Dr. Brewster, 2 vols. 1811, containing the new discoveries since the time of Ferguson. "Lectures on Subjects in Mechanics, Hydrostatics, Pneumatics, and Optics, with the use of the Globes, the Art of Dialling, and the Calculation of the Mean Times of New and Full Moons and Eclipses," 8vo. 1756; re-issued in 1764. An edition of this work by Dr. Brewster was published in 1805, and another in 1806. "An Easy Introduction to Astronomy for Young Gentlemen and Ladies," 1769. "Introduction to Electricity," 8vo. 1770. "The Art of Drawing in Perspective made easy to those who have no previous knowledge of Mathematics," 8vo. 1775: this is his last work. Elsewhere we are not informed here, he contributed several papers to the Philosophical Transactions. (Life by himself, prefixed to his "Select Mechanical Exercises; Nicholas's Anecdotes; Pursuit of Knowledge under Difficulties," 2 vols. 1766. The Library of Edinburgh.

FERGUSON, ADAM, born in 1724, was the son of a parish minister in Perthshire. He studied at St. Andrews and at Edinburgh. On being ordained, he was appointed chaplain to the Queen, a Highland regiment, in which he remained till 1757. He then became the librarian and as an advocate. He was the founder of the advocates' library of Edinburgh. In 1759 he was made professor of natural philosophy in the college of that city, and in 1764 he was appointed to the chair of moral philosophy, a branch of sciences in which he had more particularly applied himself. In 1767 he published his "Essay on the History of Civil Society," a work which was well received, and which procured him the notice of public men. It was reprinted several times, and translated into French, German, and other languages. In 1741 he accompanied the young Earl of Chesterfield on his travels, but remained with him only a twelvemonth. In 1743 he was appointed to the chair of polite literature at the University of Edinburgh. He was a member of the Royal Society, and he published an "Essay on the Origin and Nature of Civil Liberty." In 1770 he was appointed secretary to the commissioners who were sent to America in order to try to effect a reconciliation with the mother country, an office in which Ferguson took a clearer view of the constitution of the province and of the interests of the inhabitants than any of his American colleagues, and which was commended at that time with Englishmen. On his return in 1779 he resumed the duties of his professorship, and in 1783 he published his "View of the Progress and the Formation of the Roman Republic," 3 vols. 1788. He was a member of the Royal Society, and by which Ferguson is most generally known, is not so much a regular commentary as an essay on the history of the Romans, as a commentary on that history; its object is to elucidate the progress and changes of the internal policy of the Roman republic, the successions of its several states, as well as the progress of the military system of the Romans, and the varied but studied course of their external policy towards foreign nations. He carries his work down to the end of the reign of Tiberius, when all remains of the old republican constitution have disappeared. It may be said to have preceded all other works of this kind. Ferguson's work forms the subject of an introduction to that of Gibbon on the decline and fall of the empire. Ferguson and his contemporary, the French Abbe Auger, were foremost among those who, previous to Niebuhr, investigated the internal working of the institutions of the Roman republic. Their works have been the basis of all further public investigations on account of ill health, and was succeeded by Dugald Stewart. In 1792 he published "Principles of Moral and Political Science, being chiefly a retrospect of the sciences on ethics and politics, delivered in the College of Edinburgh," 2 vols. 4to. In this work he gave a comprehensive view of the various systems of ethics antient and modern, especially with respect to moral approbation, public security, and individual happiness. Another work of Dr. Ferguson's on the same subject, though extremely valuable, is the "History of the Decline and Fall of the Romans," which he first published in 1769, has been often reprinted and translated into foreign languages, and has also been adopted as a text-book in some foreign universities. Ferguson died at St. Andrews in February, 1816, being above 90 years of age. He had been on terms of friendship with Hume, Robertson, Adam Smith, Dugald Stewart, Playfair, and other distinguished contemporaries. His mind was independent, and his frankness and honest opinions are said to have stood in the way of his advancement.

FERGUSON, or FERGUSON, ROBERT, was born at Edinburgh about the year 1750, and educated at the University of St. Andrew's, where he received some encouragement from one of the professors named Wilkie, who employed him to transcribe his lectures. An anonymous biographical prefixed to Ferguson's Poems, edition of 1807) has employed considerable research in discovering certain facts of a kind neither ludicrous nor in good taste, in which he appears to have indulged during his residence at St. Andrew's; thus the "true bear being killed" is mentioned as the sentence was recalled, and he remained as it appears for four years, during which time he subsisted on a bursary or exhibition founded by a person of his own name. On leaving St. Andrew's, he paid a visit to an uncle from whom he derived as a gift a lease of a farm in the Grampian hills. Having left his house under circumstances of which his anonymous biographer gives a very unsatisfactory account. During the remainder of his life he was employed in the office of the commissary-clerk of Edinburgh, with the exception of a few years, after which he lived as a farmer. Ferguson was a constant contributor to Ruddiman's "Weekly Magazine," from which his poems were afterwards collected. The local celebrity which these productions obtained for him gave him so frequent opportunities of convivial and other excess as to ruin the constitution of his mind and body. He lived about twenty-four years. His last days were passed in a mad-house, his debauchery having ended in repentance which took the form of melancholy, and ultimately that of insanity.

Ferguson's poems are written partly in English and partly in Lowland Scotch. Those in Lowland Scotch have been admired by persons conversant with the idiom in which they
are written; but to an English ear they want the charm which makes Burns not the less sweet because he is sometimes not intelligible. There is a coarseness and clumsiness about Ferguson's, which render it wonderful how their author could have ever succeeded in gaining reputation as a poet. In praise of his English verses, a little more may be said; but we suspect that the similarity of his life to that of Catterton created an interest about him to which most, if not all, of his celebrity is owing.

His life has been written by Irving (Glasgow, 1799: reprinted in 1865), and by an anonymous author who dedicates his sketch to James Graham, esq. This latter production contains more specimens of bombast and bad taste than are usually found in the space of eighty pages, and serves by its tone of panegyric to reproduce exactly those prejudices which it was intended to repress. (Chalmers's Biogr. Dict.; and Biographie Universelle, vol. xiv.)

FERUSONITE, a crystallized mineral, which is principally a columbite of yttria. It has been found only in Greenland, near Cape Farewell, imbedded in quartz.

Primary form a square prism. Colour brownish-black.Opaque, except in the splinters. Lustre slightly metallic. Specific gravity 5·938. Hardness 5-5, 6-9. Sistrak pale brown. Fracture conchoidal. Before the blow-pipe the comestes of a greenish-yellow, and does not fuse, but with a phosphcite it dissolves completely. According to Hartwell, this mineral consists of-

| Oxide of columbium | 47·75 |
| Yttrium carbonate | 41·91 |
| Zirconia | 3·02 |
| Oxide of cerium | 4·68 |
| tin | 1·00 |
| uranium | 0·95 |
| iron | 0·34 |
| Total | 99·65 |

FERISHTA (Mohammed Kasim), a celebrated Persian historian, was born at Astrabed, on the border of the Caspian Sea, A.D. 1570. His father, whose name was Ghulam Hind, and who appears to have been a learned man, left his native country when Ferishta was very young and travelled into India. He finally settled at Ahmudnaguer, in the Deccan, during the reign of Murtaza Miram Shah, and was appointed to instruct Miran Hossein, the son of Murtaza, in the Persian language, but he died soon after this appointment. Miran Hossein however patronized his son Ferishta, and through his influence the historian was advanced to high honours in the court. When Murtaza was assassinated, Ferishta, who was then only seventeen years of age, was taken in gaining rebellion on the remaining monarch in this court he spent the remainder of his life in high honour, engaged sometimes in military expeditions, as we learn from his own history, and devoting his leisure time to the composition of his great work. He died, in all probability, soon after A.D. 1611, at the age of forty-one. He makes mention in his history of the English and Portuguese factories at Surat, A.D. 1611.

The preceding account has been chiefly taken from the English translation of Ferishta, by Colonel Briggs, which was published in 1829. The greater part of the history had been previously translated. Colonel Dow published a translation of the first two books in his 'History of Hindostan,' 2 vols., 4to. London, 1768, which is not considered to be very accurately done. A much better translation of the third book was given by Mr. Jonathan Scott in his 'History of the Deccan,' 2 vols., 4to. 1794. Mr. Stewart, in his 'Descriptive Catalogue of the Library of the late Trippo Sultan of Mysore,' gives an account of the contents of the history, p. 12; and also a translation of part of the third book, accompanied with the original Persian, pp. 257—267.

The history of Ferishta is divided into twelve books, with an introduction, which gives a brief and imperfect account of Hindoo history before the time of the Mohammedans, and also a sketch of the conquests of the Arabs in their progress from Arabia to Hindostan. The first book contains an account of the kings of Ghishti and Lahore, A.D. 977—1116. Here the detailed portion of his history begins. 2nd, The kings of Delhi, A.D. 1205 to the death of Akbor, 1605; 3rd, The kings of the Deccan, A.D. 1347—1596; 4th, The kings of Guzerat; 5th, The kings of Malwa; 6th, The kings of Kandesh; 7th, The kings of Bengal and the kingdom of Multan; 8th, The rulers of Sind; 10th, The kings of Cashmir; 11th, An Account of Malabar; 12th, An Account of the European Settlers in Hindostan. At the conclusion of the work, Ferishta gives a short account of the geography, climate, and other physical circumstances of Hindostan.

Ferishta is certainly one of the most trustworthy of oriental historians. He seems to have taken great pains in consulting authorities. At the close of his preface he gives a list of thirty-five historians to whom he refers, and Colonel Briggs mentions the names of many of the authors quoted in the course of the work. 'What is really remarkable in this writer,' says Colonel Dow, 'is that he seems so much divested of religious prejudices as he is of political flattery or fear. He never passes a good action without commending it as due reward of praise, nor a bad one without stigmatizing it with infamy.'

FERMANAGH, an inland county of the province of Ulster, in Ireland: bounded on the north west, north, and north-east by the county of Donegal and Tyrone; on the east by the county of Monaghan, and on the south and south-west by the counties of Cavan and Leitrim. The greatest length from the boundary of Donegal towards Ballyshannon on the north-west, to Shankill Loch, on the borders of Monaghan, on the south-east, is 43 statute miles; the breadth, from Culligreagh on the river Erne to the south-west, to Tappaghion, on the borders of Tyrone, on the north-east, is 29 statute miles. The area, according to the Ordnance Survey map, consists of—

<p>| | |</p>
<table>
<thead>
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<tbody>
<tr>
<td>Land</td>
<td>469,783</td>
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<tr>
<td>Water</td>
<td>46,748</td>
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Total | 456,531 | 14 | 2

Of this extent of water 36,348 acres and 21 parishes are included in the upper and lower lakes of Loch Erne, which lie almost wholly within this county. [ERNS, LOUTH.] The gross population of Fermanagh in 1831 was 149,763.

Fermanagh is divided into two nearly equal portions by the line of Loch Erne, which passes through its centre. The portion lying south of the upper or western sheet of Loch Erne contains a large tract of waste and mountain, of the same character with the extensive highland districts of Leitrim and Cavan, on which it borders. This tract is bounded on the north by the lakes Lough Gill, Lough Arrow, and Upper and Lower Loch Macnean; the waters of the first of which flow westward to the Atlantic, and of the two latter, eastward by the Arney river into Upper Loch Erne. The chief elevations of this tract on the north are, beginning from east to west, the mountain of Bolusty, 1064 feet; Sleam North, 1175 feet; Sleam East, 1030 feet; and Blacklere, 1026 feet; which overhang the shore of Upper Loch Erne in a continuous range. More central are Drumfard, 1009 feet; Knockmore, 919 feet; Glenkeel, 1223 feet; and Glenmore, 1312 feet; and on the south Slaprague, 846 feet; Ora More, 554 feet; and Aghamore, 1249 feet. The whole of this district abounds with small lakes, and is traversed by numerous ridges running generally in a direction from east to west. It is particularly remarkable for a number of subterranean channels which occur throughout the limestone and sandstone rocks of which it is composed. The Roogaugh river, which brings down the waters of several small lakes and tributary streams to Loch Melvin, is absorbed in the rock, and emerges, after running some distance, at about thirty perches underground. In like manner, several brooks running into Loch Erne from the range of Sleam North and Blacklere, dip underground in their course. A natural bridge of rock crosses a stream which forms part of the boundary of Fermanagh and Leitrim on the south; the central parts of the dip and rock in the hole are of very frequent occurrence. On the east this rough tract slopes down to a well-cultivated district extending from Enniskillen along the neck of Loch Erne and up the valley of the Sliens and Arney rivers. The latter is bounded on the south by the world of Cuslough to a height of 2188 feet, being the highest ground in the county. This neighbourhood is distinguished by the same characteristics—holes in the rock, caverns, and...
natural arches—which mark the more extensive mountain district. Three streams, descending from Cullagh, sink into different cavities of the rock, and after flowing nearly a mile each underground, re-issue in a single river, called the Coddagh, a feeder of the Arney. At the foot of Cullagh is situated Florence Court, a noble seat of the earl of Enniskillen; and generally throughout the tract from Loch Macnean to Enniskillen, and thence along the left bank of the lake, the seats of resident proprietors are numerous and highly respectable. The remainder of that part of the county which lies south of Loch Erne is low, and cultivated.

The district to the north of the Upper Lake is not divisible into many eminences: the chard is Glenvanagh, 700 feet; and Tappaghlan, 1110 feet. Towards Enniskillen there are numerous and well-improved seats of proprietors; and close to the town is Castle Coole, the residence of the earl of Belmore, which is generally considered the most splendid residence in the modern style in Ireland. Tassell mountain, 909 feet in height, rises north-east of Enniskillen, and from its situation in a comparatively flat district, commands a very extensive and picturesque prospect. From Enniskillen to Upper Loch Erne the winding river is occupied on each side by demesnes and other improved lands: the upper lake, containing an immense number of wooded islands, is highly beautiful; the demesnes of Belleale and Crouch Castle terminate it at each extremity. The remainder of the county north of the upper lake is chiefly a hill-country and consists ofnumerous parishes. The only towns of any consequence in the county besides Enniskillen and Irvinestown lie in this district, viz. Newtown Butler, Lismasken, Maguire's Bridge, Lielbella, and Tempo.

The parishes of Fermanagh are small. From the mountainous district on the south-west, the Silees and Arney run into Loch Erne: the Coddagh or Swanlinbar river flowing south-east of Cullagh has a like termination. The Woodford, which separates Fermanagh from a part of Cavan, is the largest river which discharges itself into Loch Erne within the bounds of this county. The Drumony or Colebrook river, one branch of which passes by Tempo, is the only considerable stream that flows into the lake from the north.

The climate is somewhat cold and moist: violent winds are common in winter, and render the navigation of the lake dangerous.

### Table of Population.

<table>
<thead>
<tr>
<th>Date</th>
<th>How ascertained</th>
<th>Houses</th>
<th>Families</th>
<th>Fermanagh composed of</th>
<th>Unoccupied houses</th>
<th>Unoccupied families</th>
<th>All other families</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1792</td>
<td>Estimated by Dr. Beaufort</td>
<td>11,969</td>
<td></td>
<td>814</td>
<td>22,285</td>
<td>25,263</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1818</td>
<td>Under Act 54 Geo. III. c. 120</td>
<td>22,285</td>
<td>25,263</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1821</td>
<td>Under Act 1 WM. IV. c. 19</td>
<td>25,781</td>
<td>28,132</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1831</td>
<td>Estimated by Dr. Beaufort</td>
<td>20,617</td>
<td>2,977</td>
<td>4,538</td>
<td>73,117</td>
<td>76,646</td>
<td>149,763</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fermanagh was first erected into a county by statute of the 11th of Elizabeth; but it was not till the time of the plantation of Ulster that it was finally brought under civil government. Having fallen to the crown by the attainder of Maguire, it was divided in like manner with the other five hundrecounties among Scottish and English undertakers and native Irish. The precedents or baronies of Knockinny and Maghenaboy were allotted to Scottish undertakers; those of Clarkelly, Magherastephana, and Lurg, to English undertakers; and those of Clonawley, Coole, and Tyrkenney, to servitors and natives. The chief proprietors under the new settlement were the families of Cole, Blennarhasset, Butler, Humo, and Dunbar. The subsequent forfeitures of 1641 affected a large portion of Fermanagh, and considerably increased the possessions of those from whom many of the present proprietors are descended. The forfeitures consequent on the war of the Revolution affected only 1945 acres in this county, valued at 389£ per annum.

Fermanagh returns three members to the Imperial Parliament, viz., two for the county, and one for Enniskillen, the assize town, which is the only borough or corporate town within this county.

The public expenses of the county are defrayed by grand jury presentations; the amount so levied in the year 1829 was 18,839£. 14s. 3d. The constabulary force employed in Fermanagh in the year 1833-34, consisted of 5 chief constables, 20 constables, 86 sub-constables, and 4 horses; the cost of which establishment was 473£ 3s. 5d.

There has not hitherto been anything published on the subject of the geology of this part of Ireland. Limestone occurs throughout the mountainous district, and in the rich soils of Loch Erne. The general character however of this part of the county is understood to be the same with that of the Loch Allen coal district, of which sandstone and grit are the principal constituents. The remainder of the county would appear to belong to the greywacke formation. The soil for the most part is naturally cold and moony; but has been brought into a good state of productivity throughout the arable districts. Timber is generally of a good growth; at Florence Court in particular the timber is very large. As the condition of the peaty district in Fermanagh is better than that of the neighbouring counties, and the potato does not constitute the whole of their food, the sales of grain at the local markets appear comparatively small. The following are the returns for 1835:

<table>
<thead>
<tr>
<th>Item</th>
<th>Wheat</th>
<th>oats</th>
<th>barley</th>
<th>rye</th>
<th>horn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enniskillen</td>
<td>294</td>
<td>1,355</td>
<td></td>
<td></td>
<td>501</td>
</tr>
<tr>
<td>Irvinestown</td>
<td>90</td>
<td></td>
<td></td>
<td></td>
<td>81</td>
</tr>
<tr>
<td>Kish</td>
<td>37</td>
<td></td>
<td></td>
<td></td>
<td>34</td>
</tr>
<tr>
<td>Lismasken</td>
<td>1414</td>
<td>4,170</td>
<td>14</td>
<td>144</td>
<td>224</td>
</tr>
<tr>
<td>Maguire's Bridge</td>
<td>135</td>
<td>97</td>
<td></td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Newtown Butler</td>
<td>130</td>
<td>97</td>
<td></td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Derghonnelly</td>
<td>57</td>
<td></td>
<td></td>
<td></td>
<td>50</td>
</tr>
</tbody>
</table>

Fermanagh is divided into eight baronies, viz., Lurg on the north, below, and the adjoining counties, and 1047; Tyrkenney on the north-east, containing part of Enniskillen, total population 6056; and the village of Lislavell, population 242; Magherastephana on the east, containing the town of Maguire's Bridge, population 844; and the village of Lismasken, population 430; Clankelly on the east; Coole on the south-east, containing the village of Newtown Butler, population 412; Knockinny on the south; Clonawley or Glenawley on the south-west; and Magheraboy on the west.

The linen manufacture is carried on to some extent, but does not form any considerable branch of commerce. The fair of Maguire's Bridge is much frequented by purchasers of horses and young cattle. Still Fermanagh cannot be said to have any staple or brisk trade. The produce of the county, is, in a great measure, consumed within it; and the absence of external traffic is perhaps in this case an evidence of the comfort of the people.
Diophantus, with a commentary. The whole of the actual works of Fermat fill an exceedingly small space; nevertheless they contain the germs of analytical principles which have since come to maturity. In fact they may be regarded as the germ of the analytical methods which lead to the results to which he had arrived, without demonstrations, or any indications of the processes employed.

The properties of numbers were the subject of his enthusiastic researches, and no single individual has added more to the body of useful and original knowledge by the branch of mathematics than Fermat: the theorem now commonly called Fermat's is but a particular case of a much more general one given in his works.

His method for finding maxima and minima has only the merit of moderate ingenuity, before the differential calculus was discovered; the analysts of that day hovered on the brink of that beautiful process of analysis which has been rather ridiculously termed the greatest discovery of the human mind. A method not very remote from Fermat's was practised by other analysts of his day; and in spirit also by the ancient geometers: but it certainly is not the differential calculus, and Laplace has no ground for his attempt to snatch from the claims of the English and German nations this grand step of analysis in order to appropriate it to his own. In Fermat's correspondence with Father Mersenne, we find him, in a bungling manner, contesting with Roberval the first principles of mechanics, and maintaining that the weight of bodies is least at the surface of the earth, increasing both within and without, which is the direct opposite of Roberval's position. When, however, greeted by Mersenne with the retraction of his errors, he very disingenuously attempts to deny them, asserting that no body has a centre of gravity, with many similar trifles, which place in bold relief the immortal discovery of Sir Isaac Newton. Of this creek, led on by his letters, to Sark, to his predecessor Galileo, who escaped from similar paradoxes, from which common sense ought to have guarded both Fermat and Descartes.

The correspondence of Fermat is sufficiently replenished with the name of Poncelet, well fed by some of his compatriots, who lauded his propositions as the finest things which had ever been discovered. But it is justly suspected that the discovery of many of his properties of numbers was effected by a tentative process, he himself possessing no demonstration, as no vestige remains in the works published by his son of any peculiar analysis for arriving at them; while there are abundant proofs that he and Fermat, a young Parisian, employed the methods of tabulation and trial, to suggest properties, and by further trials, observing the bottom of the barrel, the barrenness of the theory of numbers this talent and industry would have produced more useful results; for what are the theorems of Fermat to the laws of Kepler?

Fermat conjectured that the path of light, in passing from one medium to another, is such as to describe the shortest possible course. This is a particular case of the principle of least action, and requires some remark. First, we see that Fermat's method for finding maxima and minima was not the differential calculus, for though imported from it into the works of his disciples to try this principle he was detested, as he says himself, for two or three years, by the dread of the asymmetry of the process, though every tyro acquainted with the first principles of the differential calculus, with the proper data given to him, now knew the theorem which he had previously reached by a geometrical manner. Secondly, during the life of Descartes, he seems to have disbelieved this law of refraction. The foundations of both their reasonings in natural philosophy were similar: but the Cartesian law, if indeed we can at all use such a term as reasoning to the methods of Descartes, whose followers had the greatest faith when he employed the least of that useful faculty. But the law is truly attributable to Snellius, and, though that great physicist, this last great mathematician, was still critically talk of the Cartesian law of refraction. Thirdly, Fermat did not attribute the truth of the principle to any mechanical laws, of which he seems to have known nothing, but to the pseudo-physical principle that nature abhors a vacuum, and is composed of the same kind of operations — for which, indeed, he was subjected to several cases of objection, to which he has given good answers, considering the position in which such an hypothesis placed him.

To give a more exact idea of the "null," we shall give one of his problems, entitled 'Problem by P. de Fermat. To Wallis, if any other mathematician that England may contain, I propose this problem to be resolved by them. 'To find a cube number which, added to its aliquot parts, will give a square number. 'If Wallis and no English mathematician can solve this nor any analyst of Belgic or Celtic Gaul, then an analyst of Narbonne will solve it.'

Wallis gives an account of this in the Commercialis Epistolom, the correspondence having been conducted through Sir Kenelm Digby. The works of Fermat contain also the tangents to some known curves, and some centres of gravity. Though thus strongly endowed with the faculty of self-esteem, and of that cunning which seeks to hide the tracks of discovery, we must not put him among such men as Pascal, Brouncker, Wallis; but he had none of the masculine mind of Descartes, nor a particle of the penetrating spirit of the glory of his age and nation, Newton.

It would be wrong to omit here the most curious of the theorems of Fermat, relative to numbers. To make it more generally intelligible we may state, that a triangular number means the sum of any number of terms from the first of the natural numbers 1, 2, 3, 4, 5, &c.; thus 1, 5, 10, &c., are triangular numbers; the square numbers are 1, 4, 9, 16, &c., and are the sums of the progression 1, 2, 3, &c. The pentagonal numbers in like manner are the sums of the numbers 1, 4, 7, 10, &c., viz., 1, 5, 12, 22, &c. The theorem consists in this, that every number is the sum of 1, 2, or 3 triangular numbers; every number is the sum of 1, 2, or 3 square numbers; and so on.

Legendre, and Barlow, the demonstrations of the first two cases may be found; and though Legendre and Cauchy have both laboured to prove it more generally, yet our present impression (not having Cauchy's work at hand) is that the general theorem is.

FERMENTATION denotes the spontaneous changes which occur in certain vegetable and animal matters, and by which there are produced new fluid and gaseous cow-pounds. Fermentation is of three kinds: the vinous, producing alcohol; the acetous, yielding vinegar; and the putrificative, of which the products are very variable, and usually fetid.

When the expressed juice of grapes is exposed in warm weather to the air, which is necessary to the operation, it soon becomes turbid, its temperature rises a few degrees, a motion occurs in the fluid, and minute bubbles of air form and break. As the process goes on, a thick froth, consisting of these bubbles and viscid matter, rises to the surface; and when these bubbles have burst, a viscid substance falls to the bottom, the temperature being increased by causing fermentation to take place in other fluids, which, without its presence, would not undergo such a change. This substance is called yeast. [Yeast.]

In order to observe what happens during this vinous fermentation, take two pounds of wine in four times its weight of water, and add the solution to a small quantity of fresh yeast, obtained as above described, or from the fermentation of beer. Expose this mixture, in a flask with a bent tube and a bottle for fermentation products, to a temperature of about 75°; it will soon be found that the substances will so act upon each other as to produce carbonic acid, which will be found in the gas-bottle, while the sugar will gradually disappear, and the flask will contain a clear mixture of carbonic and free alcohol. By distillation, these changes occur without the interference of the air or its oxygen; nor does it appear that water is decomposed, or that anything is added by the yeast; it seems therefore that when sugar is deprived of oxygen and water, the carbonic acid will be produced by distillation.

While alcohol consists of 3 equivalents of hydrogen = 3, 2 equivalents of carbon = 12, and 1 equivalent of oxygen = 8; its equivalent is therefore 23. In order then that alcohol and carbonic acid alone should be produced from sugar, this last substance must consist of 3 equivalents of hydrogen = 3, 3 equivalents of carbon = 18, and 3 equivalents of oxygen = 54, giving 45 as its equivalent. On this admission, the production of alcohol by the separation of carbonic acid from sugar may be thus shown:

<table>
<thead>
<tr>
<th>Sugar</th>
<th>3</th>
<th>3 equivalents.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbonic acid</td>
<td>0</td>
<td>1 2 3 equivalents.</td>
</tr>
<tr>
<td>Alcohol</td>
<td>3</td>
<td>3 equivalents.</td>
</tr>
</tbody>
</table>
This would however show that sugar contains a larger quantity of carbon than is usually assigned to it. According to Gay Lussac, 100 parts of sugar should yield 48.76 of carboenic acid and 31.34 of alcohol, which is very nearly in accordance with the above theoretical statement.

Although sugar appears to be the only vegetable matter which yields alcohol by its decomposition, yet it is to be observed that pure sugar suffers no fermentation. In the juice of the grape, as well as in some other cases, there is some accompanying matter which acts as a ferment; and when yeast is added spontaneously produced it causes fermentation in sugar, without, as far as appears, adding anything important; indeed it is stated that scarcely two per cent. of this substance suffer decomposition. It would therefore almost appear to produce the effect by what has been termed an action of presence, and by Berzelius denominated catalysis.

In brewing and distilling, and in vinegar-making in this country, the substance fermented is malt, in which the starch that the grain contains has by incipient vegetation been converted into sugar, and thus rendered fermentable.

In the acetic fermentation the materials employed are similar to those used for the vinous; but the temperature employed is higher. Little acetic acid is produced unless atmospheric air be present, the oxygen of which must combine directly with the requisite proportions of oxygen and carbon to constitute acetic acid; but as alcohol may be converted into vinegar, as indeed is practiced in wine countries, it is possible, even when vinegar is produced from malt, that the various formations of alcohol may occur; and any view will best explain what happens, and show that by the mere absorption of oxygen so as to form water, and without the evolution of any carboenic acid, acetic acid may be formed: thus—

<table>
<thead>
<tr>
<th>Hydrogen</th>
<th>Carbon</th>
<th>Oxygen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two equivalents of alcohol</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>One equiv. of acetic acid</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

| Hydrogen in excess | 3      | 1 equiv. deficient |
| Absorb of oxygen   | 3      | 1 equiv. absorbed | 4 |
| Form of water      | 3      |                |

The above shows that by exposing 2 equivalents of alcohol to the air, and by the absorption of 4 equivalents of oxygen, there are formed 1 equivalent of acetic acid and 3 equivalents of water, while the 4 equivalents of carbon remain entirely in the acetic acid produced. [Acetic Acid.] The constitution of acetic acid is then 3 equivalents of hydrogen, 1 equivalent of carbon, and 2 equivalents of oxygen; its valency of oxygen is 54, giving 51 as its representative number.

With respect to the putrefactive fermentation, it is to be observed that it is the spontaneous decay and decomposition of animal matter, usually associated with the production of alcohol or acetic acid. In vegetable putrefactive fermentation the principal product is carboenic acid, and probably water, both derived from the absorption of the oxygen of the air, which unites with the hydrogen and carbon of the vegetable matter. In the putrefactive fermentation of animal matter ammonia is a very usual product, owing to the presence of azote, which enters largely into the composition of animal matter in general, and thus, by uniting with the hydrogen, the alkali just probed is produced.

FERMO ED A’SOLLI, is the name of a Delegation or province of the Papal State, east of the Apennines, bounded on the east by the Adriatic, on the north and north-west by the province of Macerata, on the west by the province of Spoleto, and on the south by the Abruzzi. It forms part of the old province of the Papal State called the Marches, the ancient Picenum, which is now subdivided into three provinces, Ancona, Macerata, and Ferino. The province of Ferino is hilly, being occupied by various offsets of the Apennines, which, detaching themselves from the central ridge extend to the coast of the Adriatic, and form numerous valleys watered by rivers or rather torrents, the principal of which are, from north to south, the Chienti, the Tenna, the Asso, the Tesino and the Tronto; the last last province along the Adriatic coast is 30 miles, and its breadth from the sea to the central Apennines is about the same. The area is about 1070 English square miles and its population 160,000 inhabitants. (Calendr. Saggio Stistico dello Stato Pontificio; Nees- baur, Gemalde Italina.) The chief produce of the country consists in corn and cattle; wine and oil are also made. The principal towns are,—1st, Ascoli with 12,000 inhabitants, a town of ancient note, has a cathedral, built on high ground, about four miles from the sea, and surrounded by old walls and ditches, with several churches and convents, and 6000 inhabitants, who carry on some trade by means of the neighbouring small harbour called Porti di Ferino and export animal wool. The ancient Firmum, a town of the Piceni, afterwards a Roman municipium, was destroyed in the fifth century B.C. by the Alaric, and the present town was rebuilt near its ruins. 3rd, Santi’Elpido, near the mouth of the river Tenna, has 3000 inhabitants; it was inhabited by the Ripatransi, who were 2000 miles from the coast and near the Tesino, has 2000 inhabitants. 5th, Grottaglie, a thriving town on the coast near the site of Cupra Marittima, an ancient Etruscan colony, carries on some trade by sea, has some sugar refineries, and about 4000 inhabitants. Pope Sixtus V. was born in this place. 6th, Offida, on a hill south of the Tesino, has a handsome collegiate church, some manufactories of lace, and about 3000 inhabitants. 7th, Montalto, a walled town but decayed, has only 600 inhabitants.

FERMOY, in the parish of Fermoy and barony of Condoms and Clongibbons, in the county of Cork, in Ireland, situated on the right bank of the Blackwater, on the great southern road leading from Dublin to Cork, distant from Dublin 112 Irish miles, and 144 English miles. The town owes its origin to its late proprietor, Mr. Anderson, the introducer of mail-coach travelling into Munster. This enterprising individual began to build here about the beginning of the present century. The site being of equal importance in a military point of view, he, with the government, was second to his design by the erection of very extensive barrack buildings. An act was obtained for providing the town with a police; and various manufactories, including a brewery, paper-mill, and bolting-mill, were set on foot by Mr. Anderson. In the eastern side of the town the regular design is observed, and hence Fermoy presents an appearance of neatness and uniformity very rare among Irish towns. In 1815 trade in Fermoy was very brisk, but has since materially declined. The manufacture of ale and the purchase of corn are still carried on to considerable extent, but want of employment is nevertheless severely felt.

The appearance of Fermoy is imposing: the town extends on each side of a handsome square, facing the river, in which are the principal through streets and 344 houses, most of which are inhabited. Charles Hargrave, is much admired: there is also a chapel, and a church of Wesleyan Methodists. The barracks, which are very extensive, occupy the brow of a bold elevation on the opposite side of the river. The surrounding country is given over to tillage, and the character of the land is unknown.

The place is very important as a military station, and the garrison generally consists of several regiments. The population of Fermoy in 1821 was 6792, and in 1831 was 6576, the garrison included. In the parish of Fermoy there were in 1831 206 schools, educating 470 males and 294 females. In the Fermoy National School, established Sept. 1833, there is an average daily attendance of 270 young persons. (Townsend's Statistical Survey of Cork, Cork, 1815; Inglis's Ireland in 1834; Parliamentary papers.)

FERNANDEZ, JOAN, a Portuguese, the first European who visited the interior of Africa. In 1446 he joined a Portuguese expedition of discovery, and from an ardent desire to procure information for Prince Henry, he got leave to remain among the Asenabhi, or wanderers of the great African desert, in its Atlantic extremity. His account has been strikingly corroborated in our days by that of Mungo Park. (Kerr's Systematic Collection of Voyages and Travels, ii. p. 190.)

FERNANDEZ, DOMINGO, a Portuguese navigator, who, in 1446, discovered the river Senegal and Cape Verde.

FERNANDEZ, NAVARRÈTE, surnamed El Mudo (the dumb), born 1526 at Logroño, on the Ebro, became a distinguished pupil of Titian, and painter of Philip II., and employed him at the Escorial. His principal work is Abraham with the Three Angels. He painted with base and despacth. On account of his colouring he was
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town was plundered and nearly destroyed, in 1796, for hav-  
ing revolted against the French. 5. Bagna cavallo, with  
3500. Among the terre or communes, the principal ones  
are: Argenta, with 4000 inhabitants, including its territory;  
Bondeno, 7000; Geppareto, 7000; Contigliano, the birth-place  
of Attendolo, the celebrated Condottiere of the fourteenth  
century and the head of the ducal house of Sforza, has  
35000 inhabitants; Fusignano, the birth-place of the musical  
composer Corelli and of the poet Monti, has 4700; Mesola,  
with 4000, lies near the principal monastery of the Papal  
state, the Porto of Goro, and has a considerable tract of forest  
the south of it, extending along the sea-coast as far as  
the mouth of Volano, and abounding with game, wild boars,  
deer, &c.; Fieve di Cento has 3300 inhabitants; Punte di  
Laggaccio, a frontier town, and commodious house for the  
bank of the Po, and on the high road leading from Austrian  
Lombardy into the papal state, has 3600 inhabitants; Porto  
Maggiore has 6500.

The air in general throughout the greater part of the  
province of Ferrara, especially in the vicinity of the great  
swamps, is more or less unhealthy, particularly in sum-  
mer, though the malaria is not quite so bad as in the  
southern marceone or in the Pompantine marshes. The  
country is flat, and in many parts much below the level of  
the Po river, which is kept from overflowing by a dike  
the river sometimes breaks through and produces dreadful  
inundations. The cost of keeping the dykes in repair is  
one of the heaviest charges on the province, and watching  
the rising of the river during the floods is a constant care  
of the province. In the province itself into three principal branches,—the main one, or Po  
d'Ariano, the Po di Volano, and the Po di Primaro or  
southernmost branch, which last receives the Reno, the  
Santerno, the Seno, and other numerous streams which  
flow from the interior of Bolonia. These various branches  
of the Po communicate with one another by canals. The  
Naviglio of Bologna communicates between that city and  
Ferrara, and the Canal di Cento between this town and  
the Po.

FERRARA, the capital of the province of the same  
name, and the residence of the papal legate or political  
governor, and an archbishop's see, is situated in the midst  
of a flat country on the north bank of an arm of the Po, in  
44° 47' N., 10° 40' E. The town is about six miles  
south of the main branch of the Po, which forms the  
boundary between the papal and the Austrian states, and  
twenty-five miles north-east of Bologna, and thirty-eight  
west of Ravenna. It is a large and well-built town, with  
its wide streets, kept in principal of which called San  
Benedetto, is about 2000 yards in length. Ferrara is enclosed  
by walls, and defended on the west side by a citadel regularly fortified, which, agreeable to  
supputation of the congress of Vienna, is garrisoned by Austrian soldiers, as the walls of the  
southern and of the northern macchia. In the middle of the town is a castle, flanked  
with towers and surrounded by wet ditches, which was once  
the residence of the dukes, and is now that of the legate.  
Ferrara has numerous churches, most of them rich in paintings, of the Caracci, and other  
great masters of the Bolognese school; and also by Garofalo,  
Bastianino, Ortolano, and other painters natives of Ferrara,  
who are classed by some as forming a separate school,  
called that of Ferrara. The finest churches are: the cathedral, the church of the second, late  
centuries, bronze statues, and frescoes; San Benedetto, in  
in which Ariosto was buried; his monument however has  
ever been transferred to the Lyceum: in the hall of the  
refectory of the adjoining convent is the painting of the Paradise,  
by Garofalo, the fraud of Ariosto, who introduced it in the  
likeness of the poet; San Domenico, which has several  
valuable paintings and the monument of Celio Celagnini,  
one of the restorers of learning in the 16th century; Santa  
Maria del Vallo, the oldest church of Ferrara, which is  
also rich in paintings of the last century; San Domenico,  
Garofalo, Bastianino, Ortolano, and other native painters;  
and the churches San Francesco, i Testi, i Gesi, &c.  
Among the palaces of Ferrara, the finest are those of Villa  
and Bertinelli. The theatre is one of the largest and  
finest in Italy. The house of Ariosto, which he purchased  
by himself, is shown to strangers, but his favorite garden has  
disappeared: the old house of his family, in which he had  
been brought up, still exists, and is called Casa degli  
Ariosti. The University of Ferrara, which is attended by  
about 3000 students, has a valuable library of 80,000 printed  
and 900 MSS., among which are autographs of Ariosto, Tasso, Guarini, and many editions of the fifteenth  
and sixteenth centuries, when the presses of Ferrara were  
among the most active in Italy (Baroffili, Della Trans-  
grafia Ferraresi.) Ferrara has produced many dis-  
tinguished writers, of whom Barotti has given a biographi-  
cal list. (Memorie Storiche dei Letterati Ferraresi, 2 vols.  
4to, 1792.) In the hospital of St. Anna is still seen the  
ground floor in which Tasso was confined for seven years.

FERRARA is one of the most interesting and handsomest of  
the modern towns of Italy, for it has no claim to classical  
antiquity, having risen after the fall of the empire. It  
was founded in 1141 by the emperor Frederick I. The present  
state of decay has been somewhat exaggerated: it lost  
part of its population in the seventeenth century, in con-  
sequence of having lost its sovereigns [Ferrari], and  
having become a provincial town; but it is now again on the  
up. It was first a duchy from 1238, when it was ceded  
under Napoleon, to 31,000 inhabitants, of whom above 2000 are  
Jews, who occupy a separate quarter, and have a synagogue.  
(Valery,Voyages Litteraires en Italie, and Calindri, Saggio  
Statistico.) It carries on a considerable trade in corn and  
wine. The province of the same name is very rich and agreeable to  
Ferrara, and its natives hospitably inclined  
towards strangers. The air, though not positively bad, is  
not very wholesome, on account of its situation (Frizzi,  
Memorie Storiche dei Letterati Ferraresi, pp. 588-590,  
for the Città di Ferrara; De Rossi, De typographia Herbro-  
Ferrariseni; and Barotti, Pinture e Sculture che si trovano  
nelle Chiese e Luoghi pubblici di Ferrara).

FERRERI and FERRARI, the names of two Italian  
mathematicians, who were nearly contemporary with each  
other, and who are liable to be confounded. Scipio Ferreii  
(Cossali calls him Ferro and Dal Ferro) was a native of  
Bologna, and taught mathematics there from 1436 to 1526.  
He is said to have been the first who possessed a method  
of solving any case of cubic equations, by this method he  
communicated to his pupil Antonio di Fiore, who proposed  
a question to Tartaglia as a challenge; and this, it is also  
said, was the cause of the latter turning his attention to  
the subject.

Ferrare was also born at Bologna, and was the pupil of  
Cardan. At the instigation of the latter, he turned his attention to biquadratic equations, and produced  
the method known by his name, being the first which  
had been invented. The method is found in the work of  
Cardan, and is called the Fourth of Cardan (Tartaglia  
taken), and in all works of algebra which treat on the  
solution of equations.

FERRERA, ANTONIO, the reformer of the national  
poetry of Portugal, and renamed the Portuguese Horace,  
was born in 1497 at Ferrara. In the frightful town of the  
macchia he devoted his time more particularly to classical and Italian  
literature, and composed his drama of 'O Brito' (which  
is the name of the principal character), to which, he gave  
subsequently a much higher polish. Growing tired of  
the life of a university, he went to court, where he obtained  
a dignified situation, and while entertaining still higher  
expectations he was carried off in the prime of life by the  
plague in 1569.

Although not a first-rate poet in imagination and origin-  
ality, he is considered with reason with great bosom.  
He often succeeded moreover in elevating the mind and  
warning the heart. His sonnets, without displaying  
y any affected imitation of Petrarch's, remind us of the  
Italian poet and his Imura. His odes and his ballades have  
great merit in the expression, but the forms are the gen-  
uine lyric spirit, and the latter the simplicity of the syll;  
qualities perhaps irreconcilable with Ferreira's philo-
osophical turn of mind and didactic seriousness. Among  
his elegies, that on May is a classic masterpiece. His  
epics, which he composed profusely while he was in the  
government of the kind in Portuguese literature. His  
tragedy of 'Ines de Castro,' written about the same time  
that the Dominican Bermudez wrote the similar and sup- 
erior one in Spanish of 'Nise Lastimosas,' abounds with  
the natural picturesque of the country, and displays  
a forced imitation of the Greek manner and style. As  
it was preceded only by Trismisio's 'Sophonius,' it has  
* * *
been considered as the second regular tragedy produced after the revival of letters in Europe. His 'Poemas Lusitanoes' appeared at Lisbon first in 1588, 4to.; and all his works were also published in Madrid as Obras de Ferreira, Lisbon, 1771, 2 vols. 8vo., which contain Ferreira's biography, a valuable authority for the reader, in addition to that of Bouterwick.

FERRÆAS, DON JUAN, born at Laba- se, county of Astorga, a most minute and accurate historian, and one of the writers who have done great service to Spain, as Cejudo did after him in banishing prejudices, and Flores in his researches on ecclesiastical antiquities. Having gone through a complete course of classical and theological learning, Ferreira displayed his eloquence in the pulpit, and obtained the patronage of the great by his merit, and the esteem of all by his gentleness and modesty. Various honorable distinctions and situations were bestowed on him, but he constantly refused all high dignities. Next to the duke of Escalada, he was at the head of the literati who founded the academy of the Lengua Española in 1713, and he was a very useful member of that body, especially in the compilation of its dictionary, in 6 vols. folio, published in 1726-1739, to which he contributed the articles in the letter G, besides a preliminary discourse on the Castilian tongue. At his death, 1735, in addition to his other appointments, he held that of librarian to Philip V. Ferreira, though not so elegant a writer as Mariana, is much more to be depended upon. He wrote in all thirty-eight works on literature, hats, and clothes; but his most important is the 'Synopsis Historica. An Chronicle of Spain,' Madrid, 1700-1727, 16 vols. It extends to the close of Philip II.'s reign in 1588, and not merely to the three years previous to the capture of Granada, as it is very strangely stated by the writer in the 'Dissertation on the History of Spain,' mentioning its reaching to the year 1589, which is near a century after the re-conquest of Granada. Hermiini translated it into French, with valuable notes, in 10 vols. 4to., Paris, 1742.

FERRAT. [MUSTELIDE.]

FERRO, or HERRRO, is a small island belonging to the group of the Canaries. Its surface occupies only 104 square leagues, and the population is about 4000. The name Ferro is familiar to most persons from the circumstance of the first meridian having been drawn through it. Gutierrez says, 'in speaking to a sailor to have a meridian circle which should intersect only the seas that divide the old from the new continent, and none such existing but that which traverses the island of Ferro and cuts off only a small part of the north-eastern extremity of Asia, this island was accordingly considered the first meridian.' The meridian was actually surveying on this island, and those are the only two places where observatories are erected; by the English to Greenwich, by the French to Paris, and by the Spaniards to Cadiz. The French finding that Paris was nearly 20° 30' east of Ferro, removed the first geographical meridian to nearly 30° east of Ferro; so that now the present island of Ferro is considered as being about 30° west of the meridian of Ferro. The meridian of Greenwich is 17° 41' east of that of Ferro, and the meridian of Cadiz 6° 16' west of Greenwich, or 11° 29' east of Ferro. Other nations, whose navigations are frequent to the Canaries, other observatory places, and hence the meridians of their own observatories are not mentioned except in scientific works.

FEROYACNIC ACID was discovered by Porret, and by him called ferruret clusy acrid. He procured it from the decomposition of ferrocyanide of potassium by the action of tartaric acid, or from ferrocyanide of barium by means of sulphuric acid. According to Berzelius it is best prepared by diffusing recently precipitated ferrocyanide of copper or lead through water, and passing hydrochloric acid through the solution. Though the sulphur precipitates the copper or lead in the state of sulphuret, while the hydrogen unites with the cyanogen and iron they form ferrocyanic acid, composed of (when dry and not crystallized) —-

<table>
<thead>
<tr>
<th>Component</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrocyanic acid</td>
<td>46.57</td>
</tr>
<tr>
<td>Cyanide of iron</td>
<td>26.48</td>
</tr>
<tr>
<td>Water</td>
<td>7.66</td>
</tr>
</tbody>
</table>

and it contains 23.27 per cent. of iron.

P. C., No. 625.

Any excess of sulphuric acid is to be got rid of by adding ferrocyanide of the metal employing. The solution should be quickly filtered and evaporated in vacuo over sulphuric acid, and when dissolved in water is inodorous, sour, reddens litmus paper, decomposes the alkaline carbonates with effervescence, forms ferrocyanides with them, and exhibits other proofs of a strong acid. When exposed to spontaneous evaporation under a warm place of the sun, it has a somewhat strong smell, which have the appearance of four-sided prisms. This acid is decomposed by long exposure to the air, Prussian blue being formed and precipitated; this is also produced by adding it to a persal of iron.

The aqueous solution is also decomposed by boiling; and when submitted to destructive distillation it yields hydrocyanic acid, hydrocyanate, and carbonate of ammonia, and carburet of iron remains.

FERROL, a sea-port town of Galicia in Spain, on a bay which is an arm of the bay of Biscay or of La Coruña, from which last town Ferrol is fifteen miles distant to the north-east across the bay, but the communication by land is much longer. The port of Ferrol is large and safe, and its entrance is defended by strong batteries. There are extensive docks for the Spanish navy, Ferrol being one of the three royal dockyards: Cartagena and Cadiz are the other two. The town of Ferrol is regularly built, the streets crossing each other at right angles. It has a school of navigation, about 15,000 inhabitants, some manufactures of manufactory goods, and is noted for its fruits and sardines, which are pickled and exported. The timber for ship-building comes from Asturias, and the hemp for cables from Aragon; but the coal and tar are brought in by foreign vessels. Ferrol carries on some trade with America, exporting especially its sardines, and other parts of Spain. It is the residence of a commissary-general, and other chief officers of the naval department, which, however, owing to the present decay of the Spanish navy, is not in a very active condition. Milano, in his 'Suplemento al Diccionario Geografico de España,' gives a plan of Ferrol, and a long article on its docks which are among the finest in Europe.

FERRY, an exclusive privilege by prescription or the king's grant for the carriage of horses and men across a river or arm of the sea for reasonable toll. The owner of a ferry cannot suppress it and put up private ferrying, even in its stead without a license; but he is bound to keep it always in repair and readiness, with expert men, and reasonable toll, for neglect of which he is liable to be punished by indictment. And therefore if a ferry is erected so near to an ancient ferry that it is not conveniently served by the owner of the old one, for which the law will give him remedy by action. The ferry is in respect of the landing place, and not of the water, and in every ferry the land on both sides ought originally to have been in the same ownership, and not have been increased by the grantee.

FURULÀ, a genus of spacieous or umbrelliferous plants, whose species often yield a powerful stimulating gum resin employed in medicine. It differs from Pastinaca and Peucedanum by its having several vitts in each channel, and from Pastinaca by the margin of the fruit being thin and flat, not thickened and convex. The fruit is in appearance extremely similar to that of a parsnip; it is compressed from the back till it is extremely flat, and it thins away at the edge. There are three approximated fliform dorsal ridges, and the two lateral ones are distant, obsolete, or lost in the edge. In each channel there are three or more vitts, and on the commissure four, or a great many. The flowers are always yellow, and the stem solid, its cavity being filled with a spongy substance, in which fibres are vaguely dispersed.

The drugs called Sagapenom and Assafetida are produced by species of this genus, but which by which in particular is not known with certainty; and it appears probable that in fact several different species yield them.

1. Assafetida, as the more important, deserves notice first. Kamptfer, whose account is by far the best we have of this plant ('Amantites Ezoetica,' p. 537), says that it is found in

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only two districts of Persia, namely, the fields and mountains of Herat, the capital of Khorasan, and the range of mountains in the province of Lar (Laristan), extending from the river Cur as far as the town of Congo, along the coast of the Caspian Gulf. Elsewhere more or less, even here the plants do not always yield the drug; that it is only those of the desert near Herat and of the mountains round Disguum in Laristan that furnish it; and finally he figures a plant, with a naked simple stem, clothed with blackish sheaths, and bearing involucres of coarse woody root rising above the ground, and pinnated leaves with pinnatifid segments and oblong obtuse lobes. This plant is the Ferula Assafoetida of Linnaeus and De Candolle; what is supposed to be it has since been met with in Persian literature, and Liout Burnes states that asafoetida growing in great luxuriance in the mountains of Hindoo Koosh at an elevation of 7000 feet that it is an annual, and grows to the height of 8 or 10 feet, when it withers and decays. The milk which it exudes is first white, and then turns yellow, and is said to be put in hair bags and exported. Sheep browse upon the tender shoots, which are believed to be highly nutritious. (Travels, ii. 243.) It is however by no means certain that this was true assafoetida. Indeed if it was, as Liout Burnes states, an annual, it is impossible to explain why it is generally supposed the root of hingisheh, or asafoetida, as ad plurum annos restitibilium, magnam, ponderosam, nudam, and in fact it is from wounds in this root that the gum-resin flows. We may however be pretty certain that assafoetida is in fact yielded by different plants in different countries, and that kinds foreign to the bazzar of India; and it appears from a communication made to Mr. Macneil from a medical gentleman at Soomeeans, in Beloochistan, that in that province a kind of ferula called hooseebe yields a similar product, which however is not collected. The F. asafoetida is said to arrive at as great an age as man himself, and in consequence its roots sometimes attain a considerable size. It is from wounds in this part that the drug is obtained. The roots are not wounded before the third year; the greatest part of the quality of their produce. There were four operations each year when Kempter visited the country; in the middle of April, the second at the latter end of May, the third ten days later, and the fourth in the beginning of July. The gatherers on the first occasion only cleared the hard sandy or stony soil away from the root to the depth of a span or so, pulling off the leaves, replacing the earth about the roots, and then heaping the leaves on them, pressing them down with a stone. On the subsequent occasions the roots were turned over the top, and collecting the juice that flows from the wounds. After every operation they cover the root with the old leaves to screen it from the sun. After the last gathering the screens are thrown away, and the roots are left to dry in the sun. 2. Ferula Peruica, a perennial species with a glaucous stem and superdecumound leaves with linear cut segments, has been reported to yield assafoetida. Dr. Hope entertained this opinion, from which Nees and Ebermaier do not dissent. Travellers found it yielding a substance extremely like asafoetida, in the botanic garden of Breslau; and the same thing has often occurred in the Apothecaries' Garden at Chelsea. Nevertheless, Fée suspects, after Wildenow, that it is rather the origin of sagapeneum. Olivier believed it to produce gum ammoniacum; but according to Professor Don, that is produced by his rema ammoniacum. 3. Ferula orientalis has also been quoted as the source of gum ammoniacum; and it appears that such a substance is really produced, either by that plant or a nearly allied species, in the empire of Marocce. 4. Ferula ferulago has been taken for the plant which furnishes galbanum; but Professor Don states that this drug is really yielded by quite a different genus, called by him Galbanum officinale. 5. F. Assafoetidae established by M. Grateloup for a fossil tuberated herb from Dax, which seems at first view very near the Anostomata, but which M. Grateloup thinks, from the examination of its aperture, approximates more to the Cyclomata, an opinion in which M. Rang concurs, adding that the species, three or four, are all fossil. It is the same shell, he states, as that afterwards described in the first number (division) of the Bulletin of the Linnean Society of Bordeaux, under the name of Strophopoma by M. Deshayes.

**Generic Character.**—Animal unknown. Shell oval, globose; aperture round, bordered, oblique, simple, toothless, "retourné du côté de la spire;" umbilicus more or less large. Opecurulum?

**FESCENNINE VERSES** were rude licentious verses sung by young men at weddings, and before the door of the bridegroom; aperture round, bordered, oblique, simple, toothless, "retourné du côté de la spire;" umbilicus more or less large. Opecurulum?

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of Marcus Verrius. This work, 'Priscorum Verborum,' is lost. Festus gives not only the meaning, but also in most instances the etymology, of words, with references to authorities. The last part of a lease in England, or the presentor; and his book, though incomplete, is justly classed by Scaliger among the most useful for understanding the language of ancient Rome.

Feudal System.

In treating of this subject we shall endeavour to present a concise and clear view of the principles of what is called the feudal system, to indicate the great stages of its history, especially in our own country, and to state briefly the leading considerations to be taken into account in forming an estimate of its influence on the civilization of modern Europe.

The essential constituent and distinguishing characteristic of the species of estate called a feudal or fief was from the first, and always continued to be, that it was not a body, but a absolute and independent ownership. The property or dominium directum, as it was called, remained in the grantor of the estate. The person to whom it was granted did not become its owner, but only its tenant or holder. There is no direct proof that fiefs were originally resolvable at pleasure, and Mr. Hallam, in his 'State of Europe during the Middle Ages,' has expressed his doubts if this were ever the case; but the position, as he admits, is laid down in almost every writer on the feudal system, and, if not to be made the foundation of a system, is supported not only by general considerations of probability, but also by some indicative facts. This however is not material. It is not denied that the fief was at one time revocable, at least on the death of the grantee. In receiving it, therefore, the tenant did nothing but receive a gift, not a loan, or at most an estate for his own life.

This being established as the true character of a primitive feud or fief, it may perhaps throw some light upon the much disputed etymology and true meaning of the word. 'Feudum' has been derived by some as Latin, by others as Teutonic. The principal Latin origins proposed are 'fero' (a treaty) and fides faith. The supposition of the transformation of either of these into feudum seems unsupported by any proof. These derivations, in fact, are hardly better than another restatement of the Germanic scheme, which is, in the first place, a very general origin, namely, that a fief is a word made up of the initial letters of the words fidelis er ubique domino vero meo. The chief Teutonic etymologies proposed have been from the old German füda, the Danish fede, or the modern German fried, all meaning battle-fief, and its oxygenation to fottum, or fettum, which it is said signifies wages or pay for service, combined with od or odh, to which the signification of possession or property is assigned. But, as Sir Francis Palgrave has well remarked, 'upon all the Teutonic etymologies of the preceding century are founded the theories of the fief constructed by the practice of the Teutonic tongues— a Furd, or fief, is not called by such a name, or by any name approaching thereto, in any Teutonic or Gothic language whatever.' (Proofs and Illustrations to Riase and Progress of Law, p. 238, etc.) Leh., or some cognate form, is the only corresponding Teutonic term; laem in Anglo-Saxon, len in Danish, leen in Swedish, &c. All these words properly signify the same thing as expressed by our modern English form of the same element, but in the Teutonic tongues. When then is fief or feud? Palgrave doubts if the word Feudum ever existed. The true word seems to be Furdum (not distinguishable from Furdum in old writing), or faisum. Fato or Fief (Latinized into Perundum) which some contracted into Fudum, and others, by omitting the r, into Feudum) he conceives to be Fief, or Phife, and that again to be a colloquial abbreviation of Emphyeutis, pronounced Emphyletis, a well-known term of the Roman imperial law for an estate granted by disension between the person who still has the larger and the usufruct only in the hands of the grantee. It is certain that emphyteusan was used in the middle ages as synonymous with precaria (an estate held on a precarious or uncertain tenure); that precaria, and also granted by disension between the person having the property and the person having the usufruct, or, as they were respectively designated, the suzerain or lord, and the tenant or vassal. Tenant may be considered as the name given to the latter in reference to the lord of his right, or, as we have seen, that an emphyteusan word must be Lehn, or some cognate form, and that feud was merely a corrupted term of the Roman law which was latterly applied to denote the same thing.

We know so little with certainty respecting the origin of the institutions of feudalism, and its nature, that it is impossible to say how much they may have brought with them from their northern forests, or how much they may have borrowed from the imperial polity, of the other chief element which enters into the system of feudalism, the connection subsisting between the grantor and the person having the property and the person having the usufruct, or, as they were respectively designated, the suzerain or lord, and the tenant or vassal. Tenant may be considered as the name given to the latter in reference to the lord of his right, or, as we have seen, that an emphyteusan word must be Lehn, or some cognate form, and that feud was merely a corrupted term of the Roman law which was latterly applied to denote the same thing.
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importance, namely, that the original vassals or vassasi were merely noblemen who attached themselves to the court and to attendance upon the prince, without necessarily holding any landed estate or beneficium by royal grant. In this sense the words occur in the early part of the ninth century and were originally of different origin and from the German geisel, which are probably the same word, and of both of which the original signification seems to be a helper, or subordinate associate, in labour of any kind.

If the vassal was at first merely the associate of or attendant upon his lord, nothing would be more natural than that, when the latter came to have land to give away, he should most frequently bestow it upon his vassals, both as a reward for their past and a bond by which he might secure their future services. If the peculiar form of tenure consisting in the vassal's doing his service not at the instance of his lord, but at the command of his sovereign, here was a very case which would suggest it. At all events, nothing could be more perfectly adapted to the circumstances. The vassal was entitled to a recompense; at the same time it was not the interest of the prince to sever their connexion, and to allow him to become independent; probably that was as little the desire of the vassal himself; he was conveniently and appropriately rewarded therefore by a fief, that is, by a loan of land, the profits of which were left to him as entirely as if he had obtained the ownership of all the land on which he worked. The tenant in chief, which, at the same time, kept him bound to his lord in the same dependence as before.

Here then we have the union of the feud and vassalage —two things which remained intimately and inseparably connected from the first. Nevertheless, they would appear, as we have seen, to have been originally quite distinct, and merely to have been thrown into combination by circumstances. At first it is probable that, as there were vassals who were not feudatories, so there were vassals who were feudatories. In the end, when the advantage of the association of the two characters came to be perceived, it would be established as essential to the completeness of each. Every vassal would receive a fief, and every person to whom a fief was granted would be a vassal. Thus a vassal and a fief would come to signify, as they eventually did, one and the same thing.

Fiefs, as already intimated, are generally supposed to have been at first entirely precarious, that is to say, resumable at any time at the pleasure of the grantor. But if this state of things ever existed, it probably did not last long. Even from the first it was most probable that many fiefs were granted for a certain term of years or for life. And in those of all kinds a substitute for the original precarious tenancy was soon found, which while it equally secured the rights and interests of the lord, was much more honourable and in every way more advantageous for the vassal. This was the method of attaching him by certain oaths and solemn forms, which, besides their formal aspect, were so contrived as to appeal both to men's moral feelings, and which therefore it was accounted not only impious but infamous to violate. The relation binding the vassal to his lord was made to wear all the appearance of a mutual interchange of benefits,—of bounty and protection on the one hand, of gratitude and service due on the other; and so strongly did this view of the matter take possession of men's minds, that in the feudal ages even the ties of natural relationship were looked upon as of inferior obligation to the artificial bond of vassalage.

At this position the vassal had thus been made stable and secure, various changes would gradually introduce themselves. The vassal would begin to have his fixed rights as well as his lord, the oath which he had taken measuring and determining both these rights and his duties. The relation between the two parties would cease to be one of absolute power and dominion on the one hand, and of mere obligation and dependence on the other. If the vassal performed that which he had sworn, nothing more would be required of him. Any attempt of his lord to force him to do anything would be considered as an attack upon his rights and his vassalage would now assume the appearance of a mutual compact, imposing corresponding obligations upon both, and making protection as much a duty in the lord as gratitude and service were in the vassal.

Other important changes would follow this fundamental change, or would take place while it was advancing to completion. After the fief had come to be generally held for life, the next step would be for the eldest son usually to succeed his father. His right so to succeed would next be established by usage. At a later stage fiefs became descendent in the collateral as well as in the direct line. At a still later, they became inheritable by females as well as by males. The French word for feudal tenure, the Calomminerie, marked the dates at which these several changes took place. Some writers conceive that fiefs first became hereditary in France under Charlemagne; others, however, with whom Mr. Hallam agrees, maintain that there were hereditary fiefs under the first race of French kings. It is supposed not to have been till the time of the first Capets in the end of the tenth century that the right of the son to succeed the father was established by law in France. Conrad II., surmounted the Salic, who became emperor in 1024, is generally believed to have established the hereditary character of fiefs in Germany.

Throughout the whole of this progressive development of the system, however, the original nature of the fief was never forgotten. The ultimate property was still held to be in the lord; and that fact was very distinctly signified, not only by the expressive language of forms and symbols, but by certain liabilities of the tenure that gave still sharper intimation of its true character. Even after fiefs became descendent to heirs in the most comprehensive sense, and were inheritable by females as well as by males, they were still to make solemn acknowledgment of his vassalage, and thus to obtain, as it were, a renewal of the grant from the lord. He became bound to discharge all services and other dues as fully as the first grantee had been. Above all, in no case could he be dispossessed. If he committed treason or felony, or if he left no heir, the estate would still return by forfeiture or escheat to the lord, as to its original owner.

Originally fiefs were granted only by sovereign princes; but after this description, by acquiring the hereditary quality, came to be considered as property to all practical intents and purposes, their holders proceeded, on the strength of this completeness of possession, themselves to assume the character and to exercise the rights of lords, granting new fiefs and holding the homage of the tenants in the alienation of portions of their fiefs to other parties, who thereupon were placed in the same or a similar relation to them as that in which they stood to the prince. The vassal of the prince became the lord over other vassals; in this latter capacity he was called and must in immediate lord; he was a lord and a vassal at the same time. In the same manner the vassal of a mesne lord might become al the lord of other arrere vassals, as those vassals that held of a mesne lord were designated. This process sometimes extended to the reduction of the baronage, which was actually become the vassal of his own vassal, and a vassal lord over his own lord.

From whatever cause it may have happened (which is matter of dispute), in all the continental provinces of the Germanic nations, many lands were from the first held, not as fiefs, that is, with the ownership in one party and the usufruct in another, but as alodial, that is, in full and entire ownership. [ALLODIUM.] The holder of such an estate, having no lord, was free from all the exacting and burthens which were incidental to the vassalage of the holder of a fief. He was also, however, without the powerful protection which the latter enjoyed; and so important was this protection in the turbulent state of society in which the Germanic nations were placed at the beginning of the empire of Charlemagne, that in fact most of the allodialists in course of time exchanged their originally independent condition for the security and subject of that of the feudatory. 'During the tenth and eleventh centuries,' says Mr. Hallam, 'it appears that alodial lands in France had chiefly become feudal; that is, they had been surrendered by their proprietors, and received back again upon the feudal conditions; or, more frequently perhaps, the owner had been compelled to acknowledge himself the vassal of his lord, and thus to confess an original grant which had never existed. Changes of the same nature, though not perhaps so extensive or so distinctly to be traced, took place in Italy and Germany. Yet it would be inaccurate to assert that the prevalence of the feudal system has been unlimited; in a great part of France alodial tenures always subsisted, and many estates in the empire were of the same description.'
After the conquest of England by the Normans, the *dominium directum*, or property of all the land in the kingdom, appears to have been considered as vested in the crown. All the lands and tenements in England in the hands of subjects," says Coke, "are held mediately or immediately of the king; for all the lands of England we have not properly allodial. This measure of tenure and acquisition therefore may be regarded as the first respect in which the system of feudalism established in England differed from that established in France and other continental countries. There were also various other differences. The Conqueror, for instance, introduced rights that were unknown on the continent of compelling the arrears vassals, as well as the immediate tenants of the crown, to take the oath of fealty to himself. In other countries a vassal only swore fealty to his lord, in England to the king of a mesne lord, he took two oaths, one to his lord and another to his lord's lord. It may be observed, however, that in those times in which the feudal principle was in its greatest vigour the fealty of a vassal to his immediate lord was usually considered as the higher obligation; while that and his fidelity to the crown came into collision, the former was the oath to which he adhered. Some feudalists indeed held that his allegiance to the crown was always to be understood as reserved in the fealty which a vassal swore to his lord. Within this system, however, it appears that in every oath of fealty taken to an inferior lord there should be an express reservation of the vassal's duty to the emperor. But the double oath exacted by the Norman conqueror did not go so far as this. It only gave him at the most, the double obligation of the vassals of the latter, who in France were nearly removed altogether from the control of the royal authority. A more important difference between the English and French feudalism consisted in the greater extension given by the former to the rights of lords generally over their vassals by what were called the incidents of wardship and marriage. The wardship or guardianship of the tenant during minority, which implied both the custody of his person and the appropriation of the profits of the estate, appears to have been enjoyed by the king in France, but in England it was confined to such incidents as could not be exercised except in England and Normandy. This, observes Mr. Hallam, was one of the most vexatious parts of our feudal tenures, and was never perhaps more sorely felt than in their last stage under the Tudor and Stuart families. The right of marriage (mariagium) originally implied only the power possessed by the lord of tendering a husband to his female ward while under age: if she rejected the match, she forfeited the value of the marriage; that is, as much as any one would give to the lord for permission to marry her. It was extended so as to include male as well as female heirs; and it also appears that although the practice might not be sanctioned by the law, some of the Anglo-Norman kings were accustomed to exact penalties from their female vassals of all ages and conditions without their consent or refusing such marriages as they proposed. The seignorial prerogative of marriage, like that of wardship, was peculiar to England and Normandy, and to some parts of Germany. It had been very usual to represent military service as the essential peculiarity of a feudal tenure. But the constituent and distinguishing element of that form of tenure was its being a tenancy merely, and not an ownership; the enjoyment of land for certain services to be performed. In England, however, it was sometimes to whatever use they grew up, it was impossible that military service should not become the chief duty to which the vassal was bound. It was in such a state of society the most important service which he could render to his lord. It was the species of service which the persons to whom fiefs were first granted seemed to have been previously accustomed to render, and the continuance of which accordingly the grant of the fief was chiefly intended to secure. Yet military service, or knight service, as it was called in this country, though the usual, was sometimes dispensed with, and the fief might be held by such as which fiefs were granted. Any other honourable condition might be imposed which distinctly recognized the *dominium directum* of the lord. [Knight-Service.]

Another common characteristic of fiefs, which in like manner arose incidentally out of the circumstances of the times in which they originated, was that they usually consisted of land. Land was in those times nearly the only species of wealth that existed; certainly the only form of wealth that had any considerable security or permanency. Yet there are not wanting instances of other things, such as pensions and offices, being granted as fiefs. It was a great question nevertheless among the feudalists whether a fief could consist of money, or of any thing else than land; and many endeavoured perhaps the more blantly to maintain that it could not. The preference thus shown for land by the spirit of the feudal customs has perhaps left deeper traces both upon the law, the political constitution, and the social habits and feelings of our own and other feudal countries than upon any other part of the system. We have therefore not only the marked distinction (nearly altogether unknown to the civil law) by which our law still discriminates certain amounts of interest in lands and tenements from the name of real property from property of every other kind, but the general consideration and maintenance in nearly every respect in which such ascendency can be upheld either by institutions or by opinion.

The grant of land as a fief, especially when it was a grant from the suzerain, or supreme lord, whether called king or duke, or any other kind of the sort, was by no means confined to the abbeys and to the admirals. The formation of manors in this country appears to have been consequent upon the establishment of feudalism. The existence of manor-courts, and the many small jurisdictions within the kingdom, is one of the most prominent features of that polity which the Normans stamp upon this country.

In the infancy of the feudal system it is probable that the vassal was considered bound to attend his lord in war for a length of time during which his services might be required. Afterwards, when the multitude of his lord's court and the palaces became more independent, the amount of this kind of service was fixed either by law or by usage. In England the whole kingdom was divided into about 60,000 knights' fees; and it had been an obligation on every feudal tenant to keep the field at his own expense for forty days, and to be present in person upon any occasion in which his lord chose to call upon him. For smaller quantities of land proportionately shorter terms of service were due: at least such is the common statement; although it seems improbable that individuals composing a feudal army could thus have the privilege of returning home some at one time, some at another. Women were obliged to send their substitutes; and so were the clergy, certain persons holding public offices, and men past 60. It was also thought that in time of war everyone should do his personal service. The rule or custom however both as to the duration of the service, and its extent in other respects, varied greatly in different ages and countries.

The other duties of the vassal were rather expressive of the relation of the subject to his lord, more than of the lord's duty to his subject. By the law, he must support his lord so far as his means and abilities permitted. He was bound to attend him in war and peace; to provide him with money, horses, arms, and other necessaries; to be subject to his authority; to supply the necessary expenses of his living; and to attend him in person. He was bound to certify his readiness to serve him when and where called upon, and sometimes to bear a part in the administration of justice.

There were however various other substantial advantages derived by the lord. We have already mentioned the rights of wardship and of marriage, which were nearly peculiar to the dominions of the English crown. Besides these, there were the payment, called a relief, made by every new entrant upon the possession of the fief, the escheat of the land to the lord when the tenant left no heir, and its forfeiture to him when the tenant was bound and guilty either of a breach of his contract, or of felony. There was besides a fine payable to the lord upon the alienation by the tenant of any part of the estate, if that was at all permitted. Finally, there were the various aids, as they were called, payable by the tenant. 'These,' observes Mr. Hallam, 'depended a great deal upon lord's custom, and were often extorted unreasonably. Du Cange mentions several as having existed in France; such as an
This settlement of the system however was anything rather than an assurance of its stability and permanency. It was now held together by a principle altogether of a different order. The Lord was no longer a most useful tax collector, and the vassals a merely slave population; but the fees were now contracts and other feudal relations, and in the eye of law became of the utmost importance to the tenant. These feudal aids are of our attention as the beginnings of taxation, of which for a long time they in a great measure answered the purpose, toll the craving necessities, and in time of war the duty of the king for substitutes for them more durable and onerous burdens.

The principal ceremonies in conferring a fief were homage, fealty, and investiture. The two first of these cannot be more distinctly or more shortly described than in the Lords of Littleton: 'Homoage,' says the Treatise of Tenures, 'is the most honourable service, and most humble service of reverence, that a frank tenant may do to his lord: for when the tenant shall make homage to his lord, he shall be upright and his head uncovered, and his lord shall sit and the tenant shall kneel before him on both his knees, and hold his hands jointly together between the hands of his lord, and shall say thus: I become your man, from this day forward, of life and limb, and of earthly worship, and unto you shall be true and faithful, and bear you faith for the name of the Lord, and shall serve you in all things so that I owe to our sovereign lord the king; and then the lord, so sitting, shall kiss him.' Religious persons and women instead of 'I become your man,' said 'I do homage unto you.' Here it is to be observed there was no oath in the homage, the fealty commonly in an oath, without any obeisance. 'When a freeholder (frank tenant),' says Littleton, 'doth fealty to his lord, he shall hold his right hand upon a book, and shall say thus: Know ye this, my lord, that I shall be faithful and true unto you, and faith to you shall bear for the lands which I claim to hold of you, and that I shall lawfully do you the customs and services which I ought to do at the terms assigned, so help me God and his saints; and he shall kiss the book. But he shall not kneel when he maketh his fealty, nor shall he be so humbled, or awesome, as is aforesaid in homage.' 'Investiture or the actual conveyance of feudal lands,' says Mr. Hallam, 'was of two kinds; proper and improper. The first was an actual putting in possession upon the ground, either by the lord or his deputy. The second was symbolical, and consisted in the delivery of a turfs, a stone, a wand, a branch, or whatever else might have been made usual by the caprice of local custom. Du Cange enumerates not less than 96 varieties of investitures.' The practice of giving a feoffment in fact the feudal investiture. [FOOTNOTE.]

The feudal system may be regarded as having nearly reached its maturity and full development when the Norman conquest of England took place in the middle of the 11th century. It appears accordingly to have been established here immediately or very soon after that event in as pure, strict, and comprehensive a form as it ever attained in any other country. The whole land of the kingdom, as we have already mentioned, was without any exception either in possession of the king himself, or held by feudal tenure of the crown, or of them by sub-infeudation. Those lands which the king kept were called his demesne (the Terrae Regis of the Domesday Survey), and thus the crown had a number of immediate tenants, like any other lord, in the various lands reserved in nearly every part of the kingdom. No where else, also, before the restrictions established by the charters, were the rights of the lord over the vassal stretched in practice nearer to their extreme theoretical limits. On the other hand, the vassal had arrived at what was almost the full point of his position in the system; the hereditary quality of fees was fully established; his ancient absolute independence and subjection had passed away; under whatever disadvantages his inferiority of station might place him, he met his lord on the common ground of a feudal relationship; and under the feudal law, there might be considerable contention about what these rights and obligations on either side were, but it was admitted that on both sides they had the same character of real, legally binding obligations, and legally maintainable rights.
land when a man parts with his entire interest in his lands. This change was effected by the statute of Quia Emptores with regard to all persons except the immediate tenants of the crown, who were permitted to alienate on paying a fine to the king by the statute 1 Edw. III. c. 12. This statute was only a decree against the spirit of feudalism, and eminently favourable to its conservation and extension, was stopped, another practice, altogether adverse to its fundamental principles, was introduced and established, that of allowing voluntary alienation by persons during their lifetime.

It was a consequence of feudal principles, that a man's lands could not be subjected to the claims of his creditors. This restraint upon what may be called involuntary alienation has been in a great degree removed by the successive enactments passed in recent years for the benefit of the man's lands liable for his debts; although, after a lapse of near six hundred years since the statute of Acton Burrell, the lands of a debtor are not yet completely subjected to the just demands of his creditors. This statute of Acton Burrell, passed 11 Ed. I. (1293), made the deisible bargages, or burgh tenements, of a debtor saleable in discharge of his debts. By the Statute of Merchant, passed 13 Ed. I. (1295), called Statute 3, a debtor's lands might be delivered to his merchant creditor till his debt was wholly paid. The profits of sale were to go to the creditor. The statute of Westminster the Second, passed the same year, a moiety of a debtor's land was subjected to execution for debts recovered by judgment [Elegit]; and finally, by the several modern statutes of bankruptcy, the whole of a bankrupt's estate was declared to be liable for the payment of his debts. Further, by a recent act (3 and 4 Wm. IV. c. 104), all a deceased person's estate in land, of whatever kind, whether he was a trader within the bankrupt laws or not, is liable to the payment of his debts. [Estate.]

An attempt had been made to restore in part the old restraints upon voluntary alienation by the statute 13 Ed. I. c. 1, entitled 'De Donis Conditionalibus,' which had for its object to enable any owner of an estate, by his own disposition, to sell his whole interest in it for a nominal consideration. So far as the statute went, it was an effort to strengthen the declining power of feudalism. The effect was to create what were called estates tail, and to free the tenant in tail from many liabilities of his ancestor to which he would be subject if he were seized of the same lands in fee-simple. [Estate.]

The power which was thus conferred upon landholders of preventing the alienation of their lands remained in full force for nearly two centuries, till at last, in the reign of Edward IV., by the decision of the courts (a.d. 1475), the crown was not till as late as the reign of Henry VIII., and the recovery was completely established. [Recovery.]

The practice of conveying estates by fine, which was of great antiquity in England, and the origin of which is by some referred to the time of Stephen or Henry II., was revived by the charter of 'An Act for abolishing Heritable Jurisdictions,' and the 20 Geo. II. c. 46. An act for the recovery of estates held under the tenure of the statute every father was empowered by deed or will, executed in the presence of two witnesses, to appoint persons to have the guardianship of his infant and unmarried children, and to have the custody and management of their property. It is a sale, and the same considerations have been made. The act and other institutions of feudalism were put an end to in Scotland by the statutes, passed after the Rebellion, of the 20 Geo. II. c. 43, entitled 'An Act for abolishing Heritable Jurisdictions,' and the 20 Geo. III. c. 26. The tenure of tontine, or the sale of estates held in Scotland, for giving to heirs and successors a summary process against survivors, and for ascertaining the services of all tenants, &c.' Nor have estates-tail in Scotland yet been relieved from the strict operation of the statute in perpetuity, thereby in the invention of common recoveries, or by levying a fine, or by any legislative enactment.

We have enumerated the principal statutes which may be considered as having broken in upon the supremacy of the feudal system, and believed to the tenant, by which the tenant of land can now exercise over it, and the right which others can enforce against him in respect of his property in it. But the system of tenures still exists. The statute of Charles I. only abolished the feudal system; it did not abolish such parts of the feudal system as had become generally intolerable; but all lands in the kingdom are still held either by socage tenure, into which military tenures were changed, or else by the respective tenures of frankalmoine, grand serjeant, and copyhold, which were not abolished. What they are in some places, as at present subsist, cannot be more simply exemplified than by the rules as to the Forfeture and Exchequer of lands, both of which however have undergone modifications since the statute of Charles II.
enter upon a course of study more laborious and extensive than is consistent with pursuits not steadily legal. Still, a general notion may be acquired of their leading characteristics by referring to several of the articles already quoted, and to such heads as Attainder, Baron, Copyhold, Courts, Distresses, Estate, Lease, Manor, Tenures, and such other subjects as have been referred to in the last mentioned work.

The notions of loyalty, of honour, of nobility, and of the importance, socially and politically, of landed over other property, are among the most striking of the feelings which may be considered as having their birth from the feudal system. These emotions are opposed to the tendency of the commercial and manufacturing spirit which has been the great moving power of the world since the decline of strict feudalism; but that power has not yet been able to destroy, or perhaps even very materially to weaken the opinion which has been bred in the minds of the masses by generations of meannours, and precise determination of penalties. Its consequences were immense, for previously to its publication criminal jurisprudence in Germany was most deplorable. Its excellence both in substance and form was such, that it was adopted as the model of similar attempts at a reform of criminal law by other portions of Germany and Switzerland. Saxony, Wurttemberg, Hanover, Oldenburg, and the cantons Zürich, St. Gall, Basle and the Grisons modified their codes in accordance with it. In fact, the work of Feuerbach was a step in the right direction of the commission to adopt the Code Napoleon to the wants of Bavaria; the result of his labour however was not adopted.—That criminal law has become a science, and that this science has had a great influence on legislation all over the continent, and on the whole, and that the present state of law in England which had been harsh and bloody became humane: liberty of action was substituted for previous restraint, and the conditions were point out under which the state ought to interfere by penalties with the rights of the citizens. The leading idea of his work consists in the proposition that the verdict of the jury is not a complete verdict in France by the rules laid down during the revolution for the composition of the jury. Like Berenger, Dupin, and other French writers who have exposed the faults of the existing mode of criminal proceedings in France, Feuerbach looks back to the original French code and contemplates its obsolete provisions as models of modern legislation. A very able part of that work is the comparison of the French and English juries, which is entirely in favour of the latter, as, according to Feuerbach’s opinion, the principle of the institution is not completely perverted in France by the rules laid down during the revolution for the composition of the jury. Like Berenger, Dupin, and other French writers who have exposed the faults of the existing mode of criminal proceedings in France, Feuerbach inveighs against the present mode of trial in France, and attacks the institution, on account of its being fraught with too many democratic principles. This tendency of Feuerbach’s opinion had a very unfavourable influence on the Bavarian government when the introduction of that institution came under consideration, and ultimately it was the cause of the jury not being granted to the country. This circumstance proves that although a liberal legislator he was by no means in favour of democracy. In 1817 he was made second president of the court of appeal at Bamberg, and in 1821 he was nominated a general arbitrator of the emperor, exercising those functions his sphere of action was latterly entirely confined, with the exception of opinions given in important
civil and criminal cases. One of those was the notorious affair of Kaspar Hauser, which produced so much sensation all through Europe. With his wonted and acknowledged perspicacity, Revius investigated this revolting case, and has recorded the results of his inquiry in his last work, ‘Kaspar Hauser, an instance of a psychological crime.’ The two following passages of that book seem to implicate a reigning family of the south of Germany. Those passages are:—

1. ‘That in cases of murder by poison, the body is not accessible to the arm of justice.’ 2. Those spheres are defined as ‘golden castles, the entrance of which is guarded by giants who do not allow a ray of light to penetrate.’ A rumour prevails that his sudden death at Frankfurt, in May, 1833, was the result of a host of the latter evil sphere, of which appears to have been lifted by him. His connection with the Bavarian government became in later years very disagreeable in consequence of his decided opposition to its illiberal policy. Feuerbach was a man of polite requirements as well as of professional eminence. The elegant diction of his productions has powerfully contributed to improve the style of recent German writers on law. In this respect his ‘Exposition of remarkable Criminal Cases, founded upon documents,’ merits particular mention.

Fever, continued. It has already stated that the symptoms are divided into two groups, according to the persistence or non-persistence of the morbid phenomena. (Agu). Of these classes the first includes the Fevers called Intermittent, in which the morbid phenomena, after having continued a certain time, disappear, but reappear at intervals of a day or two, or even a week; thus, no recurrence and remission taking place many times. In the second class the febrile phenomena do not wholly disappear, but merely diminish in violence; do not intermit, but remit: these constitute the Remittent. In these diseases of consumption, there is no remission or remission of the febrile state, but a constant and uninterrupted progression of the disease to a certain termination; fevers in which the phenomena are thus uninterruptedly continuous, constitute the class of Continued Fevers.

Since the concurrence and succession of phenomena which constitute a paroxysm of intermittent fever, or an attack of ague, afford a paradigm, or example, of the febrile state in general, of course the individual phenomena which take place in a sensation of cold is sometimes intolerable; chilliness is felt even in a heated room, or in a warm bed: hence the sensation of cold, sometimes increasing to shivering, which has been considered one of the most constant signs of fever. But this feeling of chilliness by no means denotes that the temperature is low, as it sometimes is, but exists in spite of an elevated temperature; it arises from an internal cause, and is not to be counteracted by external heat.

While the patient experiences the sensation of cold, there is no diminution of the quantity of caloric in the system. The thermometer applied to any part of the body commonly rises as high as in the state of health; and the skin, touched by the hand of another person, communicates not the feeling of cold, but often, on the contrary, the feeling of heat. There is no positive abstraction of caloric from the body, nor any failure in the process, whatever it be, by which animal heat is generated; there is only altered sensation, in consequence of derangement in the function of the skin. In this form of fever, the cold is often carried to a very high amount of shivering; in others there is an attack of well-
marked rigor, and in others, again, there is either no feeling of cold, or it is so slight that it escapes observation. The pulse is slightly accelerated, and may be felt with considerable force. The breath may, as a rule, be heard without taking pains to detect it; it is loud enough to be heard in a quiet state of health: sometimes it is also quicker; at other times it is slower; now and then it is scarcely changed in frequency, but its action is invariably weaker than in its sound state.

If the same time the respiration is affected in a corresponding degree: it is shorter and quicker than natural; the chest does not expand so freely, and compensation seems to be sought in an additional number of respirations. Often times neither the pulse nor the respiration appears to be affected. Sometimes the patient really feels perfectly well, he rises and walks across the room the pulse instantly becomes rapid, and the respiration quickened almost to fainting.

The transition from the affection of the nervous and sensorial to that of the circulatory and the respiratory systems is thus clear and striking. Physiology teaches us how closely these systems are connected, and how mutually they are dependent upon each other, the closest observers and the ablest experimenters contumaciously confounding that they are not connected, that is the least dependent of the organism's functions. The nervous system being first deranged, it is thus communicant to what we know of the healthy function of the animal economy that the circulatory and respiratory systems should be next to suffer.

How long the nervous system may continue thus deranged before any other organs are involved, excepting the circulatory and the respiratory, to the extent just stated, is uncertain. There can be no doubt that in this mild form of disease the duration of the isolated state of disorder, if we may so express it, is from a few hours to several days. The rapidity or the slowness with which other systems of organs become involved seems to depend very much upon the acuteness of the attack. In general, the interval between the immediately preceding symptoms and the phenomena succeeded by each other, and the entire series becomes complete. But this is not, and it is important to bear in mind that it is not, invariably the case, for experience teaches us that the severity and danger of the disease are not diminished by the slowness of its approach; and that cases occur which are slow in forming, and which do not for a while excite alarm, that ultimately become truly formidable.

It has been stated that the circulation languishes with the diminished energy in the sensorial faculties, and the brain becomes the vessels of low ebb. The pulse, which was feebler than natural, becomes more full, more strong, and generally more quick than in a sound state; and now the skin, which was cold, becomes abruptly hot. The previous cold consisted, for the most part, of altered sensation, there being little or no loss of color; but the feeling of heat, on the contrary, is the result of an actual increase of temperature; for the heat in the interior of the body, as well as on the surface, rises in some cases several degrees, as is ascertained by the thermometer, and the action of urine is remarkable. According to the standard time of 106°, by which it is seldom found to amount in this form of fever. The heat is at first not uniform over the entire surface of the body; it often happens that some parts are cold while others are burning hot. The heat is sometimes particularly intense over the forehead or over the back part of the head, or over the whole scalp, while the cheeks are commonly flushed. All these symptoms denote a morbid condition in the action of the heart and arteries.

Since the generation of animal heat is so intimately connected with the circulatory functions, it is probable that the increase of temperature is the result of some morbid action of the capillary vessels belonging to these systems. What the disordered action of these vessels is which produces increase of temperature, is not ascertained, but the observation is in some degree accomplished when it is ascertained that one condition of these functions is invariably connected with a morbidly diminished temperature; another with a morbidly augmented temperature; and another with the temperature of health.

Immediately the circulation is thus excited, the functions of secretion and excretion become deranged. The mouth is not thirsty, nor is the stomach to be offended with air; thirst is scarce; the secretions of the lungs, especially also of the pancreas, and certainly of the mucous membrane lining the whole alimentary canal, is not altered by the unnatural quantity, colour, and nature of the disposition and appearance; and the skin is not more remarkable for the increase of heat than for that of dryness and harshness which it communicates to the touch. With the excitement of the pulse and the increase of the heat, the pain in the back and limbs, and the skin becomes febrile uneasiness, is much augmented.

At this period, then, the fever is fully formed; the sense of morbid phenomena is complete: anything more that happens is referable to degree and to duration, and may be the result of one or other of these circumstances, or of their conjunction.

As soon as the preternatural heat comes on, pain begins to be felt in the head. The pain of the head is often slight at first, and occasionally it remains slight throughout the disease; at other times it is present severe. Cases sometimes occur, in which, instead of pain there is only a sense of dullness, and now and then the uneasy feeling is described as that of lightness; or on the contrary, as that of heaviness or weight. But whether the feeling be pain, and the pain be slight or severe, or whether it be dullness or lightness, it is proportionally more severe in the condition of the organ and requires a similar treatment.

With the accession of pain of the head there is a manifest increase in the disturbance of the sensorial functions. The inability to think, to compare, to reason, to judge, to form any idea, and, in a word, to think and act, is so complete, that the mind appears to the observer as the dullest and most senseless that he has ever seen. Notwithstanding the rapidity with which the full glare of day does not excite uneasiness, while in many the ordinary light of a room cannot be borne: in these cases the opening between the eyelids is frequently observed to be contracted, as if from an involuntary contraction of the orbicular muscles of the eyelids, which is of no inconvenience, and this state of the eyelids assists in giving to the eye its dull and hazy expression so characteristic of fever. The increase of sensibility in the organ of hearing is equally striking. Sounds which were not noticed during healthy become acutely and even distressingly sensible, while accustomed noises, such as that of a crowded street, are always painful and often intolerable. The skin, considered as an organ of touch, is in a like morbid state. An impression barely sufficient in the healthy, is exaggerated in the morbid. The skin is peculiarly sensitive when the disease is in its morbid stage; it becomes more tender, and alternations of temperature which in ordinary states are scarcely perceptible are painful. The tastes of taste and smell, on the contrary, are nearly obliterated, owing to the altered condition of the membranes upon which the sensitive nerves are distributed.

From the earliest attack of the disease the sleep is disturbed and unrestful; now scarcely any is obtained; the febrile uneasiness will not allow of repose, the patient cannot remain in any position long, incessantly shifting his position. The eye is often smarting; the eyelids become red, and the conjunctiva retains its softness, and does not impress the finger with that sensation of sharpness which is characteristic of ordinary inflammation. Occasionally, however, a degree of sharpness may be perceived in it, and it is not easily compressed.

The thin white fur which had already appeared on the tongue progressively increases in extent and thickness. The colour of the fur usually changes as the disease advances, from a dirty white to an ash colour; but in a form of the disease the tongue always remains many and
never becomes brown. This state of the tongue is almost always accompanied with thirst, but it is never urgent. There is always a loss of appetite. The bowels are generally constipated, and the secretions of the whole alimentary canal are in a state of constancy.

Thus we perceive that the progress of the disease consists in increasing mental and corporeal weakness; increasing pain in the back, loins, and limbs; increasing heat of skin, pulse, and febrile uneasiness, together with the bowels have no opportunity of adjusting their functions in the usual way; and the constant affection does not increase beyond what has been described: there are no greater indications of disease in the respiratory organs, and the mucous membrane of the stomach and intestines does not denote any progressive advancement in disease.

In the great majority of patients in whom the symptoms continue thus moderate, the disease disappears about the end of the second week, that is, they are convalescent at that period; but it usually requires eight or ten days longer before they have regained sufficient strength to leave the sick chamber. Sometimes, although there is no greater severity in the symptoms, the disease is more protracted, and the recovery is not complete until the fourth or even the fifth week. Beyond this period it is very rare for this form of the disease to recur.

Almost all who are attacked with the malady in this its mildest form recover; but now and then it happens that the symptoms go on with this degree of moderation until about the end of the second week. Then at the period when it is usual for convalescence to take place there is no perceptible improvement; the patients seem even to grow weaker; they lie more prostrate in the bed, and they are seen incapable of moving; still they complain of no pain or uneasiness, and it is not easy to detect any trace of disease in the organs. The pulse does not take the usual form, and ultimately they sink exhausted. In these cases, on examination after death, it is commonly found that disease has been preying on some vital organ, although its presence could not be detected during life; and this termination of the milder type of fever rarely happens excepting in aged persons whose constitutions have been enfeebled by previous diseases, or worn out by the various causes which depress and exhaust the powers of life.

With an occasional exception of this kind, the disease in this form is characterized by the following symptoms: by the change in the state of the tongue; and the fibrous indication of returning health is remarkably uniform: it is almost always marked by longer and more tranquil sleep. Instead of that restlessness which is so characteristic of fever, and which forms the most distressing part of it, the patient sometimes dawdles and dreams, and the first time from an undisturbed slumber, he often spontaneously says that he feels better. Better he may feel, for his febrile uneasiness is gone; the load that oppressed him is shaken off; he is a new being. The pain of the head and of the limbs is so much diminished, that often he cannot help expressing his thankfulness at the change. The constipation becomes more animated: its natural expression returns; the tongue begins to clean, and after this state of the system has continued for two or three days the appetite returns, and under the stimulus of the due appetite, the proper operation of the bowels is resumed. The pulse usually sinks about ten beats below its highest point at the height of the fever; it is not uncommon however for it to remain quick during the entire period of convalescence; and for some considerable time it is easily excited on any movement of the body, or any emotion of mind. In some cases, on the contrary, when the attack has been very mild, it sinks considerably below the natural standard, and is intermittent, a sign which has been observed to be attended with a sure and steady convalescence. In the mean time the temperature of the skin gradually improves; and in a short time the patient is restored to his usual health and vigour.

What the condition of the brain and of the organs correspondingly affected is, in these mildest cases, we do not pretend to determine. We can only say that the constant affections of the brain, and the mental symptoms which are in some degree inherent in the disease, and are generally associated with it, are not more manifest in these cases than they are in the more acute and severe attacks of it, and that in some degree the mental symptoms of the patient, in some degree the mental symptoms of the patient, are not more manifest in these cases than they are in the more acute and severe attacks of it, and that in some degree the mental symptoms of the patient, and the peculiarities of the case, mark the disease in the same manner as they do in other forms of it.

The fever in this mild form is now at its height. It remains stationary, or at least with very little change, for an indefinite period, generally five or six days. The constant affection does not increase beyond what has been described: there are no greater indications of disease in the respiratory organs, and the mucous membrane of the stomach and intestines does not denote any progressive advancement in disease.

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rendered extremely stifling; that a great canal passes through the midst of the city, which at the overflowing of the tide (the river) is filled with water; that on the declivce of the river this canal is gradually dried up, and the people throw into it all manner of filth, carrion, offal, and so on; that in consequence which is intolerable and intolerably offensive; and that from this source the plague constantly springing up every year, press upon the inhabitants, and is stopped only by the return of the Nile, the overflowing of which washes away this load of filth; that in Egypt and in the northern parts of Sudania they sometimes cause a famine by devouring the fruits of the earth, and when they die create a pestilence by the putrefaction of their bodies; that this putrefaction is greatly increased by the dampness of the climate, which, during the day, is hot and in the night cool, and the cold and dampness of the effluvia which arise from this immense quantity of putrefying animal substance, combined with so much heat and moisture, continually generate the plague in its intensest form; and that the Egyptians of old were so sensible how much the putrefaction of dead animals contributed towards breeding the plague, that they worshipped the bored Isis for the services it did in devouring great numbers of serpents, which, they observed, injured by their stench when dead as much as by their bite when alive.

The following statistical statement recorded by Pringle, and which daily occurred to him, of the production of fever exquisitely typhoid (according to the language of that day, jail and hospital fever), and of the sudden transition of the intermittent and remittent into the continued and typhoid type, from the peculiar climate and certainly of animal origin. Whenever wounded soldiers with malignant sores or mortified limbs were crowded together, or whenever any few of such diseased persons were placed in a room with the sick from fever, those labouring under intermittent and remittent, for example, a severe and mortal typhus immediately arose; nay, whenever men previously in a state of sound health were too much crowded together for any considerable time, a typhus (full of hospital fever) was sure to be produced.

 Instances of such occurrences that are too numerous to be cited, but they are so clearly stated and so striking that they ought to be consulted by whoever is desirous of clearly tracing the operation of this great cause of fever. But by far the most potent febrile poison derived from an animal origin is that which is formed by exhalations given off from the living bodies of those who are affected with fever, especially when such exhalations are pent up in a confined space, the air being heated by a number of persons, in a small and heated apartment in London, with no ventilation of fresh air, is perfectly analogous to a stagnant pool in Ethiopia full of the bodies of dead locusts. The poison generated in both cases is the same, the difference is merely of quantity. Let the sun, her silded and pent-up wind, her stagnant and teeming marsh, manufactures plague on a large and fearful scale. Poverty in her hut, covered with her rags, surrounded with her filth, striving with all her might to keep out the pure air and to increase the heat, imitates nature but too successfully; the process and the product are the same, the only difference is in the magnitude of the result. Penury and ignorance can thus at any time, and in any place, create a mortal plague: and of this no one has ever had a better proof than the people of the country of St Andrew, in a state of great suffering, of almost total destitution, of sound health, much more when in disease, and above all when that disease is fever, to produce a poison capable of generating fever, no one disputes, and the fact has never been called in question. Thus far the agreement among all medical men of all ages is complete.

Since the above was written the true nature of these poisonous exhalations has been demonstrated by direct experiment. It has been found that if a quantity of the air in which these exhalations are diffused be collected, the vapour condensed by the collection of the exhalations would, on being cold, produce an abominable stench of animal or vegetable matter be obtained which is found to be highly putrescent, constituting a deadly poison. A minute quantity of this condensed poison applied to an animal previously in a sound health destroys life with the most instantaneous symptoms of malignant fever. If from ten to twelve drops of a fluid containing this highly putrescent matter be injected into the jugular vein of a dog, the animal is seized with acute fever, the action of the heart is wordu-
mately excited, the respiration is accelerated, the heat increased, the pulse at its greatest extreme, the muscular power exhausted, until the animal lies on the ground wholly unable to stir or to make the slightest effort, and after a short time it is actually seized with the black vomit, identical in the nature of the matter evacuated with that which is so common in the fevers and which is the effect of the fever. It is possible by varying the intensity and the dose of the poison thus obtained 'to produce fever of almost any type, endowed with almost any degree of mortal power.'

When these facts are connected with the absorbing power of heat manifested in the animal from which the above passage is extracted (2nd vol. of the Philosophy of Health), we can no longer wonder that when the poison is in a high degree of concentration a single inspiration of it should be capable of producing almost instantaneous death; and then when it is diffused into the atmosphere. In the centred state, the continual inspiration of it should generate the mortal disease which experience teaches us that it produces.

It is impossible to estimate too highly the importance of the medical point of view, the direction in which human industry and skill should be put forth to destroy the great sources of fever, that is, to put an end to that terrible malady by whose sole agency one half of the human race perishes, and whose principal ravages are carried on by a small portion of the population, by which so many to the possessor, and most useful to the possessor.

The treatment of fever, a subject of some difficulty, but of the utmost moment, belongs to the several heads of Systema, Physica, Ethica, and Fever, Pharmacology, and Practice of Medicine; Starling's Discoveries relating to Fevers; Mead's Method of Treating Contagion, and the Methods to be used in Preventing it; Sir John Pringle's Observations on the Nature and Cure of Hospital and Jaundiced Fevers, in a letter to Dr. Mead; and Observations on the Diseases of the Americas by a Correspondent on Fever; Southwood Smith's Treatise on Fever; Physiology of Health; Copland's Dictionary of Practical Medicine; Cyclopaedia of Practical Medicine.

FEVERSHAM, or FAVERSHAM. [KENT.]

FEZ. [MAROCCO.]

FEZAN, a country in northern Africa, between 26° and 31° N. lat. and 12° and 16° E. long., may be considered as the greatest oasis of the Sahara, by which it is enclosed on the west and east, and partly also on the south. On the north it borders on a less desert region, which belongs to the regency of Tripoli. Where it borders on the desert, its boundary, of course, is not exactly fixed. On all sides it is surrounded by nomadic nations; on the north and east by Arab tribes, and on the south and west by the Tibboos and Tuaregs.

Its northern part is traversed by two ridges of stony and sandy mountains, or rather hills; for it seems that their elevation above their base does not exceed 1200 feet. They are in general parallel to each other, and divide the country into two parts; the eastern they take the name of Gharhan Mountains and Soudah Mountains. The country south of these ridges contains large plains, covered with sand, and without any trace of vegetation; but some ridges of hills from 400 to 600 feet high, rise above the plains and inclose valleys between them, which are the only parts capable of cultivation. The cultivable portion of the country hardly exceeds one-tenth of its surface, which according to Hornemann, extends 300 miles from north to south, and 200 from east to west. The trade is carried on by means of camel caravans, and is composed of thick beds of blue clay, alternating with sandstone, beds of alum-slate, and thin strata of porphyritic clay-stone (Denham); the tops consist of sandstone. The soil in the valleys is a stratum of sand, lying on chalk or clay, which is rendered fit for agricultural purposes by irrigation. As there are no rivers or brooks, and only very few natural springs, the irrigation is effected by wells, water being commonly found at a depth of about 100 feet. The heat in summer is very great, but in winter, when the northern winds, the cold is unpleasant even to Europeans. Rain is very rare; in some districts it does not rain for some years together; and in all of them it rains very little at a time. Light crops are obtained; the year's harvest is usually gathered in the north and south, which fill the air with clouds of sand.

Date-trees, which constitute the principal wealth of the country, grow plentifully near the towns and on some plains, where the soil is impregnated with saline matter. Some sheets, barley, and douras are cultivated, but not enough for the consumption. Goats and asses are reared in great numbers; cows, sheep, horses, and camels are not so numerous. All these animals feed on dates or their kernels.

The principal town, Mourozack, is surrounded by a wall, and contains about 200 inhabitants. Towards the northern boundary is Sokcar, with about 2000 inhabitants. Zulis, east of Mourozack, is not so large.

The number of inhabitants is estimated by Hornemann at 76,000 or 75,000. In the northern districts they resemble their posterity, the Arabs, but in the southern they have rather the features of the Tuareg Tibboos, who belong to the widely spread nation of the Berbers. They are all Mohammedans, and commonly use the Arabic language. Their sovereign exercises despotic power, but is, for some degree less so, limited by the laws of the Koran. The country annually sends presents of gold-dust and slaves. He receives from his subjects a portion of the produce of the land, and levies some duties on the merchandise which passes through his territories.

Fezzan is of some importance in a commercial point of view, being the most frequented road by which Soodan communicates with the countries along the Mediterranean. From October to February numerous caravans arrive at Mourozack from Cairo, Bengazi in Barca, Tripoli, Gadames, and others from west, Bornou, and the coast. In the spring, the Tuaregs, and Arabs then visit its market. The traders dispose of part of the produce of their respective countries at Mourozack, and carry the rest farther on. The industry of the inhabitants is limited to the manufacturing of light goods, coarse blankets, and clothing for the lower classes. (Hornemann's Journey from Egypt to Fezzan; Denham and Clapperton's Narrative of Travels and Discoveries, &c.)

FIBRE [Bryun., vol. iv. p. 121; MURD.]

FIBRE and FIBROUS TISSUE. A fibre is a minute thread or filament, apparently the form which solid animal matter, for the most part, assumes in its first stage of organization. It has been stated, that the different kinds of matter which enter into the composition of the animal body, when the analysis is carried to its ultimate point, are reducible into two primitive forms: first, a substance capable of coagulation, but possessing no determinate figure; and secondly, a substance consisting of rounded particles. The coagulable substance is capable of existing by itself; the rounded particles are never found alone, but are invariably combined with coagulated or coagulable matter. Alone or combined with the rounded particles, the coagulable matter forms, when liquid, the fluids; when coagulated, the solids.

When solid, the coagulable matter is disposed in one of two forms, either in that of minute threads or fibres, or in that of minute plates or laminae; hence every solid of the body is said to be either fibrous or laminated. Useless or lamellated tissues are variously modified, either alone or in combination with the rounded particles. These different modifications and combinations constitute different kinds of organic substance. When so distinct as obviously to possess a peculiar structure and peculiar properties, each of these modifications is considered as a separate form of organized matter, and is called a primary tissue. Of these primary tissues, the peculiar substance termed membrane appears to be the simplest, which is formed by the arrangement of this concrete matter into a thin film or sheet, which is so slight as to pass through the coarsest needles, and to the naked eye. Vast numbers of these threads successively uniting, at length form a single thread of sufficient magnitude to be visible, but still smaller than the finest thread of the silk-worm. If the length of these threads be greater than their breadth, they are termed fibrous; if contrary, their breadth exceed their length, they are termed plates or laminae. By the approximation of these fibres or plates in every possible direction, and by their accumulation, combination, and condensation, is constituted the simplest form of organized substance, the primary tissue called membrane.

Membrane, composed for the most part of fibres, so disposed as to form a net-work, may be said to constitute the special tissue of the animal body; for the fibrous net-work are poured the different kinds of animal matter which constitute the different kinds of animal tissue. Thus nerves are composed of nervous matter deposited in
the interstices of a membranous net-work; muscles are composed of muscular substance deposited in the interstices of a membranous net-work; bones are composed of earthy particles deposited in the interstices of a membranous net-work. The threads of which this membrane is composed appear net-work or net-worked, and consist of their fibrous threads or filaments when built up into complex structures. Hence, perfectly formed membranes, nerves, muscles, and bones, present a fibrous structure, often visible to the naked eye, and always manifest in the analysis of these organs. The larger part, in the nerves and muscles for example, are obviously formed, consist of smaller fibres, and these of still smaller fibres, until we come at length to a primitive fibre of extreme minuteness. Professor Ehrenberg states that there are nervous fibres which can only be discerned by the aid of a magnifying glass. This is what we shall see in the 30th of March and others which can only be brought into view by a magnifying power of 800 diameters; and the primitive muscular fibres are commonly supposed to be still more minute.

But though membranes, muscles, nerves, and bones are composed of fibres and present a manifestly fibrous structure, yet there is one particular tissue which is called fibrous by way of eminence; a bad name for it certainly, but still it has been so long and so extensively in use among anatomists that it is difficult to change it. The tissue so spoken of consists of the membrane that covers the bones and cartilages (the periosteum and perichondrium); the membrane that is spread over or that forms a part of certain muscles, constituting the muscular spinae; the great round integument of the arm and leg; the outer membrane that envelops the brain and spinal cord (the dura mater and its continuation down the spinal canal); the firm membrane in which the more delicate muscles and the humours of the eye are contained (the tectorial membrane); the outer membrane that contains the heart (the pericardium); the membranes by which the bones in general are tied together and the joints in particular are secured, called ligaments; and the firm cords in which many muscles terminate and which form their most prominent terminations, tendons.

To.frame thin sections of these substances are extensively diffused through the body, and are apparently independent of each other, yet they are closely connected together, and form a peculiar system. The firm and resisting threads which constitute the back of all the delicate organs are composed of condensed cellular tissue. The peculiar animal substance of which they are consist is coagulated albumen and gelatine, intermixed with a small quantity of mucous and saline matter.

All the proper fibrous organs possess, in the language of anatomists, a constant nature; they may receive large and comparatively small quantity of blood, and their blood-vessels are so minute in size, that they are generally incapable of admitting the red particles of the blood. They receive few nerves, and these are so small that some anatomists have been led to believe they are not supplied with any nerve at all; but their sensibility in certain states of disease proves that they are not absolutely destitute of sentient nerves. In like manner, few absorbents can be traced to them; yet the ravages of disease in the neighbourhood of joints, the sloughing of tendons, and the destruction of the peritoneum by the pressure of aneurism, abundantly testify that they are supplied with absorbent vessels. But the office of all the fibrous organs is mechanical; they are adapted either to contain, support, and defend more delicate organs, or to form structures which consist of excessively delicate threads.

A high degree of organization, great vascularisation, great sensibility, great sensibility, would have disqualified them for their office. What they principally need is a power of cohesion sufficient to enable them to resist rupture, and to sustain the pressure of the fluids to which they are exposed in the violent movements of the body; the less sensibility they have the better, and accordingly they are so organized that while their physical properties render them by far the strongest parts of the animal frame, they are endowed only with a moderate degree of vitality to constitute them important parts of the living system.

(Grainger's General Anatomy; Cyclopaedia of Anatomy and Physiolog._in loc._Philosophy of Health, vol. I.)

FIBRE, VEGETABLE, one of the most elementary forms of vegetable. It consists of excessively delicate threads, twisted spirally in the interior of a cell or tube. It is uncertain whether the fibre is solid or hollow, its tenuity being such as to baffle all microscopic observers who have yet examined it. It is this elementary fibre which, being turned spirally round a long delicate tube with its spires in contact, forms the elastic spiral vessel. It occurs in the interior of common cells, when its turns cross each other and are covered with a film. It is a peculiar fibrous tissue which forms the lining of an antler, and is supposed to have some connection with the opening of that organ. In its naked state, uncombined with membrane, it is supposed to be very rare. On the surface of some seeds, as in currant, mixed with a coat of starch, it is abundant, in the form of spiral threads of a highly elastic nature. It is also reported to appear in several minute fungi, but this is a point that requires confirmation. Vegetable fibre should not be confounded with the woody fibre of plants, which consists of a coat of starch, and single or adhering in bundles. This, which forms the thread of hemp, flax, and the like, some account is given here. [Woody Tissue.]

FIBRIN (coagulable lymph, gluten), an animal principle consisting of the blood of the coagulum of the blood which remains after the removal of the red particles [Blood], and forming the basis of muscle. The fibres of the blood is best obtained by what is called whipping the blood, that is, by rapidly stirring a quantity of fresh blood with a spoon or a piece of stick. During this process, the blood coagulates and the coagulum, after being filtered through the spoon or stick. The red particles which are mixed with this coagulum may be removed by washing it in large and repeated portions of water; the substance that remains is fibrin. During the state of life the fibrin is contained in solution in the fluid part of the blood, the liquor sanguinis. Professor Müller obtained fibrin in a state of purity from frog's blood by opening one of its large arteries, or by laying bare the heart, and collecting all the blood he could receive. All the blood is poured into a watch-glass and the process of coagulation was observed. It was observed that previously to the complete coagulation of the blood there formed a small colourless coagulum clear as water. 'Having brought a drop of pure blood,' says Müller, 'I then removed the coagulum by means of a silk thread, or a pair of scissors, so that the blood corpuscles lay completely separated from each other, I observed that in the interval between the blood-corpuscles a coagulum of previously dissolved matter was produced, by which the whole separated blood-globules were connected together. I was then able to remove at the same time all the blood-corpuscles, notwithstanding their wide distribution and the size of the intervals between them, by raising with a needle the blood coagulum occupying the intervening spaces. As the blood-corpuscles are necessarily very numerous, and in a very exceedingly minute state, this observation admits of the greatest distinctness, and allows no ambiguity to remain on the subject. There is still however an easier and more convincing method of proving that fibrin is dissolved in frog's blood. As the blood-corpuscles of the frog are about four times larger than the blood-corpuscles of men and mammalia, I concluded that perhaps the fibre would keep them back, while it allowed the corpuscles of men and mammalia to pass. This is the case. The experiment may be made on a scale with the blood of the frog alone; a small glass funnel and a filter of common white filtering-paper or thick printing paper are the only requisites. The paper must previously be moist, and it is well to add an equal quantity of water to the fresh blood of the frog, just as the blood of man is contained in the same vessel of water. Place the almost colourless clear serum diluted with water, with a slight tinge of red, from the colouring matter dissolved in the water. As however the solution of the colouring matter of frog's blood by water requires a considerable time; the filtered fluid can scarcely be said to contain distinct traces of colourless fibrin, if, instead of water, a solution of sugar in water (one part of sugar to 200 or more of water) be employed, no colouring matter will be dissolved during the filtration, and the filtered liquid is quite colourless and can be filtered through the finest absorbent paper; to this clear serum be examined under the microscope, no trace of corpuscles can be detected. In this clear serum in the course of a few minutes a colourless coagulum is formed, so clear and transparent that it is not even detected after its formation. It is the coagulum of the fluid with a needle. It gradually thickens and becomes whitish and fibrous; it then assumes gradually the appearance of the coagulum of human lymph. In this way the fibrin of the blood is ob-
tained in the purest state, and this has not hitherto been done."

Pure fibrin is of a whitish colour, inodorous and insoluble in cold water; it is a solid substance, tough, elastic, and composed of thread-like fibres.

The relative quantity of fibrin contained in the blood varies according to the state of the system at the time it is obtained.

It is stated by Brande, who has given a full account of the chemical properties of fibrin, that fibrin and albumen [Albumen], if not identical, are very closely allied, and appear rather to differ in organization than in essential chemical character. "The ultimate composition of fibrin has been determined by Gay Lussac and Thenard, and by Michaelis, who made a comparative analysis of that of vascular and venous blood: the following are their results:—

<table>
<thead>
<tr>
<th>Substance</th>
<th>Vascular Blood</th>
<th>Venous Blood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>19.934</td>
<td>17.387</td>
</tr>
<tr>
<td>Carbon</td>
<td>53.360</td>
<td>51.374</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>7.921</td>
<td>7.234</td>
</tr>
<tr>
<td>Oxygen</td>
<td>19.685</td>
<td>29.769</td>
</tr>
</tbody>
</table>

The mean of these results gives nearly the following stoichiometric composition:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Formula</th>
<th>Theory</th>
<th>Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen</td>
<td>N</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Carbon</td>
<td>C</td>
<td>6</td>
<td>36</td>
</tr>
<tr>
<td>Hydrogen</td>
<td>H</td>
<td>1</td>
<td>7.04</td>
</tr>
<tr>
<td>Oxygen</td>
<td>O</td>
<td>1</td>
<td>22.94</td>
</tr>
</tbody>
</table>

That variety of fibrin which constitutes muscular fibres is so interwoven with nerves, vessels, and cellular and adipose tissue, that its properties are probably always more or less modified by foreign matters. "To obtain the fibrin of a muscle, it must be finely minced and washed in repeated portions of water at 60° or 70°, till all colouring and soluble substances are with difficulty till the tissue is incompact, insipid, and inodorous; it is then strongly pressed between plates of linen, which renders it semitransparent and pulvcrent. Berzelius observes, that in this state it becomes so strongly electro-positive when titrated, that the particles repel each other and adhere to the mortar, and that it still retains fat, which is separable by alcohol or ether."

When long boiled in water, it shrinks, hardens, and yields a portion of gelatine, derived from the interstitial cellular membrane; the fibrin in the muscle also yields the same on the coagulation of boiling water, and loses its solubility in nitric acid, which, when digested with it in its present state, forms a gelatinous mass, soluble in water, but slightly turbid, from the presence of fat and a portion of insoluble membrane, derived from the living end. The muscle, as a whole, is insensible to the action of acids. It is soluble in dilute caustic potash, and precipitated by an excess of muriatic acid, the precipitate being a compound of fibrin with excess of muriatic acid, and which, when washed with distilled water, become gelatinous and soluble, being reduced to the state of a neutral state of fibrin.

When the fibrin of muscle is mixed with its weight of sulphuric acid, it swells and dissolves, and when gently heated, a little fat rises to the surface, and may be separated:

if it be then boiled and left to cool, the gelatinous mass is obtained. If the muscle be long boiled and boiled for nine hours (occasionally replacing the loss by evaporation), ammonia is formed, which combines with the acid, and on saturating it with carbonate of lime, filtering, and evaporating to dryness, a yellow residue remains, consisting of three distinct products: two of these are taken up by digestion in boiling alcohol of the specific gravity of 1.42, and are obtained upon evaporation; this residue, treated with alcohol of the specific gravity of 0.830, communicates to it (1) a portion of a peculiar extractive matter, and the insoluble remainder (2) is white, soluble in water, and crystallizable, and has been called by Breconot Leucine. It fuses at 212°, exalting the odour of roasted meat, and partly sublime: it is difficult soluble in alcohol. It dissolves in nitric acid, and yields on evaporation a white crystalline compound, the nitro-leucite acid. The portion of the original residue, which is insoluble in alcohol (3), is yellow, and its aqueous solution is precipitated by infusion of gall-brothate of lead, nitrate of mercury, and potassium of iron. It appears therefore that the products of the action of sulphuric acid upon the fibrin of muscle are (1) an extractive matter soluble in alcohol; (2) leucine; and (3) extractive, insoluble in alcohol, but soluble in water."

(Fromza, Cyclopedia of Anatomy and Physiology in loc., Professor Muller in British Annals of Medicine; Philosophy of Health, vol. i.)

FIBULA. The fibula (πήρον, Fr. épiron, a boddin) is a long slender bone swelling out at both ends, by which it is firmly attached to the outer side of the tibia, or main bone of the leg. The lower extremity forms the projection of the outer ankle; it is received into a deep longitudinal groove at the side of the tibia, to which it is connected by a ligamentous union, and is firmly knitted to the foot by strong bands of ligament, which spread like the sticks of a fan from the tip of the bone, and extend to the toes instead. The upper extremity slants a little backwards, and is articulated with the side of the tibia below the knee, by means of a true joint, having cartilaginous surfaces and a synovial membrane as well as external ligaments. The lower extremity is chiefly made up of the fibula, and it is a true hinge joint, since it can only move as if than is sufficient to give some elasticity to the play of the ankle-joint, which is secured on the outer side chiefly by the projection of the fibula beyond it. The shaft of the fibula—nearly straight, triangular, hard, a little twisted, and of great strength—is about the size of a forefinger, and extends like a bowstring across the arch formed by the gradual enlargement of the tibia towards the knee. A strong sheet of fibrous membrane, called the intersosseous membrane, forms a strong ligament, tightly stretched from one bone to the other, fills up the greater part of the interval between them, and gives surface for the attachment of muscles and strength to the limb, without adding inconstancy to its bulk or weight. Nine muscles are attached to the fibula. The peroneus tertius, also called the tendon of the outer ankle, if its fibres are tender and extended, will the placing the remaining five unite in raising the heel, and press the toes and the ball of the foot against the ground; at the same time turning the sole outwards by lifting its external border. The muscles and their action are the peroneus longus and brevis; their tendons pass behind the ankle, lying in a groove of the fibula, which acts as a fixed pulley to change the line of their traction, and are inserted into two bones on the outer side of the lower leg.

When the ankle is violently extended, the foot slipping unawares over the edge of the curb-stone, and is complicated with various degrees of lateral dislocation, and with severe sprain of the ligaments of the inner ankle. The force may be sufficient to break off the tip of the inner ankle; and if the patient is thrown, the fibula will be driven through the skin, which sometimes happens, the cavity of the joint is exposed, and the injury becomes a compound dislocation of the ankle-joint. These accidents are sometimes secondary, the foot being in the first instance fractured by the weight of the patient, or the violence of the external ligaments, and then drawn up with a jerk by the peronei. However produced, the injury is a very serious one, and often requires much good management to prevent permanent lameness or even worse consequences. Minor degrees of it have a general resemblance to simple sprains of the ligaments, and the fracture of the fibula may be overlooked. It may, however, be easily detected, notwithstanding the swelling, by the unusual position of the feet, and by pressing the bones together higher up the leg; for if the fibula be broken, the foot will not retain a sense of yielding of the otherwise solidly compacted parts, and increase of pain to the patient from the pressure of the broken edge of the bone against the soft parts. From the name of the eminent surgeon who first delineated and described this injury, it is called Tal's fracture. [Foot; Fracture; Tibia.]

FIBULA, a term used among the Romans for the
branch or buttuck with which their roots were usually fastened. It is derived from *figo," to fix," and the most ancient form of the word is supposed to have been *figula. These fastenings were made in very great variety, both in material and form, and were sometimes ornamented with engraved stones or gems. *Fibula of gold were often used as pre-cuts. The most common were made of brass or iron. Ceylon, in his *Recueil, p. 110, fig. 4, has engraved a fibula of the same description; the double pin on the end of the garment and a key. *Fibula was a term likewise applied by the antients to the iron braid or band used for joining or fastening beams, mentioned by *Caesar (De Bello Gall., I. iv., c. 17) and described by *Virgilus (l., c. 6). The *fibula was an instrument by which observers draw the lips of a wound together, noticed by *Pirusus, in his *Libron, p. 278, who also mentions the *fibula gynæica, sine theatraulis, *que cananterius et comedes inserit, particularly decribed by *Celopus, and several times cited by *Plutarch and *Marbri. This was a ring of light workmanship.

FIUBLA'RIA. [ECHINIJE, vol. i. pp. 260, 261.]

FICE'DULA. [BECCAPPolo, vol. i. p. 123; SYLVIJEDE.]

FICHE, JOHANN GOTTLIEB, was born in Upper Lipien in 1742. After receiving a school education, he studied at the universities of Jena, Leipzig, and Wittenberg. He afterwards became acquainted with Kant and Pestalozzi; and in 1792 attracted general attention by his *Verehrung der alttestamentlichen Propheten (Critic of all Revelation), on account of which he was made professor of philosophy at Jena. Here he began to promulgate the system of philosophy which is known under the name of *Wissenschaftslehre (Doctrine of Science). A brief account of this book is given in the *Philosophical Magazine and Journal of Science, for June, 1835. On having brought upon him the suspicion of irreligion, he retired to Prussia, and after living for some time at Berlin, removed to Erlangen, where he was appointed professor of philosophy, with leave to visit Prussia in the winter time.

Fichte's character has always been held in high esteem. His *Discourses to the German People during the French invasion are justly valued, and he is said to have died, as he always lived, for a good cause. During his residence at Berlin in the year 1814, he urged his wife to visit the sick and wounded soldiers of the army of scattering, which she caught a fever, from which she recovered, but communicated it to her husband. Fichte died at Berlin in 1814, leaving a son, Immanuel Hermann, now a professor at Bonn, and one of the most distinguished philosophers in Germany.

Fichte's Wissenschaftslehre grew out of the philosophy of Kant, of whom he at first considered himself a mere disciple. Kant had dogmatically assumed the school logic as the foundation of his system: the forms of propositions, as affirmative, negative, and the like, had something of categories, and he never thought that any one would ask for the origin of these forms themselves. According to the system of Kant, time and space have no existence exterior to the mind, but are merely the forms in which it discoursed objects to itself. The idea of time (or immediate contemplation) was divided into matter and form: thus in a red surface, the mere colour red was called the matter of the intuition, and the extension its form. The first was held to be independent of the second, and the latter to be merely dwelling in our own minds. This was Kant's theory of sensation (Transcendentale *Ästhetik) and it is followed by an investigation of the laws of the understanding. These laws he worked out from propositions of categories, which, when abstracted from the logical form of propositions. Thus, propositions are divided into universal, particular, and singular. Hence the objects of propositions considered in this light, are all, *many, or one, or may be said to be under the formed objects of idea, *subject and idea, *subject and object, *action and reaction. A fourth series of categories obtained from the modal division are *necessity, *actuality, *possibility: and as we cannot think of objects at all except under the forms expressed by these propositions, it follows that all objects of thought must come under the categories.

From this Kant concludes, that as time and space are the forms of our intuition, so are *cause and effect, *the forms of our thought, having likewise no existence without our own minds; and that when we say the law of cause and effect is a law of nature, in no more is conveyed than that the law of cause and effect is that under which we are compelled to observe nature, having nothing to do with external things themselves. Kant compares his own system to that of Copernicus, observing that the latter makes the sun the centre of the earth, and the earth is a satellite of the sun; he Affairs puts the mind in the centre, and makes the objects adapt themselves to the forms of the mind, instead of the mind following the laws of the objects. Hence, according to his view, we are altogether without knowledge of things themselves, the external world which they appear to us being merely in our own mind, and likewise the laws by which we suppose they are regulated. We merely contemplate various phenomena, which are the exponents of things we cannot know anything about, and to which these phenomena refer. The ego, in reality, is not a being at all.

Various contemporaries had found it strange that two regions so heterogeneous as those of mind and things in themselves (ungeh und sich) should at the same time be admirably adapted to each other, and to each other; that they should accommodate themselves to all the forms of the former: and at the same time, the taking of a common book of logic, assuming all its dicta as self-evident axioms, seemed rather a superficial proceeding. The skeptical adversaries of Fichte attempted to show that there was no connection between the form and the matter of knowledge. Aroused by these attacks, Fichte, as a disciple of Kant, began to inquire what was the absolute form of knowledge, and at the same time what lay at the foundation of logic, and he began to consider what such a system as he had written at and which he was the more entirely to satisfy him. He saw that all logic depended on the propositions of identity and contradiction. *A is A" and "Non-A is not A." He then asked himself what is meant by "A is A" and "Does it imply that A exists? No, because the proposition "A is A" means nothing more than "A is not A." *Given implies given to some conscious being; and hence we find that the truth even of an identical proposition depends on the being who is conscious of it. The proposition "A is A" is converted into "Ego is Ego," and this is found to depend on no condition, as Ego gives itself, and its very essence consists in its giving itself. From this proposition is obtained the category of reality: reality is that which is given to the Ego. In like manner, "Non-A is not A" is converted into "Non-Ego is not Ego," and from this proposition is obtained the category of negation. Then a question arises, "How can Ego posit Non-Ego?" It is assumed as an axion that every thing in Ego is posited by itself: this is a kind of law of thought that is self-effacement and self-destruction. It then turns out that Ego posits itself, as determined by Non-Ego. An undetermined being is nothing: determination implies limitation, and hence Ego, by positing itself as a determined being, at the same time posits Non-Ego. The Ego is converted into a self-ooped activity; it meets with a shock (autostasis), which causes it to perform an act of reflection, and from this moment it begins to construct a world without itself. It feels itself confused by certain sensations, and hence imagines there must be something outside of these sensations. At the same time the very consciousness of confinement implies a consciousness of the capability of freedom: for no being can be aware of a curb that is not itself capable of breaking it. Hence Fichte, in the act of directing the attention to some objects to the exclusion of others, or in the imagination of such as are absent, Thus a child who sees its first object cannot divert its attention from that object, and think of another; it is completely absorbed in the first; and from this the unity of the various objects at pleasure call forth a distant object, and close his mind's eye upon those immediately before him. This is a state of comparative freedom. It is impossible, in this limited space, to follow the Wissenschaftslehre through all its ramifications; but what is given has been written to convey an idea of the principle. Fichte's adversaries accused him of Nihiizziness and Atheism, and seem to have imagined

* It is not to be understood that the above is intended as a complete view of Kant's system. Only so much is given as to render the account of Fichte intelligible.

* Greater, 'poet,' is the proper translation, but 'given' is more familiar.
that he (Fichte) thought he had constructed the whole universe. These objections are answered by his son, in an excellent little book entitled Beiträge zur Charakteristik der neueren Philosophie, in which he shows that the very being of the Ego proves its own finiteness, and that consequently his father's doctrine necessarily leads to the assumption of an absolute God, which is banished by Fichte.

In a tract called Die Wissenschaftslehre in ihrem allgemeinen Umriisse dargestellt (Berlin, 18 10), the elder Fichte says plainly that God is the only true being, and thus both absolves all suspicion of Atheism. His moral doctrines involve a contempt for nature, which he regards as a mere curb over which freedom should triumph; and hence he is averse to all speculative physics, considering nature as the absolutely given of which there can be no knowledge, and making all reality proceed from the hitherto, he denies reality to the former, and so in effect he led the German Naturphilosophen (Natural-Philosophers) to accuse him of one-sidedness. His son attributes this tendency to the influence of the doctrines of Kant, which always treated nature as a mere appearance (Erscheinung), and from which Fichte's mountain-ranges are openly free.

It is hardly to be expected that the Wissenschaftslehre will be rendered perfectly intelligible by the above short notice, when the reader might turn over the whole works of Fichte, and that subject is immensely difficult and obscure. The design of this article has been to give a hint of the principle, and no more.

An opportunity is here taken of warning the English reader against mere dabbling in German philosophy. If he has not the perseverance of others, 300 pages will not absorb a considerable portion of his time, and will not refuse to blow on it the most painful attention, he will find it worth his labour to study the works of Fichte, Schelling, and Hegel. But if he cannot bestow this labour, let him refrain from the subject altogether. The doctrines of the German philosophers are only to be gathered from their own voluminous works, most of which are written in a hard crabbled style; and all the English books which would give a slight view of this philosophy, and a pretty essay on it, are worse than worthless.

FICHTE]GEBIRGE is a mountain-knot or mountain-range in Germany, situated between 50° and 50° 15' N., and 11° 45' and 12° E. long. Its greatest length from north-east to south-west, between the towns of Asch and Babelsberg, does not exceed thirty-five miles; and its average width is about twenty-eight miles. It is calculated that this mass of rocks covers about 900 square miles.

The whole mountain-range is furrowed on all sides by narrow valleys and gorges; its most elevated part extends from the summit of the Erzgebirge, and an elevation of 2000 feet. These summits form a series arranged along the axis of the mass from southwest to northeast. Those which attain the greatest elevation are the Köseine, which rises to 3024 feet; the Ochsenkopf, to 3028; and the Schneeburg, to 3028 feet. Above these were placed independently the Erzgebirge, which in the main part of the whole mass rests about 1700 feet above the sea-level towards the south and west, and towards the east and north about 1800 feet.

The Fichtelgebirge is the centre, in which three extensive mountain-ranges unite, and from which they may be considered to issue. The Erzgebirge begins at its northern extremity near Asch, and runs off in an east-north-east direction, dividing Saxony from Bohemia. From its north-western extremity branches another range, which is first called the Erzgebirge (Forest of Erzgebirge), which takes the name of the Thuringerwald (or Forest of Thuringia); the Harz itself may be considered as the most northern branch of this range. This third range, which is improperly connected with the Fichtelgebirge, is the Ebnerwald (or Forest of Bohemia), which runs off in a south-eastern direction.

In consequence of this disposition of the mountain-ranges which issue from the Fichtelgebirge, the waters collected in this range run off to the north, and are pouring itself its southern declivity rises the Naab, which joins the Danube, by which its waters are carried to the Black Sea; the Main, running on the western declivity, mingles its waters with the Rhine; and the Eger, which carries off the waters from the eastern declivity, is as well as those on which rises near the northern extremity and runs northward.

The nucleus of the mass is composed of granite, gneiss, and mica-slate; but on the north-western side it is surrounded by extensive beds of clay-slate and granite. Its mineral wealth is not great. It contains extensive beds of iron ore, which is the only metal that is worked on an extensive scale. Copper ore occurs frequently, but always in such small quantities that it cannot be worked. Gold was formerly obtained by washing the sand of some rivulets. Potash, serpentine, lapis, and fluorspar are found in large quantities. In other places there are some precious stones, as garnets, tourmalines, &c.

FICINO, MARSILIUS, born at Florence, A.D. 1433, was the son of Niccno, the physician of Cosmo de' Medici, who perceived the happy disposition of the youth, generously provided for his education. Ficino studied Greek, and applied himself especially to the works of Plato, which he translated into Latin. He afterwards translated Plotinus,ambitious treatises on the arts, and Porphyry, and became a great admirer of the late Platonists led by the Alcmeon school. He was one of the preceptors of young Lorenzo, Cosmo's grandson. Cosmo appointed him president of the literary society which he assembled at his house, and which was called Academia Platonica, having for its object to explain the doctrines of the Platonists. In these meetings, which were greatly encouraged by Lorenzo, were cheered by symposia, or annual banquets, on the anniversary of Plato's birth-day, of which, held at the villa of Careggi, Ficino was the central figure. The students of the Platonica were divided into three classes: 1st, the Memmiati, being the family of the Medici; 2nd, the teachers, who consisted of the most learned men of the time, such as Pico della Mirandola, Poliziano, Leon Battista Alberti, Landino, etc.; and 3rd, the students, which were different in different years. The Platonica was so far a success as to attract the注意 of many famous men, among whom was Aristotle. The school was revered from literary feuds and rancorous polemics. Being of a diminutive size, and of very precarious health, he says himself that he hardly passed a day without bodily pain, and yet he constantly applied to the Academy. He was at the time was spent at the various country residences of the Medici near Florence, in which he composed his works. He died in 1499, at the age of sixty-six, and his countrymen raised to him a monument in the cathedral of Florence, with an inscription which gives his life and his works.
be subject to the penalty of a statute by a fiction of law.
The law, it was said, would also make fictions in order to avoid
resourcery; but this could hardly have been said in
earnest.
Blackstone shows (iii. 43) by what manner of fiction the
Court of King's Bench originally held pleas of all personal
actions—' it being surmised that the defendant is arrested for
an act, which he might have committed; and being thus in the custody of the marshal
of the court, the plaintiff is at liberty to proceed against him
for any other personal injury: which surmise, of being in
the marshal's custody, the defendant is not at liberty to dispute.
Such liberty of disputing the fiction would clearly
spoil the whole business, and was therefore as necessarily
dis allowed as the fiction was allowed. Of the same kind is
the fiction mentioned by Blackstone (iii. 107), by which a
son killed in battle is supposed to live for ever for the benefit of
his parents; and by the fiction of posthumous and the
lex Cornelia, captives, when freed from bondage, were held
to have never been prisoners; and such as died in captivity
were supposed to have died in their own country.

Fictions in law, though often ridiculous enough, have
unsurpassed merit. Such fictions are to be found in the existing
to courts or course of procedure, and have pointed out in what
respects the judges or interpreters of law, and, as we may
suppose, general opinion also, under the influence of which
judges must to some extent be, have felt that change was necessary, and, so far as
they have been beneficial; but it must be remarked that they
are the indications of a rude state of social organization,
and must gradually disappear with the improvement of the
institutions of society; for their existence supposes a defect
in the organs of legislative remedy.

FICUS, a large genus of Urticaceae plants having the
flowers, both males and females, mixed indiscriminately on
the inside of a fleshy receptacle, which is so concave that
its edges are drawn together into a narrow opening. This
is the commonest feature of this genus; the fleshy
receptacle of Ficus Carica, which, although resembling a fruit as simple
as a gooseberry, is in fact a collection of a large number of
minute unisexual flowers growing to a succulent base; at
its apex will be found the narrow opening where the edges of the
receptacle are drawn together, and when its interior
is laid bare, the flowers are seen closely packed all over the
surface, divided from each other by soft colourless bristle-like bracts or scales. What are called the seeds in the ripe
fig are the pericarps, each of which contains a single seed. The
fig is thus a true drupe, and the seeds of the fig sometimes having only 3, sometimes 7 or 8. The stamens are
solitary in many species, 3 in others, and 5 in some. The
pistil consists of a single ovary terminated by an awl-shaped style, ending in a two-lobed stigma.

The species of Ficus is very considerable, perhaps
as great as that of any arboreal genus. They are
all either tropical or inhabitants of warm countries.
Some are small plants creeping upon the surface of rocks and
walls, or clinging to the trunks of trees like ivy; others are
among the largest trees of the forest. A number of
travelers in the woods of South America speak of the noble aspect of the
fig trees (meaning species of Ficus not of the cultivated sort),
of their gigantic dimensions, and of the thick delightful
clothing of the branches. They are especially remark-
able for throwing out roots from their branches, which
after they have reached the ground and established them-
selves there, increase rapidly in diameter, produce other
branches, and thus contribute to extend an individual over
a large area on the ground. From this it is evident that what
he saw of their habits in the forests at Moreton Bay in New
Holland—' I observed several species of Ficus upwards of
150 feet high, enclosing immense iron-bark trees, on
which originally the seeds of these fig trees had been
deposited by birds. Here they had immediately germinated,
and thrown out their parasitical and rapacious roots, which
adhering close to the back of the iron tree had followed the
course of its stem downwards to the earth, where, once
arrived, their progress of growth is truly astonishing.
The roots of the Ficus then increase rapidly in number, envelop
the iron-bark, and send out at the same time such gigantic
branches, that it is not unusual to see the original tree, at
a height of 70 or 80 feet, peeping through the fig, as if
it had first, but for some mistake in the nature of the
angles or walls, as they are here termed, which are formed
by the roots of these trees, and of which I observed many
16 feet high, their is room enough to dine half a dozen
persons. The fruit is eagerly sought by Regent birds (Seri-

cus vulpinus, Cuculus Pica, and Cuculus Pica Hawi).
Cuculus Pica Hawi, and the spreading and massy boughs
support a number of superb parasitical plants. ' Reinwardt
assures us ('Ueber den Charakter der Vegetation auf den
Inseln des Inselischen Archipels') that he observed on the
island of Samoa a large savannah whose trunks all proceeded
from one single stem of a Ficus Benjamina, all united with
each other by their branches though the trunks were dis-
tinct. The well-known Ficus Indica, or Banyan Tree, is
another instance of this peculiar habit.

The common fig tree bearing a large fruit containing caule-
couch, and there is every reason to believe that what of
this substance comes from Java is exclusively procured by
tapping different species of Ficus. The best known on the
continent of India is yielded by Ficus elastica.

Although the fruit of Ficus carica and some others is
eatable, yet the whole genus abounds in an acrid, highly
dangerous principle, diffused among the milky secretion.
This is perceptible even in the common fig, whose milk
produces a burning sensation on the tongue and throat;
this is due to the fact that it is secreted and excreted by
butterfly larvae, and is caused to flow into the fruit, per-
stroyed by the chemical elements entering into new
combinations. In some species it is so concentrated that they
are among the most virulent of poisons. Ficus tomentosa, a
Sumatra species, and F. daenon, from Tanjore, derive their
dangerous properties, in this circumstance, in which many more equally
participate.

For an account of the Ficus carica see Fig.; of a few
others, remarkable for their interest, we shall give a brief
account.

1. Ficus Indica, the Banyan Tree, is a native of most parts of
India, both on the islands and the main land. Roxburgh
states that it is found in its greatest perfection and beauty
about the villages on the shores of the Cicer mountains.
The leaves are ovate, heart-shaped, three-ribbed, and entire; the
fruits are about the size of walnuts, and when ripe, they are from five to six inches long, and from three to four
broad; at the top of the leafstalk on the underside is a
broad, smooth, gressy-looking gland. The figs when ripe
grow in pairs from the axils of the leaves, are downy, and
about the size and colour of a middle-sized red cherry.
The wood is light, white, porous, and of no value. Brahmins
use the leaves as plates to eat off; birdlime is manufac-
tured from the tenacious milky juice. If the seeds drop
in the axils of the leaves of the Palmry Tree (Horura fucata),
and on not being discovered by the tree, they are carried
in the trunk in their descent; by dogs they envelop every part
except the top, whence in very old specimens the leaves and
head of the Palmry are seen emerging from the trunk of the
Banyan Tree as if they grew from it. The Horizontal
gard such cases with reverence, and call them holy
marriage instituted by Providence. The Banyan Tree, cov-
ing its trunks a sufficient space to shelter a regiment of
cavalry, and used as a natural canopy for great public
meetings, has been so often described by writers on
India, that it is well known. We shall mention only a
mental and a graphic description of the mode of growth in Rumf. 's
"Herbarium Ambonianense," vol. iii., p. 126. See also "Asiatic Researches,
v. 310. It is called Vuta in Sancor, but Bur or Ben in
Bengal, Bagha in Cingalese.
which bound the province of Silineth on the north, where it
grows to the size of a European yeacumare, and is called
Kameer. It is chiefly found in the sands of rocks and
over the declivities of mountains among decomposed rocks
and rocks and sand. The pears, when wounded, give a great
abundance of milk, which yields about one-third of its
weight of caoutchouc. It grows with great rapidity; a tree
is described as being twenty-five feet high, with the trunk
a foot in diameter when only four years old. The juice of
this valuable plant is used by the natives of Silineth to smear
over the inside of baskets constructed of split rattan, which
are thus rendered water-tight. Old trees yield a richer
juice than young ones. The milk is extracted by incisions
made across the bark down to the wood, at a distance of
about a foot from each other; all round the trunk or branch
up to the top of the tree, and the higher the more abundant
is the fluid said to be. After one operation the tree requires
forty-eight hours' rest, when it may be again repeated.
When the juice is exposed to the air it separates spontaneously
into a firm elastic substance, and a fluid whitish-coloured
liquid. Fifty ounces of pure milky juice taken from the
trees in August yielded exactly 164 ounces of clean washed
caoutchouc. This substance is of the finest quality, and
may be obtained in large quantities. It is perfectly soluble
in the essential oil of Caffuman. (Roxb., Fl. Ind., iii. 545.)

2. Ficus religiosa. The Pippul Tree, is a large tree com-
mon in every part of India, especially near houses, where it is
planted for the sake of its extensive dark green foliage.
It is held in superstitious veneration by the Hindoo,
because it is fifty years in diameter, and is said to be
under its branches. The leaves are heart-shaped, long,
pointed, wavy at the edge, not unlike those of some poplars;
and as the footstalks are long and slender, the leaves act
ually tremble in the air like those of the aspen tree. Pippul
serves as a great shelter tree to the poor. It is
often cut down by thecrown and the mulberry.
The leaves are used for tanning leather;
and are used by the Arabs, who call the tree Mudhâ and Vudhâ, and also
Lehi Zebi. See Asiatic Researches, iv. 399, for further
information concerning this tree.

4. Ficus assyriaco, or Assyriamone, is a large tree found
in Egypt, where it is planted extensively by the road-side,
near villages, and on the sea-coast, for the sake of the
shade of its vast, widely-spread branches. The Arabs call it Dummazzâ.
Forskål notes that the tree is "tender for
young yards in diameter. The leaves are broadly ovate,
reap'd, or somewhat angular, rather blunt, nearly smooth,
heart-shaped at the base. The figs are not produced upon
the young branches, but in clustered racemes upon the
trunks, from the base of each leaf, and are eaten by the Egyptians. The timber appears to be of little
value, for Forskål excludes it from the lists of carpenters' wood,
and places it among the trees which are used for fire
wood. It can hardly therefore have furnished the wood of
which mummy cases were made, as has been been both
Proctor, in his book on the Thames, and Conder, who
states that they were made from the timber of Cordia Myra.
When old this tree becomes very gnarled and broken, as is shown
in a plate in Plate's 'Abysinia,' where it is figured under the
case of Darroon, but it is said bare of foliage as to be hardly
picturesque.

FIDDLE. [VIOLIN.]

FIDEI COMMISSUM. According to German civil law, the
fidei commissum is intimately connected with the law of
inheritance and the administration of estates. A person
considered as capable of being a fidei commissum is one
who holds an estate on condition of doing a certain service
or performance, and the estate passes to another on the
death of the person holding it. Thus, for example, a man
may hold an estate on condition of serving the court, and
the estate passes to the next of kin on his death. This
system is in force in the old German law, and is known as
the Code Napoleon, as in Bavaria. In the north of
Germany, however, where the ancient Saxon law was pre-
valent, as in Hanover, Saxony, and other countries, it is
maintained, and is still in force.

FIDEICOMMISSUM, in the Roman law, is something
given by will or codicil, not directly to the person benefi-
cially interested in it, but to some other person, with a re-
quest that he will transfer it to the party for whom it was
given. This person who requested was called Heres Fide-
icumissarius; and the person for whom it was intended Heres
Fideicommissarius. It was necessary that an heir (here
in the Roman sense) should be named, or no property
will be transmitted to the Fideicommissarius. (Gaius, ii,
248, &c.) Originally it entirely depended on the good
faith of the trustee (fiduciarius) whether he performed
the will of the testator or not.

The origin of these fideicommissa probably was in a de-
sire to evade the strictness of the old civil law; as we see
in the case of Q. F. Huber, Max. iv. 2, 9), who being
an exile was incapacitated from taking a gift under the will
of a Roman citizen, but yet could claim it from his mother,
to whom it had been given in trust for him. In many of
the times of Augustus the rights of the fideicommissarius became legi-
inely established by an emperor. But the consuls jurisdic-
tion in such matters. Afterwards pretors were ex-
pressly appointed, under the name of pretores fideicom-
missarii, to take cognizance of such trusts, but the consuls
still retained their jurisdiction also. In the provinces the
governors (praeses) took cognizance of fideicommissa.
(Ulpian, Instit. 25, 12.) Fideicommissa, or trusts of spec-
ific things, became gradually assimilated as to their qualities
and incidents to legacies: the following remarks apply to
fideicommissa, where the whole inheritance (hereditas in
the Roman sense), or a determinate part, was given to a
trustee in trust.

By the old Roman law the heres, on taking possession
of the testator's property, became liable to all his debts and ob-
ligations, and consequently those who only took the property
trustees (heredes fiduciarii) often had to encumber
themselves with a burden from which they could derive no
advantage, and might sustain great loss. To remedy this
inconvenience, it was enacted by the Senatusconsultum
Trigallianum, that the mortmain should cease at the time of Nero, that when the
trustee had given up the property to the
estate (cestus que trust of the English law), all right of actions
by or against the trustee, in respect of the property, should be
transferred to the cestui que trust.

If the trustee renounced the inheritance, the
pretor, on the petition of the cestui que trust, could compel
him under the Senatusconsultum Pegasianum, passed in
the time of Vespasian, to accept and to transfer the pro-
erty to his cestui que trust, who took it with all its bur-
den. No particular form was requisite in order to effect
this transfer.

By the Senatusconsultum Trebellianum, if the heres
was required to transfer not more than than three-fourths of the in-
heritance to the cestui que trust, the two parties were liable
in all suits and in respect of the property according to their
several shares. If the transfer was required to be made
less than three-fourths of the whole, the S. Pegasianum allowed
him to retain one-fourth, as the Fideiaco law did in the
case of legacies. If the heres let himself be compelled to
accept the trust, under a threat of the consul, he could
claim its one-fourth.

The cestui que trust was himself sometimes only a
trustee for others, and in this case never had the benefit
of the one-fourth: the same was the case if a legatee had to
transfer a legacy.

FIEF. [FEUDAL SYSTEM.]

FIELD OF VIEW. [TELESCOPES.]

FIELDFARE. [MERULIDE.]

FIELD MARSHAL, a military dignity conferred on
such commanders of armies as are distinguished by their
high personal rank or superior talents.

It has been supposed that the term marshal is derived
from Maris Somenschallus, but it is more probable that it
came from the Saxon words mar, or marach, a horse, and
marsh; and the title is given to governors, etc., who have
designated the person who had the care of a certain number of
or in the royal stables. In the Teutonic laws such a person
is called maris coluscus, and the fine for his murder is par-
cularly specified.

The earl-marshal of England had originally the chief
command of the army; and history records the names of
two noblemen, De Montmorency and Fitzosborne, on whom
the title was conferred by William the Conqueror.

The office was by Henry VIII. made hereditary in the

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Fielding however did not make reprisals, but contented himself with noticing Clarissa in a favourable manner, in a publication which he at that time conducted, called 'The Jacobite Journal,' directed against the party known by that name, and in support of the Hanoverian succession. This, with other publications of the same kind, at last obtained him a small pension and the place of Justice of the Peace for Middlesex. He was a man of the utmost prudence, and is said to have owed to the influence of Lord Lyttelton.

Horace Walpole, with his usual mixture of sophery and snappiness, gives a very unfavourable account of Fielding's habits at this period, but his conduct as a magistrate proved so exemplary that the President of the Middlesex Administration of Justice has so-called trading justices, one of whom he describes so forcibly in 'Amelia' under the name of 'Justice Thrasher.'

Amidst the laborious duties of a magistrate and pamfleteer, for Fielding was born, once, he concluded to produce 'Tom Jones,' a novel which, from the admirable originality of characters, and interest of the tale, has been and ever will be held in the very highest admiration. The publication of 'Tom Jones' was followed by some works on the law, in which there is less reason to complain of its appearing, for it appears to have struck out a scheme the same in principle with that which is now adopted. He also wrote a Charge to the Grand Jury of Middlesex and some Law Tracts.

'Amelia' was Fielding's last important work. It was published in 1751, soon after which time he was attacked by dropsy, jaundice, and asthma, and when all remedies had been tried in vain, the last remedy of self-banishment was proposed by his physicians. He left England for Labou on June 26, 1754. Fielding died there in the same year, aged 47, leaving a widow and four children.

Fielding has been styled, with perfect justice, the father of the English novel. Sir W. Scott observes that Richardson by no means succeeded in escaping from the trammels of the English novel, but that he was 'the most perfect of the impossible virtue and improbable heroism of that class of writing, and the length of Sir Charles Grandison bears no small resemblance to Le Grand Cyrus.' But in Fielding's works we find the most perfect delineations of individual characters. Squire Western, from Jones himself, Allworthy, and perhaps above all, Amelia and Mr. Abraham Adams, are portraits which proclaim their own truth. Every reader of Fielding must have been struck with the deficiency of individuality in his heroes. This arose, we presume, from the low state of feeling then prevalent with respect to women, which placed them, while unmarried, in the light of a plaything; and when married, in that of an upper servant, or at most an humble companion. Such our women as were capable of bearing children were not considered to be capable of bearing minds; and though this state of manners continued, it was impossible for any writer professing to give a true picture of the times, to attempt to invest his heroes with such mental attractions as are possessed by the female characters of modern novels.

Discussions have been much divided as to the tendency of Fielding's works. We have little hesitation in pronouncing it to be, on the whole, moral, and decidedly more so than that of Richardson's. It is true that scenes of extreme indelicacy occur, often very unseasonably, but the manners of the characters which are represented have the same effect on the reader, as if he were in the face of an interesting incident which, though shocking to the imagination, is to be regarded with the highest sense of propriety and decorum. There is no such thing as being too good to speak ill of the human heart.

Nichols ('Literary Anecdotes,' iii. 371) informs us, that it was taken from a clergyman named Young, and indeed it seems almost impossible that so peculiar a character should have been the work of imagination, for there is perhaps nothing so difficult for a novelist as to draw singularity without allowing it to lapse into improbability and extravagance. Sir Walter Scott relates ('Life of Fielding,' pp. 95, 96) that Richardson took mean and petty methods of revenging himself upon his successful satisifier, by depreciating her and her appearance, both in his own family, and by endeavouring to diminish his reputation as an author.
palliate bad actions by specious phrases. The character of Tom Jones seems to us not to have met with a fair share of praise. His generosity and nobleness of nature are, it is true, the source of many of the excellencies of the story. But as for the last, which he so often fails in, he is, not for want of a desire to have it, but for want of the means of so doing, which he is, however, in many points, a character perhaps as delicate as we find in 'Tom Jones,' or 'Joseph Andrews.' Both and Amelia are said to have been portraits of Fielding and his second wife; and if he put her patience, as has been alleged, to tests of the same kind, he has, in some way, and here by the picture he has drawn of her feminine delicacy and pure tenderness. (Scott's Life of Fielding.)

In summing up our opinion of Fielding's works, we should say that the chief fault is a want of unity in the plots. A novel is not a professed record of all which happens to any two people during a certain number of years. To make it perfect it requires extraordinary combinations tending to a certain end—the happiness or misery of the parties concerned. We do not reject these as improbabilities, but as such which arise from the very essence of the material element of the work. But we are not satisfied by a succession of petty annoyances and pleasures which have nothing to do with the conclusion of the tale. These rather disturb than interest our attention, and we would prefer being without the valleys, mountains, valleys, mountains, which happen so commonly in 'Tom Jones,' the author's best work, while we have, to counterbalance its truth and originality of delineation, skill in language, considerable dramatic power, and brilliancy of wit which has never been surpassed. (Sir Walter Scott's Life of Fielding; Nichols' Literary Anecdotes, vol. iii; Chalmers' Biog. Dict.; and Fielding's Works.)

PREDI FA'CIAS, a judicial writ of execution issued on a judgment obtained in a personal action in the king's courts. It is directed against the goods and chattels of the debtor, and is thickly drawn, as far as it is possible. In it whereby the sheriff is commanded 'quod fieri facias de bonis,' &c., that he cause to be made of the goods and chattels of the defendant the debt or sum required. [Ex-erven.] It lies against privileged persons, as peers, &c., as the matter, happy in the hands of the one who administers, so far as regards the goods of the deceased. This writ, like all other writs of execution, being founded upon the judgment, must strictly conform to, and be warranted by, the terms of the judgment, or it will be void. The goods and chattels of the defendant till he has raised enough to satisfy the judgment and costs, as well of the suit as of the execution; and also to satisfy any rent due to the landlord of the premises where the goods may be at the time of the taking, not exceeding one year's rent in the whole. If the goods of the defendant in the county where the venue was laid are not sufficient, a testatum fieri facias (as it is called) may be sued out, which is directed to the sheriff of any other county where there are goods of the defendant; and if the goods be seized, the sale of the goods of the defendant, the plaintiff may have a capias ad satisfaciendum for the residue. [Capias.]

The sheriff is not justified in breaking open any outer doors to execute this writ, but having peaceably obtained entrance, he may break open any inner doors belonging to the defendant in order to obtain possession of the goods. The clothes which the defendant actually has on or in wearing cannot be taken, and royal palaces are privileged against the sheriff's intrusion for the purpose of levying upon the goods of a defendant therein.

Formerly it was necessary that writs of execution should bear teste or date, and be returnable in term time; but now, by stat. 3 and 4 William IV., c. 67, they may be tested, that is, dated on the day when issued, whether in term time or vacation, and be made returnable immediately after the execution thereof.

If a fieri facias is issued against a clergyman, and the sheriff returns that he has no goods upon which the judgment can be levied, but that the defendant is a beneficed clerk not having any lay fee, the plaintiff may sue out a fieri facias de bonis ecclesiasticis, which is directed to the bishop of the diocese, or to the archbishop in the case of a bishop's see, commanding him to make of the ecclesiastical goods and chattels of the defendant within his diocese the sum therein mentioned. It is tested and made returnable exactly in the same manner as a common fieri facias, and is executed by means of a sequestration issued, as the registrar of the diocese. [Sequestration.] (3 Bl. Com.; Archibald, K. B. Prat.)

FIESCHI. [Doria.]

FIESOLE. [ETRURIA; FLORENCE.]

FIFE, a very small flute with never more than one key, seldom seldom seldom the second. Scordas, and used, together with the side drum, for military purpuses. [Fluting. &c. It is an octave higher than the flute, and in compass comprises two octaves. Fifes are of three sizes, named by the letters A, B, and C. The first is the lowest; the last, which is that in common use, is the highest. FIFEISHIRE is a maritime county on the east side of Scotland, comprising the peninsula between the Frith of Firth on the south, the German Ocean on the east, and the Frith of Tay on the north. On the west it is bounded by the counties of Perth, Kinross, and Clackmannan. It lies between 56° 3' and 56° 25' N. lat., and 2° 30' and 3° 50' W. long. The outline is very irregular. The extreme length of the county from north-east to south-west is about 45 miles. The area contains 564 square miles, or 322,560 acres; of which from one-tenth to one-fifth of the whole is arable, and one-fifth consists of hills, moss, moor, roads, and woods. General Appearance and Soil.—The county, when viewed from the loftiest summits, presents a pleasing variety of English scenery. The high ground, with two summits above the Fife, is highest on the west, being 1720 feet above the level of the sea; the Largo Law on the east is 1020 feet; and the Norman Law on the north, 850 feet. A great number of noblemen's and gentlemen's seats appear in the midst of old plantations and extensive pleasure-grounds; and the scenery, on a closer view, exhibits deep, romantic, and well-wooded glens. Fifeshire is justly considered one of the best of the Scottish counties. It is well cultivated, has an unusual proportion of gentlemen's seats and plantations, and its county seat, Cupar, is one of the most elegant and commodious in Scotland. Pennant, in his 'Tour in Scotland' in 1772 (part ii. p. 212), remarks that the peninsula of Fifeshire is so populous that, excepting the environs of London, scarcely any part of South Britain can vie with it. Fertile in soil, abundant in water, having a temperature favourable to the most profitable manufactures, the property remarkably well divided, none insensibly powerful, but most of the fortunes of a useful mediocrity. The number of towns is perhaps unequalled in the same extent of coast, since from Cire in the east to Culross in the west, about 40 miles, they appear to form one continued chain. 

The soil is of various kinds. In the most fertile districts it consists principally of a rich loam: in the poorer tracts it is mostly a wet clay, resting on a cold bed of till. A level tract of deep, rich, and very fertile loam extends from east to west along the whole southern side, varying in width from three miles to one mile from the shore of the Frith of Firth. It produces luxuriant crops of all the common kinds of farinaceous grain and esculent vegetables. A large strip of land, on the west of the Frith of Firth, to the extremity of the county north-west of Dunfermline, consists of very wet clay, with moss, moor, and rocky hills. The western and north-western parts are also of little agricultural value, being partly covered with moss and heathy mountains. A valley called the Howe of Fife, drained by the Eden, commences at the mouth of that river and extends to the borders of Perthshire. From Cupar westward its width is from three to four miles. Its level varies in different parts, from a gentle slope to a strong and heavy loam, but the whole is generally well cultivated and very productive. The northern side of the county along the Frith of Tay exhibits a series of barren rocky hills partially covered with furze, yet intersected by numerous fertile valleys and carefully cultivated seats. Hydrography and Communications.—Fifeshire is watered by numerous streams, of which the Eden and the Leven are the chief. Fresh springs are found in almost every field. The small river Eden, which rises in the Lomond
Hills, flows about twenty miles east and north-east through the central vale, or Home of Fife, passed by the town of Cupar, into an extensive plain, in which the hills are of little note; art, however, has made it available for the improvement of mills and of powerful manufacturing machinery. [Cupar] Red and white slate, pine, and cedars, are abundant in the deeper parts, and salmon are taken plentifully. The Lochs, particularly Loch Leven, by taking an easterly direction, it receives the Or Water from Loch Fitty, and flows into the Firth of Forth at the village of Leven. In a course of twelve miles it turns forty-five miles wide, broad, flow, flow, paper, corn, oilseed, oil, &c. The water being very clear and soft, it is excellent for bleaching. Before the establishment of bleaching fields along its banks, it was the best trout stream in the county. Fine salmon were taken in the loch, and thousands of eels in the bays near the sea. There is still a salmon fishery on the mouth of the loch. May 1, June 1, and August 1 are the dates when the salmon are allowed to ascend the stream in millions, and when full grown in the loch and its marshes, they descend in September to the sea. Some of the numerous small hills of this county have been drained, and the sites become becoming fields. Several of these which remain greatly improve the picturesque beauty of the scenery. The Loch of Lindedore in the north-west is a beautiful sheet of water, covering seventy acres, and the depth is twenty feet. Loch Fitty, near Dunfermline, is still more beautiful. There are mineral springs in various parts, particularly two chalybeates of great repute, near the town of Dysart.

About three-fourths of the county boundary are formed by the ocean and the great estuaries of the Firth of Forth and the Firth of Forth, and the coast is fished in many numerous little harbours. Steam-boats ply regularly between the principal parts of Fife-shire and those of the adjacent counties, especially with Leith on the south, and Dundee and Perth on the north. The principal roads in the county are those which lead to the small towns of Burntisland and Kinghorn opposite Leith, lead to Perth, Cupar, St. Andrews, and Dundee. During the last thirty or forty years all the roads have been much improved. The turnpikes are kept in good repair by parliamemntary aid.

Climate.—An extensively prosecuted plan of draining and forming enclosures has considerably ameliorated the climate, by clearing the atmosphere of malaria arising from stagnant water and decaying vegetation. The air is in general dry, healthy, and exhilarating. Many instances occur of great longevity. No peculiar epidemics appear. Agues are almost unknown, and fevers have a character comparatively mild; indeed diseases are ever attributable to local causes. Along the coast of the Firth of Forth the air is particularly mild and salubrious; there is a slight elevation of the surface above the level of the sea, the absorbent quality of the soil, and the shelter afforded by numerous plantations and enclosures; but in the west and north-west districts, which have greater elevation, with a soil of a different and less cultivated nature, the climate is damp and cold. From the hills of Fife-shire lying generally in a line from northeast to south-west, the valleys are much exposed to severe easterly and north-easterly winds. But the greatest inconvenience experienced by the agriculturist in this county, and in every part of Scotland, is occasioned by the frequent sudden changes in the weather.

Mineralogy, Natural Productions.—The county of Fife, in a geographical point of view, is one of the most interesting in Scotland; it is rich in organic remains. Coal and limestone are important in the north of the county, and almost every part of the county south of the Eden; but they are not found in the upper division, north of this river. Along the shore of the Firth of Forth, from Torryburn in the west to Pittenweem in the east, the strata of coal are generally regular, dipping to the east and south-east. They terminate on the one hand at the distance of two or three miles from the water edge, and on the other they are continued beneath it. Another tract of coal, to the north of this, extends through the higher ground, nearly parallel through Dunfermline and to the parish of Denimo, a little to the south of St. Andrews. The dip of these strata is almost invariably north and north-east. In the irregular hills along the southern bank of the Eden the strata are found in every variety of position, cropping out and dipping towards opposite points of the compass. The coal mines are numerous, and some are very extensive, and employ a large number of hands. The working of these at Dysart commenced about 230 years ago. Several extensive works of coal at Dunfermline and to the south, and in many other places, in which quarries are constantly worked.

Ironstone is plentifully obtained in several parts of the coal fields, especially near Dysart, and in the parish of Bal- smore. It yields from 40 to 60 per cent. of metal, and is said to be of great quality, and is much used in the furnaces of the Fife Company. Lead mines have been worked in the Loamhill Hills.

Freestone of a superior quality is found in great abundance in the Eden, particularly at a fine quarry in the parish of Burntisland, south of Leven. It is a hard greenstone, well adapted for paving, is quarried in the parish of Strathmiglo, and near Dunfermline and north of the Loamhill Hills there are vast rocks of white freestone, susceptible of a fine polish, and especially suitable for carved ornaments. It is the chief ornamental stone in the side and sash lights of the northern hills; there are boulders of the primitive rocks—granite, gneiss, quartz, mica-slate, with garnets and primitive green-stone; many of these are of very large dimensions.

Whin or green-stone is very abundant, especially in the northern parts: it is generally hard, firm, and very durable; and, when neatly dressed, is an excellent material for the construction of houses. On the shore near Burntisland, and in some other places, are found beds of a hard dark-coloured stone, which endures exposure to the most intense heat for several years without waste or injury; it is therefore much used for grates and ovens. Marl of a rich quality is found in some places very near the surface, but it is not the common marl of farmers for manuring, but marl for making bricks, not only of the common kind, but of firebricks of an excellent quality. Peat in some parts is plentiful. Agates and very beautiful crystals of carbonate of lime and sulphate of barites are imbedded in the whinstone of Monmoll and Newburgh, and are a treasured jasper, and brilliant rubies have been found in the bed of the Eden and at Earl's Ferry. In the parish of Dysart fossil trees and numerous other remains have been found imbedded in the rocks. The antlers and skeleton of a rhinoceros have been found, being dug on a few years ago in a marl pit in the parish of Collessie.

There are a few patches of natural wood in Fife. The plantations are numerous, and the timber in them, which is mostly oak and beech, consists of ash, elm, beech, and oak. Among the interesting woods are the Burgh wood and Swan wood; the largest plantations are those of the Earls of Crawford and Leven. They are also remarkably fine at Leslie-house in the parish of Leslie, where there is an avenue of beeches of large dimensions, about 200 years old. In recent times many hundreeds of acres of waste land have been planted with forest trees, the want of shelter being one of the greatest disadvantages of this county. In the single parish of Collessie 120 acres have been covered, chiefly with fir. Owing to the great number of opulent proprietors who reside or have houses in the county, there is a constant abundance of firewood, and well attended to, producing abundance of all the usual esculent vegetables and hardy fruits. Orchards are rare and only recently planted. Near Newburgh about 40 acres laid out in orchards are yielding supplies of excellent apples and pears.

Most of the indigenous and other animals of Britain, wild and tame, are found in this county. Game birds, especially pesants, are abundant, and the leeks are visited by wild geese, ducks, teal, and coots, and occasionally by wild swans, geese, ducks, and teal. The banks of the Eden and Dannon, the Bedding Hill, and the Burn are inhabited by otters and water shrews. The coun- teries, the Siskin, Kingfisher, and Passenger-pigeon.

Agriculture, Buildings, &c.—It has already been stated that four-fifths of the surface of this county are arable. Farms vary in extent, from 50 to 500 acres. The average may be about 120 acres. Property in land is perhaps more equally divided, and distributed among a greater number.
of proprietors than in any other county of Scotland. The annual value of a large portion of the estates is between 400L. and 3000L., and a few from 3000L. to 6000L. A much greater number range from 40L. to 400L. a-year. The number of heritors paying cess taxes exceeds 1200. In the agricultural survey published in the year 1800 an enumeration of the size of lands, etc., is made, and several hundred thousands have been expended in new erections and architectural improvements.

Fifty years ago most of the rural dwellings and farmsteads were of the most wretched description. The excellence of its breed of black cattle. The prevailing colour is black, though in the true country breed a very variety of colour is found. The body has a round and bulky form. The horn is small in proportion to the carcass. The limbs are short and well proportioned; the skin soft, and the rendering for export. The horns small, and well formed for beef. The head is small, but very full about the ears and throat, and finely diminished at the muzzle. They are hardy, fleet, travel well; are tame, docile, and excellent for work in the plough or cart, and they fatten quickly and fill up well at all the choice points. When fat, they bring a much higher price at Smithfield market than any other kind, and are selected by the English butchers for the tables of their most luxurious customers. A Fife bull will often bring a higher price in the London market than an English one ten years of age and a Fife heifer and Fife cows are also of high repute in the dairy. The best give from five to seven gallons of milk per day. They are usually milked thrice in the day. Cakes are sometimes partly fed on hay-seas and oatmeal-gruel. The number of milk-cows in Fife is enormous. The Agricultural Society's statement at 10,000, and the whole stock of black cattle at 40 lasts. The Ayshire, Teeswater, and some English breeds have been, it is thought, injudiciously introduced, since none possess qualities superior to those of the Fife breed, which has a name to be cherished. Since 1800, but a large number have been slaughtered at Kirkcaldy and sent by the steam-vessels to London. The Flocks are small, chiefly of the Cheviot breed. Hogs, though not considered as a primary article of farming stock, have lately become more generally kept, and are kept by small farmers and cottagers for the domestic sale of pork and bacon. A few cargoes of them are exported to the London and other markets. The breed of horses, which formerly were small, unsightly, and ill suited either for sledge or harness, has been greatly improved. All kinds of poultry and pigeons are abundant and skilfully reared. Modern improvements in agricultural implements are adopted throughout the county. Threshing-machines, some of which are driven by steam, iron ploughs, &c., are in common use. The average rent of small and medium-sized farms is about 22L., and leases are generally for 19 years. Labourers' wages are generally about 1L. 6L. per day for men, and 9L. for women, and many are paid with provisions instead of money. There are several active agricultural societies in the county. Manufacturing is now almost wholly discontinued and distilleries for the manufacture of malt liquor and malt spirits are numerous. About twenty flour-mills are employed in grinding wheat and oats, and not less than 25,000 cwts. of pot-barley are manufactured, chiefly for home consumption. About 200L. of sawing machinery is manufactured and is used in the vicinity of every town and village. The annual output of the coal-fields in the western parishes of Aberdour, Dalgety, Inverkeithing, and Dunfermline, is about 230,000 tons. Fordell Colliery yields annually about 70,000 tons. About 10,000 ox and cow hides, as many calfskins, and nearly 100,000 annually tanned and dressed at Kirkcaldy, Cupar, Auchtermuchty, and Falkland, for which are consumed annually about 600 tons of oak-bark. About 300,000 pounds of soap are manufactured, and 200,000L. of candles. About 800,000 bricks and tiles are made annually, and at Burntisland a large quantity of vitriol is manufactured.

At Dysart, forty years ago, about a hundred smiths made annually twelve millions of nails, value 2000L.; but this manufacture is now almost wholly discontinued.

The manufacture of linen is more extensive and valuable, and employs a much larger number of hands than

The Rural Survey' to be at least 140,000 acres. Of this extent about 12,000 acres are annually under rye-grass and clover.

Lime being abundant and cheaply obtained, is very generally used for manure. Compost dung-hills are very common, and in a smaller degree marl, peat, coal-sashes, and to a certain extent, iron-ore. For particulars concerning the rotation of crops, which is very various in different parishes, see The New Statistical Account of Scotland, Nos. X. and XIII.

The county of Fife has been long distinguished for the excellence of its breed of black cattle. The prevailing colour is black, though in the true country breed a very variety of colour is found. The body has a round and bulky form. The horn is small in proportion to the carcass. The limbs are short and well proportioned; the skin soft, and the rendering for export. The horns small, and well formed for beef. The head is small, but very full about the ears and throat, and finely diminished at the muzzle. They are hardy, fleet, travel well; are tame, docile, and excellent for work in the plough or cart, and they fatten quickly and fill up well at all the choice points. When fat, they bring a much higher price at Smithfield market than any other kind, and are selected by the English butchers for the tables of their most luxurious customers. A Fife bull will often bring a higher price in the London market than an English one ten years of age and a Fife heifer and Fife cows are also of high repute in the dairy. The best give from five to seven gallons of milk per day. They are usually milked thrice in the day. Cakes are sometimes partly fed on hay-seas and oatmeal-gruel. The number of milk-cows in Fife is enormous. The Agricultural Society's statement at 10,000, and the whole stock of black cattle at 40 lasts. The Ayshire, Teeswater, and some English breeds have been, it is thought, injudiciously introduced, since none possess qualities superior to those of the Fife breed, which has a name to be cherished. Since 1800, but a large number have been slaughtered at Kirkcaldy and sent by the steam-vessels to London. The Flocks are small, chiefly of the Cheviot breed. Hogs, though not considered as a primary article of farming stock, have lately become more generally kept, and are kept by small farmers and cottagers for the domestic sale of pork and bacon. A few cargoes of them are exported to the London and other markets. The breed of horses, which formerly were small, unsightly, and ill suited either for sledge or harness, has been greatly improved. All kinds of poultry and pigeons are abundant and skilfully reared. Modern improvements in agricultural implements are adopted throughout the county. Threshing-machines, some of which are driven by steam, iron ploughs, &c., are in common use. The average rent of small and medium-sized farms is about 22L., and leases are generally for 19 years. Labourers' wages are generally about 1L. 6L. per day for men, and 9L. for women, and many are paid with provisions instead of money. There are several active agricultural societies in the county. Manufacturing is now almost wholly discontinued and distilleries for the manufacture of malt liquor and malt spirits are numerous. About twenty flour-mills are employed in grinding wheat and oats, and not less than 25,000 cwts. of pot-barley are manufactured, chiefly for home consumption. About 200L. of sawing machinery is manufactured and is used in the vicinity of every town and village. The annual output of the coal-fields in the western parishes of Aberdour, Dalgety, Inverkeithing, and Dunfermline, is about 230,000 tons. Fordell Colliery yields annually about 70,000 tons. About 10,000 ox and cow hides, as many calfskins, and nearly 100,000 annually tanned and dressed at Kirkcaldy, Cupar, Auchtermuchty, and Falkland, for which are consumed annually about 600 tons of oak-bark. About 300,000 pounds of soap are manufactured, and 200,000L. of candles. About 800,000 bricks and tiles are made annually, and at Burntisland a large quantity of vitriol is manufactured.

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The manufacture of linen is more extensive and valuable, and employs a much larger number of hands than
any other in the county. The different kinds of linen goods manufactured are damasks, diapors, checks, ticks, Osnaburgs, and Silesia or brown linens, besides plain linen of various fabrics for drapery, and other domestic purposes. Damasks and diapors are made chiefly at Dunfermline. [Dunfermline.] Checks and ticks are manufactured principally at Kirkaldy, Dysart, and their immediate neighbourhood. Silesia, Dowlas sheetings, Osnaburgs, worsteds, and all the finer qualities of linen in general, as Abbotshill, Auchtermuchty, Monimail, Falkland, Cupar [Cupar], Kettle, Strathmiglo, Leslie, Markinch, Kenmore, Leven, Largo, East Wemyss, King's Barns, and by numerous individual weavers scattered in every part of the county. The growing statements of the agricultural and manufacturing interests of the county are considerable; and the most important ones are taken from the New Statistical Account of Scotland. In the parish of Monimail the value of the labour employed in the linen manufacture is about 3000l. per annum. The hours of work are very long, all the work is employed, and the diapors manufactured at Newburgh finds a ready market in London, Leed's, Manchester, and in the West Indies and South America. Thirteen master-tradeemen employ all the weavers in Newburgh, and in probably twenty other towns and villages are employed. The wages of the weavers do not exceed 14. per week. In total, the number of hands employed is about 1400 yards 1 yard wide, and about 24l. when the width is 3 yards. The number of hands in Newburgh employed in weaving bobbins is about 350; looms, 570; number of weavs annually manufactured, 24,000—containing 550,000 spindles of the yarn. The cost, including the yarn, is about 15,000l. In the parish of Kettle the number of looms is 350: average wages received by the weavers 4s. 6d. per week. In the town of Leslie there are 260 weavers; the best earn one shilling per day by working 12 or 14 hours. Six days in the week, and with this payment the loom in two hands, 12 hours every day; average daily wages of men 2s. 6d. and 3s.; of women about 10d.; and of boys and girls about 4d. Three bleacheries employ 140 men and women, 10 hours per day; men's daily wages 1s. 6d., women's 10d. The bleacheries are in the mills giving the appearance that the bleachers, though of late the requisite attention has been given to the ventilation of the rooms. In the parish of Dysart about 2900 looms are employed in manufacturing ticks. The average quantity manufactured is about 31,000,000 yards, value not less than 150,000l. It is sent to Glasgow, London, Manchester, Liverpool, Nottingham, and Leed's; to the Cape of Good Hope, and to the East and West Indies. Between five and six thousand hands are employed in the trade, weaving, webbing, &c., and the number of looms employed out of the parish exceeds 1000. Some of the weavers work from four or five o'clock in the morning until ten or eleven at night to earn 10d. or 1s. per day, which is very injurious to both body and mind. At the mills where flax is spinned, the workpeople are employed from half-past five in the morning to eight at night, the women earning from 1s. to 1s. 2d. per day. [New Statistical Account of Scotland, No. X., p. 138.] It is estimated that, in the flax-mills of this country, 22,000,000 lbs. of flax, and 50,000 lbs. of seed, are used in the manufacture of flax 6000 tons of flax, the value of which is 438,750l.

Fisheries.—Besides considerable salmon fisheries in the rivers Leven and Eden, and at Newburgh, the herring fisheries along the north-eastern, eastern, and southern coasts are extensive, and large quantities of the product are made, especially from the ports situated between St. Andrews and Inverkeithing. Cod, turbot, haddock, and the other common species of sea-fish are taken off the eastern coast, and conveyed to the market of Edinburgh.

Antiquities.—This county once formed a part of the district which, being bounded on the north and south by the Tay, and on the north and south by the Forth and the Firth, and extending from the Ochil hills on the west to the German ocean on the east, was called Ross, which, in the Gothic or Pictish language, signifies peninsula. Hence the part now comprising the county of Kinross was antiently called Kean-ross, head of the peninsula. So Calais signifies back of the peninsula, and Muckross, the old name of Fife, means the point or snout of the peninsula.

The origin of the name of Fife has puzzled all the antiquaries who have examined this part of the country. The most ancient chroniclers attribute it to Ficus Duffus, a chieftain who rendered eminent services in the wars of the Caledonians. This county originally, like all the surface of Scotland, was one continuous forest, varied only by swamps and tracts of moorland. It is certain that the forests of Kinross and other parts of the county were used for the rearing of wild animals, especially boars of enormous size. The ancient history of its people is involved in great obscurity. Prior to the eleventh century, this district was either the property or wholly under the jurisdiction of the powerful Kings of Fife, who possessed a feudal title of Macduff. Duncan Macduff was created first earl of Fife by King Malcolm Canmore (Malcolm the Third) at his first parliament held at Forfar about the year 1057. This Duncan being a man of great property and power, was much dreaded by the barons. M. Dowias reforms dispossessed his relations who joined the English who came with Malcolm Canmore, and the restoration of the latter to the crown of Scotland was accomplished by his important councils. For these and other good services great honours and privileges were bestowed upon him. One of the most remarkable of the muniments granted by the king was connected with the coven cross of Macduff, hereafter noticed. Of Duncan Macduff, who is interesting as the ancestor of several existing families of the nobility and gentry of the county, and as being one of the earliest of the barons. William Hales or Hales, of Macbeth, an elaborate account has been collected by the learned and voluminous antiquarian, Dr. Sibbald, from numerous monastic and other documents. This and similar accounts of the successive earls of Fife comprise chapters of the history of Scotland. 'The History, ancient and modern, of the Sheriffdoms of Fife and Kinross, giving a description of both, and of the Firths of Forth and Tay, and the Islands therein, with an account of the royal Seat of Cupar, and the remains of the ancient Church of St. Mary, which is said to be the true parent of St. Andrews, and in chap. 8 are described the wars and calamities caused by the invasions of the county by the Danes. After the termination of the jurisdiction of the earls, whose chief residences were at Cupar and Falkland, and whose power was the full powers to decide all civil and ecclesiastical controversies, the most considerable event was that of the sheriffs and stewards, and the bailieries of the churches, and wherever the king had a seat there was a constabulary. Fifeshire was the district where the Scottish Reformers commenced. More strenuous supporters of the Covenanters, and still remain staunch adherents of ecclesiastical Presbyterianism, which however differs virtually not much from the Episcopalianism to which it is nominally opposed. There are 63 parishes in Fifeshire, besides about 48 meeting houses of Presbyterian dissenters, but only 4 episcopal chapels. The county forms an ecclesiastical synod, divided into 4 presbyteries.

This county contains a great number of ancient edifices one of the chief is the small ports of Fifeshire consists chiefly of brigs and sloops for the coasting trade, as the contingency of the great ports of Leith and Dundee afford the convenience of steam conveyance to London and other distant places. There are however a considerable number of vessels engaged in the Baltic, American, and Australian trade, and a few are employed in the Greenland fishery.
tempered with ivy, hazel, and wild flowers of various and brilliant hues, which cling to the mouldering fragments of the walls. The whole produces a very picturesque effect. In the same neighbourhood are the remains of two very curious ancient crosses. The cross of Mugdrum, or Magdrin (a saint), consists of a pediment or plinth, with an upright shaft adorned with remarkable sculptures of animals and scrolls. (See an engraving and description in The New Statistical Account of Scotland, No. x., p. 68.) Many such crosses, some square, some octagonal, and some octagonal, are traditionally assigned to the age of King Arthur, about A.D. 600. The other is the famous cross of Macduff, on the Ochill hills, overlooking the beautiful valley of Strathblane. It consists only of one large block of sandstone, forming the cross of Macduff alone, which, in 1559, was destroyed by the mob of fanatic reformers on their way from Perth to the abbey of Lindores. It is surrounded by cairns and tumuli, containing, it is said, the remains of those who, having committed murder, fled to this cross, but failed in establishing their claims of kinship with the powerful thane, who made it a sanctuary for his family; and the neighbouring rustics relate how sighted travellers have heard the shrieks of their ghosts.

The following lines from Sir Walter Scott's 'poem on this interesting monument are finely descriptive:

"* Mark that fragment—
  I mean that rough-hewn block of massive stone,
  Placed on the summit of a mountain side,
  Commanding prospect wide o'er field and fell,
  And peopled village and extended moorland,
  An emblem of the hero whom it protected,
  A symbol of all that is just and right.
  To the far distant Grampians. Do not deem it
  A mere sandstone or a rock, or a plain, or a stone,
  But a sentry of the faith, a stele of the sign,
  A token of blast or fame, a name of the time.
  Cared for with words which few' philologers
  And the swedes it did comprehend.
  It was dark, remote, and wholly inaccessible:"

As were the mystic characters in verse.

The wondrous words here alluded to have been preserved by Sir James Balfour, the celebrated annalist, as follow:

"Militremus Draconis, Manius, Inquilius, largus
Praestans, et Augustus. In custodia
Lithaeo, fideis, sentinella, latiae liceos
Et terrae statu, et singularis artem distrincta
Skirnus, at lapindus a alia vinum imitatur labrum.
Prpecta, et supererit. Ac celeritas, et superabilis labrum."

Mr. Cunningham, in his learned Essay on this singular inscription, considers the words with which the Latin is intermixed as Saxon Latinized; and the writing he believes to be a charter from Malcolm Canmore to Macduff, in which he is termed the king of the kingdom of Fife by a tenure similar to that by which the famous Hugh Lupus held from William the Conqueror the government of the county of Chester.

Besides the abbey of Lindores, there are remains of many other castles, both old and new, of which the abbey of Inchcolm and of Balmerino, the priory of Pitenweem, &c., for descriptions of which we refer to Grose's 'Antiquities,' Dr. Sibbald's 'History of Fife,' and 'The Beauties of Scotland,' vol. iv. The large palace or castle of Falkland is one of the most picturesque objects and interesting historical and local interest, situated on the banks of the River Leith, about a mile from the ancient town of this name, and near the site of the battle of Falkirk, when Robert the Bruce won a great victory over the English. It was one of the seats of the Macduffs, the thanes of Fife. By King James V. it was greatly enlarged and ornamented, and made a royal residence; being pleasantly situated in the midst of a fine country for the enjoyment of deer and bear hunting. The south front of this magnificent building is partly inhabited. In the parish of Monimail stands an old tower, known as Bethune's or Beatson's Tower. It formed part of the palace of the archbishops of St. Andrews, and in 1560 was the residence of Cardinal Beaton, who was executed on the spot. It is distinctly represented on the walls in relief with his cap on, together with the arms of the Bethune family. The castle of Rosyth, near Inverkeithing, stands on a rock surrounded by the sea. It consists of a large square tower, in the midst of the ruins of an ancient fort, and some parts of it remain on some of the interior walls. The castle of Loch Orr stands in the middle of this loch, in the parish of Balingly. It was built in the time of Malcolm Canmore, and consists of a tower and other buildings surrounded by a strong wall. The ruins formed a beautiful object in the lake before it was drained. Seafield Tower is an old ruin on a rock by the shore, in the parish of Kinghorn. The castle of Ravenscraig stands also on a precipitous crag projecting into the sea, in the parish of Dysart. It is inhabited in the time of Oliver Cromwell, and has been the scene of romantic legends. Macduff's Castle at East Wemyss stands on a high cliff overlooking the sea. Two square towers and some of the surrounding wall still remain. There are several other castles of Macduff in other parts of the county. Craig Hall, in the parish of Ceres, is an extensive ruin on the top of a beautiful glen filled with luxuriant trees. It was the seat of Sir Thomas Hope, Charles I.'s advocate. In the same parish is Tarvet Tower, a beautiful old fabric surrounded by a stone wall, and the mansion house.

The following counties are traditionally assigned to the age of King Arthur, about A.D. 600:

- A.D. 600:
  - The famous cross of Macduff, on the Ochill hills, overlooking the beautiful valley of Strathblane.
  - The abbey of Lindores.
  - The abbey of Inchcolm and of Balmerino, the priory of Pitenweem.

These counties, along with others, have been the scene of numerous battles and significant events in Scottish history. The following counties are mentioned:

- A.D. 1559:
  - The cross of Macduff was destroyed by the mob of fanatic reformers.

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  Cared for with words which few' philologers
  And the swedes it did comprehend.
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In this county are found a remarkable number and variety of the vestiges of the Caledonian and Pictish inhabitants, and of their Roman and Danish invaders, antient mili-
tary forts and earthworks, numerous enclosures of Druidical lihii, cairns, tumuli, barrows, stone circles, Celtic sepulchral urns, spear and arrow heads of flint, swords and battle-axes of brass and bell-metal, crosses, fonts, beads, Roman and other coins, weapons, &c. One of the small consuls in the early part of the 1st century was charged with numerous coats of arms of the antient families, has been disintegrated in the parish of Inverkeithing. It may be here also mentioned that the roof and walls of Earl's Hall, a venerable old edifice in the parish of Leuchars, are supplied with two armed men, dressed in mail, with the same parish an arm, containing about 100 perfectly preserved silver coins of the Roman emperors, was turned up by the plough. Part of the church in this parish was about a year 1100, and exhibits the most interesting specimen in Scotland of the 11th century style of building.

The mansion of the earl of Rothes at Leslie contains curious and valuable collections of old manuscripts, paintings, and tapestries. In Chamber's 'Picture of Scotland' (2 vols. i. 27, pp. 163-223) there are two views of the picturesque objects and interesting historical and local interest, connected with the abbey and palace of Dunfermline, Falkland palace, the Valley of the Eden, or Howie of Fife, the castle and colleges of St. Andrews, Ravenscraig castle, &c. From Dunikier Law, and in several other counties, the view extends beyond the county on every side.

Among the eminent individuals who have been natives of Fifeshire may be mentioned Sir Robert Sibbald the antiquary; Dr. Andrew Marshall, distinguished in medicine and anatomy; John Weir, a learned divine; Sir Robert Adam, an eminent architect; Dr. Watson, who wrote the life of Lord Gordon; Professor Tennant, of the University of St. Andrews, a distinguished oriental scholar; Admiral Greig, whose abilities raised him to the chief command of the Russian navy. Dr. Adam Smith was a native of Kirkcaldy, where not only the house but the room is shown in which he composed 'The Wealth of Nations.' It was in the parish of Leslie that, when a child, he was accidentally left in the fields and stolen by gipsies. Leslie Green was the son of Allan P. C., No. 628.

P. V. X. - 2 M.
Remsey to be the scene of King James the Fifth's poem of 'Christ's Kirk on the Green'.

Chief Towns—Cupar is the county town. The two other principal towns are Dunfermline and St. Andrews. The former is important as a populous centre of the linen manufacture and of the old burgh of the county.

Of the three places separate descriptions are given under their respective names. The number of smaller towns and villages is about 40, lying chiefly on the line of coast. A detailed description of each is given in The New Statistical Account of Scotland. There are 13 royal burghs, namely, St. Andrews, East and West Auchterarder, Burrieston, Crail, Dysart, Inverkeithing, Kirkcaldy, Pitreavie, Cupar, and Dunfermline. All these, with the exception of the two last, are seaports; but in general the burghs are now only fairly lively. The former burghs of Grantown, Aberdour, and Aberdovey, and are now comparatively in a state of decay, a fact which is owing partly to their having originally possessed, like all other royal burghs, an exclusive privilege of trading, but principally to the union of Scotland with England in 1707, when the burghs on the Firth of Forth experienced more or less depression and loss of trade. The population of these burghs, including their respective parishes, is, according to the census of 1851, as follows:—

Auchterarder, burgh and parish, 1,457; Dunfermline, 2,692; Crail, 1,831; Cupar, 1,756; Dysart, 706; Inverkeithing, 712; Kirkcaldy, 1,962; Pitreavie, 613; St. Andrews, 3,621.

The whole population of the county in 1851 was 128,989. The annual rateable value of the county for the year 1851 was £28,440. The total rateable value of the county for the year 1841 was £25,611. The number of railway stations was 16, and the agricultural produce was 8 per cent.: from 1841 to 1851, 13 per cent.; from 1851 to 1861, 12 per cent.

Dysart is a small ancient town on the Firth of Forth, consisting of three narrow streets, of which the central, or high street, is a continuation of the old highway, running in the line of the ancient burghs and the site of the ancient race-courses, dates, and pothouses under which the merchants in old times exposed their goods for sale. It was a royal burgh about the year 1250, but even in 1450 its saltworks were not of great importance. It now supplies the principal places in Scotland and Holland. Its trade and manufactures were once very active, but the industry was then carried on to a greater extent, and its markets exhibited a very superior degree of mercantile and commercial activity. At present the harbour is one of the best on the coast of Scotland, and the chief shipping consists of only a few barges and sloops engaged principally in the exportation of coal, corn, and other agricultural produce. A flour mill and earthenware factory give employment to about 100 persons. The manufacture of linen has been already described. There is also a small cotton works.

A curious observation made by the cottiers and miners here, is, that some hours before a storm of wind and rain, a sound comes from the strata in the coal-pits and ironstone works resembling the drone of a bugle, or the loud humming of a bee, accompanied with a 'black damp' at the bottom of the pits which extinguishes the lamps. Inverkeithing is a small market and post-town near Dunfermline, on the bottom of a bay, which occasionally affords a safe asylum for large vessels lying in the Leith roads. It contains about 1,000 inhabitants, and is very picturesque in its situation. It was the residence of David I., and was made a royal burgh by William the Lion. In conjunction with Culross, Queensferry, and Stirling, it sends one member to parliament. Its coasting trade and maritime commerce are similar to those of the other royal burghs already mentioned. Kirkcaldy, Auchterarder, Pitreavie, and Crail, are small seaports and fishing towns not requiring particular notice, though in common with the other royal burghs many interesting facts are connected with their local history and Ancient Propriety. They unite in sending one representative to parliament. The burghs of Kirkcaldy and Burrieston, which jointly with Dysart and Kirkcaldy return one member to parliament. Kirkcaldy merits especial notice as a place of considerable commercial importance. It was formerly a part of the region called Kilkeith, or Culross (see Talbot's 'New Statistical Account of Scotland,' last chap.), whence the formation of its name by the prefix of the word kirk. It belonged to the abbots of Dunfermline as a royal burgh in the year 1354. Charles I. in 1644 made it a free port with additional privileges and jurisdiction. At this period it possessed 100 ships, and the population was much larger than at present. It is pleasantly situated on the shore of the Firth of Forth, forming one handsome street nearly two miles in length, which has near 1500 houses, besides about a thousand others some few miles out of the town. The population exceeds 6000. Kirkcaldy of late years has received many additions and improvements in houses and public buildings. It has an elegant modern-built church and town-house, with assembly-rooms, marine lodge, subscription library, reading rooms, and public grammar school, which is lighted with gas. The market is well supplied, and many visitors resort to the town as a bathing place. The harbour has been rendered very commodious. Of the single article of coal about 90,000 tons are annually shipped, of which 20,000 tons are chiefly destined for the coal trade of the river Medway. Sheep and pigs also form large items of exportation to London and various other ports. There are several flax-mills, an extensive manufacture of coarse linen fabrics, an ironfoundry, tanneries, a large whisky distillery, several salt-works, breweries, &c. The harbours of Eille and Newburgh, on the Tay are safe and commodious, and the little town of Newburgh is an active and improving place of commerce.

Dividends, Fairs, &c.—The county is divided into 61 parishes. A neat and accurate map of these parochial divisions is given in the 'New Statistical Account of Scotland,' No. 13. For ecclesiastical purposes it is divided into four presbyteries, namely, St. Andrews, Cupar, Kirkcaldy, and Dunfermline, so called from the presbytery being appointed to meet at these places. In all the towns and large villages, and in the majority of the smaller parishes, there is a fair every year, for the sale of agricultural stock and produce of every kind, as well as for all articles of domestic consumption, and implements of agricultural and manufacturing industry. The greatest fairs in the county amount to £75; namely, at Cupar, 8; at Dysart, 10; at Leven, 7; at St. Andrews, 6; at Inverkeithing, 5; at Crossgates, 5; at Dyvart, 4; at Auchtermuchty, 4; at Auchterarder, 3; at Galine, 3; at Leuchars, 2; at Leslie, 2; at Kirkcaldy, 2; at Pitlessie, 2; at Cray, 2; at Colnburgh, 2; at Kirkbath, 2; at Kinghorn, 2; at Newburgh, 2; at Strathmiglo, 2; at Pathhead, 2; at Tayburn, 1; at Wemyss, 1.

The courts for trial of crime and civil suits are—1, the county courts; 2, the sheriff's courts; 3, the courts of the justice of peace.

The county sends one member to parliament and the burghs, as above stated, send three. The annual value of real property, as assessed in 1812, was 405,770l, and the value rent in 1816 was 368,452l.

Education.—In this county, as in almost every other in Scotland, the means of elementary instruction are so generally established and so efficiently administered in every parish that it is very unusual to find an instance, even among the poorest and most secluded parts of the country, according to the parliamentary reports on education in 1818 the number of parochial schools in the 61 parishes of Fifeshire was 71, of which the annual revenue was 1430l, and the number of children taught in these schools was 3898. There were also of endowed day schools 132, teaching 5671 scholars, and of unendowed Sunday schools 29, attended by 2522 children. A general view of the present state of education in the whole county is not obtainable from the 'New Statistical Account of Scotland,' as reports of only about half the parishes are published. It is, however, clear from the reports by the master and the schoolmaster in the majority of the schools which have been published that the report is one of steady progress and improvement in the moral character of the people and that the education of the children is really equal. Some of the parishes enjoy the advantage of several large donations from wealthy philanthropists for the promotion of education; thus, Mr. Robert Philip bequeathed about 80,000l. to Kirkbaldy and three adjoining parishes for this purpose. Greek, Latin, Mathematics, and the modern languages are taught in the greater number of the schools. In every town and village circulating libraries, containing several hundred volumes, a c e non-returnable in the small towns and villages. However, in many parishes, especially where distilleries are estab- lished, public houses for the sale of intoxicating liquors are numerous; and the number of dram-drinkers is 1500. Several Savings' Banks in the county are well encouraged. No compulsory assessments are made for the relief of the poor. They are supplied solely from church.
collections and the interest of funded donations. (New Statistical Account of Scotland; Dr. Thompson's Survey; Dr. Sibbald; History; Beaumont's London, vol. iv.; Calhams' Caledonia; MacCulloch's Statistics; Pennant's Tour; Parliamentary Returns, &c.)

FI F T E N T H, in music, is the interval of the double octave.

The Fifteenth Stop in organs, is a range of metallic pipes, tuned two octaves higher than the diapasons.

FIFTH, an interval in music, and the most perfect of the concords, the octave excepted. Its ratio is 3:2. [Concord, Harmony]

There are three kinds of Fifths; the Perfect Fifth, the Flat or Diminished Fifth (called also the Imperfect Fifth), and the Extreme Sharp or Superemous Fifth. The first (c, g) is composed of three whole tones and a semitone; the second (a, d) of two whole tones and two semitones; the third (c, e, g) of four whole tones. Ex.:

FIFTH MONARCHY MEN, a sect of religious men, whose distinguishing tenet was a belief in the coming of a fifth universal monarchy, of which Jesus Christ was to be the head, while the saints, under his personal sovereignty, should possess the earth. They appeared in England towards the close of the Protectorate; and in 1640, a few months after the Restoration, they broke out into a serious tumult in London under their leader Venner, in which many of them lost their lives, some being killed by the military, and others afterwards executed. Several Fifth Monarchy Men also suffered death in 1662, on a charge (most probably unfounded) of having conspired to kill the king and the duke of York, to seize the Tower, &c. They are the same who were sometimes called Mennonarians, their notion being that the reign of Christ upon earth was to last for a thousand years. They seem also, from the extravagance and violence of conduct into which they occasionally broke out, to have been confounded, in the popular imagination, with the old Anabaptists of Münster. [Anabaptists]

FIG, the Ficus Carica of botanists, is a small tree with tough, lobed, deciduous leaves, naturally inhabiting the temperate parts of Asia, and now commonly cultivated in Europe for the sake of its fruit.

In the fertile islands of the Mediterranean, in Spain, Italy, and Greece, and even so far north as the south of France, it is considered as a valuable article of exportation in a dried state. A thousand tons are annually imported into Great Britain alone. The fruit is grown with some success even in the southern and milder parts of England, but it is seldom found in the northern parts of England, except under glass. It is only as an object of cultivation in this country that we have to consider it in this place.

The nomenclature of figs is in a greater state of confusion than that of most other fruits, and the descriptions of them generally so imperfect that the same kind is grown in different parts of the country under many different names; an account of their synonyms, as far as they have been determined, will be found in the Horticultural Society's Fruit Catalogue, ed. 2.

The following is a list of the best sorts:

- Black Providence
- Large Blue
- Brunswick
- Blue Burgundy
- Early White
- Large white Genoa
- Hambleton Brawn
- Black Ischia
- Brown Ischia

The best sorts for forcing are:

- The Ashridge Forcing
- Figue Blanche
- Early Forcing
- Prograssia

The following kinds are recommended as a selection for a small garden in the southern and midland counties of England:

- Black Ischia
- Large white Genoa
- Brown Turkey
- Brunswicker
- White Malta

The following sorts have been recommended for a succession from August to October in the south of England:

- Brown Ischia
- Large white Genoa
- Green Ischia
- Murrey, or brown Naples
- Fort's Seedling
- Black Providence
- Yellow Ischia
- Gentile

The most approved methods of propagating fig-trees are either by layers or cuttings, and the former method is generally preferred, because the plants at the end of the season are stronger and more fit to be planted out where they are intended to grow. Trees raised from layers generally come into bearing the second year. Grafting succeeds upon these trees as well as upon any other; but it is almost unnecessary and seldom practised. Before the trees are planted the ground should be well drained, and made from two feet and a half to three feet deep, with a mixture of good friable loam and decayed dung. Millar remarks, that 'Fig-trees love the greatest quantity of the most favoured fruit-mold growing upon chalky land where there has been a foot or more of a gentle loamy soil on the top.'

It was generally believed until a few years back the pruning was injurious to the fig, but experience shows this provision to be unnecessary, and that it is as tractable in this respect as any other tree.

The object to be always kept in view is to have constantly a supply of fruit-bearing shoots, and for this purpose the old wood should be gradually cut away, and the young in- 

...
perature should be gradually increased from 50° to 65° or 70° Fahr. Some also approve of a bottom heat, and recommend the pots to be plunged in a bed of leaves or tan.

The ficus is very apt to throw off its fruit before it ripens; and various methods have been suggested to prevent this. In the Levant, to insure a crop, a process termed caprification is resorted to, which consists in placing among the cultivated figs branches of the wild fig, in which a kind of Cytops-absends. This insect, issuing from the wild fruit, eats several of the seeds, digesting about the pollen in the pistil, and so fertilizing the fruit. Or these figs that drop prematurely and are chiefly filled with male flowers are preserved and introduced among the green growing figs with a view to their pollen being cast on which are placed figures with young fruit. Nothing is done in this country except ringing the shoots sometimes, and this is said to be attended with beneficial consequence. (See Hort. Trans., vol. i., new ser., p. 395.)

FIG. 1. (Loopy)

FIGURAS. [Catalonia, p. 362.]

FIGULUS. [Creepers, vol. viii., p. 148.]

FIGURATE NUMBERS. [Numbers, Figures, and Polynomial.]

FIGURE. (Geometry), a finite space, which has a boundary in every direction. The figure of a space is the notion we receive from observing its boundary.

FIGURE OF THE EARTH. [Geodesy.]

FIGURED BASE, in music, is a line, or staff, written in the shape of a figure, and in which the notes are placed figuring certain chords. This is commonly called the Thorough Base. [Thorough Base.]

The Figured Base is fallen into disuse; though we are strongly of opinion that it might still be most beneficially employed in a course of first learning music, when the harmony, or accompagniun is given fully in the treble staff, figures are not only superfluous, but perplexing and incorrect.

FILAMENT. [Other.]

FINCHERI, GAETANO, was born at Naples in 1752, of a noble family. In his early youth he did not exhibit any signs of extraordinary talent, but after being put under the care of Monsignor de Luca, bishop of Trivento, he made rapid progress in the classical language, mathematics, and philosophy. In 1774 a reform in the judicial administration was determined on by the ministers of King Ferdinand, by which the judges of the various courts were in future to explain the grounds of their decisions by referring to some existing law applicable to each respective case. Finch will not only have the means of defendants, but take the risk of the king for his decision. This determination, which checked the till then absolute discretion of the courts, was strongly opposed by the judges, supported by most of the law practitioners, as offensive to the dignity and independence of the courts, and they published a memorial on the subject. Finch took up the matter, and wrote a reply showing the absurdity and impertinence of the objections as insulting alike to the liberty of the citizens and to the authority of the crown. Riferimento politico della Legge 21 del 23 di Settem- bre del 1774. The work was favourably noticed by the government, which enured its decree regardless of the clamours of the interested party. Those were times of useful reforms and enlightened administration at Naples, when Genovesi, de la Fuente, Galanti, Palmeri, Galini, and other learned men were encouraged in suggesting improvements, which were at least in part acted upon. [Fernando iv. of Naples.]

In 1780, Finch was 28 years of age, published the first volume of his great work, "Scienza dei Legamenti"; which made a great stir through Europe; he went on publishing the successive volumes in the following years. In 1787 he was appointed a member of the Supreme Council or Board of Finances, a department which stood also in need of reforms. He died in July, 1816, at the age of 75, having died of his work on legislation incomplete. The work however has gone through many editions, and has been translated into several languages; one of the best editions of the Italian text is that of "L'Espresso Italiano," vol. xii., 8vo, Milan, 18-22, to which are added his "Opere Scelte," etc. Minor works. Among the translations the French one, Paris, 18-22, contains a biography of Finch by his countryman, Sait. Benjamin Constant wrote a "Commentaire sur P'afge-Filangeri," 2 vols., Paris, 1822-24.

Finangeri has been styled the Montesquieu of Italy, but there are considerable discrepancies between these two writers. Montesquieu, a man of mature years, more extensive reading, and stronger reflective powers, was rather the historian of the laws and social institutions such as they existed then or had existed before his time, and although he discovered and pointed out abuses, yet he seldom advocated change. Filangeri on the contrary recommends a complete reform in the laws, and lays down the bases of a new order of things. Both occasionally fall into apparent contradictions, but after a full and deliberate study of the subject, invests at times most strenuously, and in spite of his veneration for privileges and inequalities of rank, against the abuses of those very institutions; whilst Filangeri, a professed innovator, in his writings abounds in sublimity of character and out of deference to existing forms of society, to make concessions which seem opposed to his principles. Thus he awards as a punishment for high-tension not only the penalty of death, but also that of confiscation of property, and this at the very time that the penal code published by Leopold in 1826 proclaimed to the world that "confiscation was a real act of violence and a usurpation of private property by the government." Filangeri aimed at effecting a change in legislation without a corresponding change in the forms of the government, and in his time, and especially in Italy, where numerous and important reforms emanated from the sovereigns themselves, this course appeared both reasonable and prudent. He says, in the introduction to his work, that his "only object was to facilitate to the sovereigns of his age the execution of a wise and useful plan, and to show by his examples the manner of transposing the human will to the will of God, and to the common good, in a way that no good government can be done without; the recommendation to them is to abolish all pernicious or useless laws, and to be sparing in making new ones without a real necessity. Like his contemporary Beccaria, he adopted the theory then prevailing in France, of an original social contract, by means of which each individual in society has an original claim upon the government, and to whose license he has been, in a great degree, the descendant of his right of self-defence which he possessed in a state of nature to the collective body of society, giving it thereby the right of punishing any one who made attempts against the security of another (Scienza della Legislasione, 24. 26). As the country has been hitherto overthrown by other writers, and in Italy especially by Romagnosi in his Genesi del diritto Penale, 1791, and in his Assunto primo della Sezione del Diritto Naturale, 1826. See also on this subject another Italian, Professor Rossi in his Trattie di drit Penale, Paris, 1815.

On some questions of political economy, on population, agriculture, &c., Filangeri shared the opinions prevalent in his time, which have been since exploded or modified by modern economists. Notwithstanding these and other misjudgments, that his work still great merit; it suggests many useful ideas, and is throughout inspired by a sincere love for mankind, and an honest sincerity of purpose. The commentary of Benjamin Constant forms a very useful supplement to it.

FILBERT, filbert, [Corlyns avellana. [Corlyns.]

The term was originally applied to those kinds of nuts which have very long husks, but owing to the number of varieties that have of late years been obtained, this distinction, which was never serious tical, appears to be nearly disregarded, and nut and filbert are almost synonymous terms, except that the wild unculivated fruit, and those varieties which most nearly approach it, are never called filberts.

The best sorts are the following:—

Frizzlzed filbert, excellent bearer.
Red filbert.
White filbert.
Cornish filbert (a new and different variety).: a very prolific kind.
Bond-nut.
Coford.
Large square Dowton.

According to the most skilful cultivators, the soil on which the filbert succeeds best should consist of a lozal loam of some depth, upony a dry soil; but this is not always found convenient, it should be remarked that it is not essential to the growth of the filbert, and even had it been grown on a dry poorish soil. The ground should be frequently dress (at least once in two years), and a small quantity of manure given; woolen-rags are often used for this purpose with the greatest success, but manure of any kind will be found beneficial.
Filberts are most successfully propagated by layers or suckers. The layering should be performed in the earlier part of the season, in order that the plants may be well rooted, and ready to plant either in a nursery, or where they are intended to remain, in the autumn. When they are laid on the ground, the root or former roots of the plant should be removed from the parent plant in the end of the season, and subjected to the same treatment as layers. If it be desirable that the trees should be dwarf, layering and grafting are recommended; but for strong plants are wanted, they are raised from suckers: it is also said that fruit is increased in the last method.

The method of pruning depends in a great measure upon the object the cultivator has in view: if dwarf trees are wanted, the layer or sucker is shortened to about one foot and a half or two feet, when all the rooted branches are disposed of, then the stem is cut much higher; but if the shoot is weak it is better to cut it near the ground, and leave it the proper height at the next year's pruning. Afterwards, when any sucker makes its appearance, at the bottom of the stem, it should be carefully removed, and not allowed to draw the nourishment from the parent plant.

In the formation of the head, the chief thing to be observed is to form it regularly, cutting away all strong suprasculose shoots, keeping it thin and open in the centre, and thus allowing the free passage of light and air. 'There will be produced from the two and three years' branches, annually, short twigs of six or nine inches in length, which generally bear a great many nuts the following year; these should be thinned out, but not shortened, leaving them to develop at their free will, and let them clean out the following winter, and leaving others in the same manner as those had been left the previous season.' (Ludley's _Guide_, &c.)

About Maidstone, and other parts of Kent, the management of the filberts is much neglected, and many are poor, and it appears not by any of the present state of this part of the country; and as the soil and other circumstances seem to suit its growth, immense quantities are grown for the London market. 'That part of Kent where the filbert is chiefly cultivated is a bourn upon a dry sandy rock, where there are no trees where they are to remain, whether they are intended for a garden or a larger plantation; and after being suffered to grow without restraint for three or four years, to cut them down within a few inches of the ground. From the remaining part, if the trees are well rooted in the soil, five or six strong shoots will be produced. In the second year after cutting down, these shoots are shortened; generally one-third is taken off, and that they may appear regular, a small hoop is placed within the branches, to which the shoots are tied, and this is first unbound when the trees are of considerable size. In this way the trees grow more regular, and the middle of each is kept hollow so as to admit the influence of the sun and air: but this in a large plantation would be almost impossible, nor indeed is it necessary, to give these plants such attention. If the trees are abundant, the neatness is almost essential, it ought to be practised. In the third year a shoot will spring from each bud; these are suffered to grow till the following autumn, or fourth year, when they are cut off nearly close to the original stem, and the leading shoot of the last year shortened two-thirds. In the fifth year several small shoots will arise from the base of the side-branches which were cut off the preceding year; these are produced from small buds, and would not have been emitted had not the branches on which they are situated been exposed to the nourishment being carried to the upper part of the branch. 'It is from these shoots that fruit is to be expected. These productive shoots will in a few years become very numerous, and many of them must be taken off, particularly the strongest, in order to encourage the production of the smaller ones; for those of the former year become so exhausted, that they generally decay; but whether decayed or not, they are always cut out by the pruner, and a fresh supply must therefore be provided from the stock. The leading shoot is every year shortened two-thirds, or more, should the tree be weak; and the whole height of the branches is not allowed to exceed six feet. Every shoot that is left to produce fruit should also be tipped the second year in question, as after the new wood has been grown at the end of the branch. It frequently happens that a strong shoot springs from the root; and should any of the first year's or leading branches be decayed, or become unproductive of bearing wood, it will be advisable to cut that entirely away, and suffer the new shoot to supply its place, which afterwards is to be treated in the same way as is recommended for the others.' (Hart Trans. vol. iv.)

Such, according to Mr. Williamson, is the method of cultivating and careful treatment which has been grown on particular lands: at the same time he acknowledges that failures are by no means unfrequent, but he attributes this to the excessive productiveness of successful years.

The filbert is a monocious plant, having its male organs in one flower and its female in another; and one modern writer, suspecting a want of male blossoms to be the cause of failure in particular seasons, suspended a quantity of the staminodia of the common hazel over the female blossoms of a bunch of filberts, the result of which was a great quantity of fruit than his trees had borne for many years. He then tried some with, and others without, the male flowers, when the former bore fruit, and the latter proved abortive, as he had anticipated. He therefore recommends unpruned hazels to be planted among the cultivated filberts, in order that impregnation may be effected.

Great quantities of filberts are rendered useless by being attacked by the _nut-weevil_ (Balanius nucum), which perforates the nut in its young stage, and deposits its egg: a few days later the maggot is hatched, and then feeds upon the kernel. Some recommend the trees to be shaken in June or July, as this is the time when the insect makes its appearance, but no remedy is known which can be said to be effectual.

In order to preserve filberts in a fresh and plump state, it is only necessary to prevent their parting with their moisture by evaporation. Burying them in heaps in the earth, putting them in earthen jars in a wine-cellar, covering them with dry sand, are all very good plans, and many growers equally succeed in these. (Curtis's _Gleaner_.)

FILLET, a flat rectangular moulding, of very frequent occurrence in architecture. It is used to terminate or divide other mouldings, as in the cavetto, which is surmounted with a fillet, and in the cyma reversa, which is divided by a fillet. The fillet is much used in entablatures. [COLUMN.]

FILTER, a strainer used in chemical operations for the purpose of rendering fluids transparent by separating the suspended impurities which make them turbid, or for the still more important use of separating, collecting, and washing the precipitates or insoluble compounds resulting from chemical research and analysis.

Filters are usually made of unsized or blotted paper: a sheet is spread out upon cloth stretched on a wooden-frame, for larger operations, or folded and placed in funnels, and having consequently the form of an inverted cone.

Filters are either single or double: the former are usually sufficient for rendering fluids clear, but when the insoluble matter is to be preserved, double filters of equal weight are used; in this case, as it is always difficult and often impossible to remove the whole of the solid matter from the inner filter, the outer one, having been subjected to the action of the same fluid serves as a counterpoise to determine the weight of matter remaining on the inner filter when both have been dried.

In other cases a single weighed filter is used, and then the contained impurities being being heated to reduce the in air with the filter in a crucible, so as to determine the weight of the carbonaceous matter of the paper, the quantity of earthy impurity remaining with the product is determined by burning an equal weight of similar paper. For the numerous precautions that must be observed in Fournier's _Chemical Manipulation and Berzelius's Traité de Chimie_.

Within a few years various filters have been very usefully employed for the purpose of filtering water either for drinking or culinary purposes. These filters, though having somewhat the same construction, have the advantage of passing water through sand or small pebbles and charcoal. It is well known that the Thames water, though it contains but little saline matter in solution, is frequently turbid, owing to mechanical admixture of earthly matter, which the filter will remove. It is recommended for the purposes of filtering the water, though not so agreeable as spring-water for drinking on account of its flatness, yet well adapted for other purposes, especially making tea and other similar uses.
FINCH. [NOTTINGHAM, LORD.]

FINCH. [Bellinch Cinch. Young Finch.]

FINE OF LANDS, one of the modes of conveying lands and hereditaments by matter of record. It was so called because it put an end not only to the actual suit of which it was the cause, but also to all other suits and controversies concerning the same matter. Driven of its technicalities, a fine may be described to be an annulable composition or agreement of a suit, either actual or fictitious, by leave of the king or his justice, whereby the lands in question, or any part thereof, are or are acknowledged to be, the right of one of the parties.

This mode of conveyance, which was in use from the earliest periods of English history of which we possess any authentic judicial records, has been recently abolished by the statute 3 and 4 Will. IV. c. 74; yet the rules by which it was governed form a very considerable branch of real property law, and it is therefore desirable briefly to describe its nature and effect. Fines were of four kinds.—1. A fine 'sur dune grant, by which the goods of the grantor were conveyed to the grantee at a certain sum paid, i.e., upon acknowledgment of the right of the cognizor, as that which he (one of the parties to the fine) had of the gift of the cognizor (the other party to the fine). This was the best and surest kind of fine, for thereby the equitable possession was vested in the grantee, and he could not be deprived of it by the action of the grantor from keeping the cognizor out of possession, in order to make good his covenant with the cognizor (the plaintiff), of conveying to him the lands in question, and at the same time to avoid the formalities of an actual feoffment and livery, acknowledged in such a form of fine as in possession, to have been made by him to the plaintiff. This fine is therefore said to have been a feoffment of record, the livery this acknowledged in court being equivalent to an actual livery; so that this conveyance was rather a feoffment in form of fine, than an actual conveyance, and hence usually called
2. A fine 'sur dune grant, at a certain sum paid, i.e., upon the acknowledgment of the right merely, and not with the circumscription of a preceding gift from the cognizor. This was commonly used to pass a reversional or interested, for of such there could be no felony with livery supposed, as the possession during the preceding, or as it is technically called, particular estate belonged to a third person.

3. A fine 'sur concessit,' which was where the cognizor, in order to make an end of disputes, though he acknowledged no prevalent right, yet granted to the party with whom he was conversing, and having the fine a way of supposed composition. And this might be done, reserving a rent or the like, for it operated as a new grant. 4. A fine 'sur dune grant, of an elder,' which was a double fine, comprehending the fine 'sur dune grant de droit comes,' &c., and the fine 'sur concessit.' This might be used to create particular limitations of estate, whereas the fine 'sur dune grant de droit come coe,' &c., conveyed nothing but an absolute estate of inheritance or at least of freedom. In this last species of fine, the cognizor, after the right was acknowledged to be in the party, granted the cognizor, or perhaps to a stranger, some other estate, in the premises. But in general, the first species of fine, 'sur dune grant de droit come coe,' &c., was the most used, as being in general the most absolute, and gained the cognizor a seisin in law, without any actual livery, and it was therefore called a fine executed, whereas the others were but executory.

Fines of all four kinds were thus levied, to use the technical term,—First, the party to whom the land was to be conveyed commenced an action or suit at law against the party who was to convey, by suing out a writ or precepte, called a writ of covenant. The action was founded upon the breach of a supposed agreement or covenant, that the one party should convey the land to the other. On this writ a fine, called a primer fine, amounting to about one-twelfth of the annual value of the land, became due to the king. The suit being thus commenced, then followed.—Secondly, the tenant, conversand, or leave to compromise the suit, upon which another fine called the king's silver was sometimes the post fine, became due to the king, amounting to about three-twentieths of the annual value of the land.

Thirdly, came the concord or agreement itself, which was required to be made either openly in the Court of Common Pleas, or by agreement of the lord-chamberlain of that court, or two or more commissioners in the county specially authorized; all of whom were bound by stat. 1 Ed. I., s. 4, to take care that the cognizors were of full age, sound memory, and out of prison. If a married woman (or a woman under the age of fourteen), she was privy excepted by the parties before whom her acknowledgment was taken, whether she did it freely and willingly, or by compulsion of her husband. A fine was the only way in which a married woman could convey without her husband's interest in lands.

By these several acts the essential parts of the fine were completed, and even if the cognizor died, still the fine might be carried on in all its remaining parts, of which the next was—Fourthly, the note of the fine, which was simply an abstract of the form of the suit, and the concord; before the parties, the presced, and the agreement, for the purpose of enrolment of record in the proper office.

The Fifth and last part was the foot of the fine, which included the whole matter, receiving the parties, day, yeare, and subscription, as the form of fine, if the same was paid at a certain time. And this indenture was made or engrossed at the clerk's chamber, and delivered to the cognizor and the cognizee; usually beginning thus: 'have est finales concordia: this is the final agreement, and then reciting the whole proceedings and taking the fine, and delivering the deed.

The note of the fine was read four times openly in the Court of Common Pleas, or as it was called, proclaimed, once in the term in which it was made, and once in each of the three succeeding terms, during which all pleas ceased, and the cognizor was privy excepted by the parties. A breach of the terms of the fines levied in each county in every term was allowed in some open part of the Court of Common Pleas all the next term, and a copy of the same was given to the sheriff of every county, who at the next assizes fixed the same in the several counties for the years, for the more public notice of the fine. [2 Bl. Com. 342.]

Of the effect of a Fine.—A fine was a conveyance so effectual that it bound not only those who were parties and privy to the fine, but all other persons whatsoever, unless they brought their action or made lawful entry within a year and a day after the intimation. This notice was necessary to give the right to any person who might pretend, by way of estoppel, to have the benefit of the fine. [Exstrepel.]

A fine was principally used as the mode of conveying the estates of married women, and restraining their right to dower, as a means of barring estates tull, and remainders reserved to dependent unmaried persons, and also for the purpose of strengthening defective titles.

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[2 Bl. Com.: Crise On Fine.]
FINGAL. [Ossian.]
FINGER. [Hand.]
FINGER-BOARD, the whole range of keys, white and black, of a piano-forte or organ.

FINGERING, in music, is the art of so applying the fingers to a musical instrument, the piano-forte and organ especially, as to render the performance easy and most effective manner. In a work of this kind practical treatises would occupy too much room, and the art of fingering, accompanied by the necessary examples, would require many pages; we therefore shall only add that, as a system, Clementi's is the best that we are acquainted with; though some few modern improvements have been made in its details.

FINISTRE', a department at the western extremity of France, comprehending a part of the former duchy of Brittany, and containing a few square miles, nearly resembling the eastern part of Devonshire. The inhabitants are chiefly fishermen, and the farm produce is very poor. The department is a seaport, and has a good harbour. The coast of the department consists of a range of mountains, the snow-capped summits of which are seen from the sea. The land is very fertile, and the climate is mild.

The department is divided into two districts, the North and the South. The North district is composed of a range of mountains, the highest of which is called the Mont Aiguille. The climate is mild, and the soil is fertile. The South district is composed of a range of hills, the highest of which is called the Montagne de la Treille. The climate is milder still, and the soil is more fertile.

FINISTERRE, or Finisterre, the most western point of Europe, celebrated in ancient times as the limit of the known world. It is a rocky headland, with a high cliff, from which there is a beautiful view of the Atlantic Ocean.

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and Odet, are favourable to commerce. A canal from Nantes to Brest is in progress, if it is not completed; it enters the department on the east side, and follows the valley of the river which it joins at or near Château-Renard. The high road from Paris to Brest enters the department on the north-east side, and runs through Morlaix, Landivisiau, and Landerneau: this is the only road of the first class. A road of the third class enters the department on the south-east, which terminates near Cantemerle; and two other roads, one northward to Morlaix and St. Pol de Léon, one north-westward to Landerneau and Lesneven, and one south-eastward into the department of Morbihan; another road of the same class enters the department on the north-west, near Quimerperlé, and runs through that of Rosponder, and Quimerplé, to Douarnenez, Pont Croix, and Audierne; another of the same class runs from Quimerpél to Châteaulin and Le Faou to Landerneau. The other roads are by-roads.

The department is divided into five arrondissements, viz.,

of Morlaix, in the north-east, population 1832 313,580; of Brest, in the north-west, population 156,815; of Châteaulin, in the centre, population 94,302; of Quimerplé, in the south-west, population 100,676; of Quimerperlé, in the south-east, population 41,928. These arrondissements are subdivided into 43 cantons, or districts, each under a justice of the peace, and again into 290 (or, according to others, 284) communes, which, in extent and population, may be compared with our parishes. In this department, as in all others, the extent of the ancient commune, no, the population considerably surpasses that of the towns. The towns are Quimerpél, the capital, on the Odet, population 9960; Morlaix, at the junction of the Reliec, and the Jarlo, population 7797 for the town, or 9596 for the whole commune; and Brest, population 29,860. [Brest; Morlaix; Quimerplé.]

Of smaller towns, there are in the arrondissement of Morlaix, Landneur, on a bye-road from Lannion (Côtes du Nord) to Morlaix; Guerlesquin, on the border of the department of south of Morlaix; Landivisiau, on the road from Morlaix to Brest; and St. Pol de Léon (population 3105 for the town, or 6592 for the commune); Ploëuc, (population of commune 3017), and Roscoff (population of commune 3323), all on the coast. St. Pol de Léon was formerly the capital of the department of the Revolutions, the capital of a diocese, the bishop of which was a suffragan of the archbishop of Tours. The town is built on the slope of a hill: the chief buildings are the town-hall; the cathedral, which is built of granite, and presents little that is worthy, except some handsome columns; and a lofty tower more than 180 feet high, called the tower of Creiser. There were several religious houses and a college before the Revolution. The town has a small harbour; the inhabitants manufacture some cotton and linen, and export much leather, kersey, and black worsted; and a large quantity of hay and corn. The chief occupations are fishing, and the cultivation of the potato. In the little port are 25 vessels, besides several large ships. The building of the town is very strong; it is still defended by walls and by a castle built by Anne, heiress of Bretagne and Queen of France. The port does not afford good anchorage. The inhabitants are engaged in the sardine or pilchard fishery, in which 400 vessels are employed.

In the arrondissement of Quimerpél are Quimerpél on the Elvé or Quimerpél (population of town 3866, of commune 3275); Pont Aven, on a small river which unites with the Beton, and Bannalec (population of commune 4183), which is a small town, and has a considerable trade in the coast fishery, particularly in the canaries, but whose neighbourhood was not unfrequently the residence of the dukes of Bretagne, who had here a castle called Cornet. In the civil divisions of Bretagne and afterwards in those of France Quimerpél was the object of attack. The town is of modest size; it has two good streets, a large church, with a square frontage; and a sub-prefect's office, formerly a benefice convent, is worthy of notice. The trade of the town is promoted by the navigation of the river Quimerpél, formed by the junction of the Elvé and the isole or isok: vessels of 50 tons can ascend it to Damgan, the capital of the coast; Lannilis (population of commune 3175) and Ploudalmézeau (population of commune 3023), both on the coast. Landerneau is in the Breton language called Landrannes. In the contest for the duchy of Bretagne between the houses of René and John of Angoulême (John of Montfort) took Landerneau and put the garri-

The department forms the diocese of Quimerpél, the bishop
of which is a suffragan of the Archbishop of Tours. It is in
the jurisdiction of the Cour Royale or High Court of
Justice of Rennes, and in the circuit of the Académie
Universitaire or Educational Board of that city. It is com-
prehended by two to 300 feet in width and varies from
150 to 300 feet in depth; it falls into the gulf of Fin-land
kennedgard, but, owing to the frequent falls, is not navigable.
The Kamoyoki flows from a lake still more to the west, and
falls into the gulf of Bothnia near Börneberg. The Tana-
ness, an outlet of Lake Vänerni, flows into Lake Lago-
dona. The Seestra is the boundary between the governments
of Finland and St. Petersburg; the Tornea and Muonio sepa-
rate Finland from Sweden, and the Tana-elv divides it from
Norway. The line of the Tana-elv is first from south-west
to Falun, where it enters the gulf of Bothnia. Then the
northern border and does through Finmark in Norway north-by-
east into the Tana-forbid.

The waters of Finland and its numberless swamps and
moors occupy more than a third of its surface; but the
contribution is on the whole very small, and the man-
agement is of great longevity. The average duration of the
summer, which is accompanied by great heat, is not more than
three months; the winter, which lasts from seven to eight, is
exceedingly severe, particularly in the north. During the
winter season there is a direct road from the gulf of
Bothnia to Sweden. In the northern parts of Russian Lap-
land the sun disappears entirely from the end of November to
the close of January; an interval which the people term
"skabom," an abominam; but during which the moon and
stars frequently exceed the brilliance of the moon in the
twenty-four hours. The climate is less severe in the
central and southern parts, but thick cold fogs are common.

There are extensive forests of firs and pines in the south,
interspersed with oaks, elms, &c. on the mainland and
the islands in the archipelago. The soil of the lakes and
the soils which receive the exhalation from the lakes and
swamps. In northern Lapland these trees are replaced by
the birch, until, in the coldest districts, trees cease alto-
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The greater portion of the soil is either stony or sandy.
Rich vegetable earth is rare occurrence, and scarcely
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which he plants the ground afresh and lets it lie for twenty or
thirty years before he again uses the burned ground. In this
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but wild berries are the only fruit, except perhaps in
the vicinity of Abo. The crab apple grows wild, but not
beyond the sixtieth degree of latitude. The oak does not
thrive beyond 61°, nor the ash beyond 62°. The forests
have suffered greatly, particularly near the sea-coast,
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Sains, and thence eastward into Lake Ladoga. It is
full of granite rocks and falls as to be little use for
navigation. The Kymmenne is a broad stream, issuing
from Lake Pemöna to the west of Lake Saima, seldom less
than 6 miles in width, and varies from 150 to 300 feet
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and active. Fowl and other wild game are plentiful. Bears, elk, wolves, foxes, martens, &c, afford a large supply of fur and skins. Reindeers abound in all parts of northern Finland, the stock in the district of Kuusamo alone is 12,000 heads; and in that of Urjoki, in northern Lapland, it is between 30,000 and 50,000. These animals constitute, in fact, the wealth of the Laplander; they supply him with food, clothing, and other necessaries, as well as the means of barrier for his principal luxuries, brandy and tobacco: nor is he accounted effeminate unless he be owner of a skin carriage.

Fish is the chief food of the Laplander, whose streams, such as the Torne and Tana, are well provided with salmon, pike, a kind of eels, rebeleys, &c. The pearl muscle is found in some of the lakes and rivulets of the western parts.

Finland has few mineral products. Bog iron is obtained in some parts, and converted to domestic use: coal is also found, and a little copper here and there, but neither in large quantity nor sufficiently to form a business industry.

The whole annual metalic produce of the Gulf of Finland does not exceed 12,000 tons, or about 420 tons.

The majority of the population is of Finnish extraction. The Finns call themselves ‘Samualants’ or ‘Suomues’, but they are denominated ‘Finskoledy’ by the Russians; they are about 1,800,000 souls, but pastoral, temperate and industrious; their complexions are dark, their countenances and manner serious, and they are all well knit, and of a robust make. They are all free, and many of them are landholders. A great number have houses of their own, and hold their farms as true proprietors; they keep in some cases of bestowing them on their children. Their dwellings, called ‘Poette’, are low, dark, and unclean, and built of wood. The Laplander is of the same extraction as the Finlander, and calls himself a ‘Samualants’ or ‘Suomues’; he is also called ‘Lapoomy’, or ‘Laplander’ (in Russian), the name given to him by the Swedes, which signifies a coward, scur, magician, or poisoner. They resemble the Finlanders in all respects except that the upper jaw projects more, and their hair is of a deeper tint. There are not many thousands of them in this government; they lead a wandering life, and are divided into two classes, the reindeer Laplanders and the fishing Laplanders. Numbers of Russians and some Swedes have settled in the district of Viborg and Koslov, as well as in the Finnish towns.

According to the civil and consular register of births in 1822 were 42,928, and in 1823 49,168; the deaths in 1822 were 33,533, and in 1823 29,578; and the marriages in 1822 were 9809, and in 1823 10674. In the five years’ interval from 1815 to 1820 there was an excess of births over deaths in 11,500, and the marriageable portion of the people increased from 16,317. Finland contains 26 towns, 1949 villages, and 28,733 ‘hemman’, hamlets, settlements, and hamlets.

All the inhabitants, except the Russians, profess the Lutheran faith. Finland has 420 parishes and 6124 steepled and bell-towers, and a church, a grammar school, and a manufacture in each town, and in the majority of the parishes, and three or four for each town. The clergy consists of one bishop, 53 vicars, and 137 curates. There are 66 hospitals, 202 medical men, and 1000 chaplains. The number of schools in the majority of the parishes; but public instruction is not widely extended, and the proportion of schoolers to the general population was not more than 1 in 109 about four years ago.

Agriculture, the breeding of cattle, and in some parts, the fisheries, constitute the peculiar occupations of the people. There are few manufactures except in the large towns, and these are principally of iron ware, sail-cloth and stockings. The peasantry make what coarse woollen and linen goods they require for their own use and for exportation, and in some of the parts vessels are constructed. Navigation is much impeded by the severity of the winter, which shrieks the harbours from six weeks to three months. The value of the Gulf of Finland amounts to about 250,000 annually in imports and 260,000 in exports; the latter consisting principally in the supply of St. Petersburg, by the channel of Lake Ladoga and the Gulf of Finland, with timber, meat, butter, skins, tar, fish, &c. The same articles are likewise exported to Sweden. Salt is a great article of trade.

There is a distinct establishment at St. Petersburg for the government of this vast province or principality. The government of Finland is in the hands of a Prince who resides at St. Petersburg, and performs the military duties of a despot. Though Finland has a constitution of its own, by which the inhabitants are classed in four orders, the diets are never convened, except on the occasion of additional taxes being contemplated by the government. The Senate in fact has been found out to be a convenient body to manage than the diets, and it has almost superseded them.

In the year 1811 the principality was re-moulded into eight circles or ‘Loonen’, at the head of each of which there is a grand-governor called a ‘Landshoofder’. Each circle is divided into districts, or ‘Voogdleren’, and each of the latter into bailiwicks, or ‘Hoarit’. In judicial matters the Swedish system has been retained; and this is the case also with regard to fiscal concerns. In the absence of official data, the revenue has been estimated at 60,000,000 sterling per annum.

The eight circles, or leagues, commencing from the south, are Viborg, St. Michael, Nyland, Vasa, Uleaborne, Viborg, Waasa, Kuopio, and Uleaborne-Kuvas. The circle of Viborg has the town of the same name, with Viborg castle, which was the ancient capital of Sweden; it lies on a bluff of the Gulf of Finland, is well fortified, consists of the main town and two suburbs united by a wooden bridge to the island on which the castle stands, and has an elegant church, an electoral college, and a university, and another for the Finlanders, a Roman Catholic chapel, a district school, besides other schools, and about 3000 inhabitants. In this circle is Frederik-hamm, on a peninsula on the bay of Finland, a strong fortress, containing about 2800 inhabitants.

The circle of Vasa, the capital of Vasa county, is a small town, but has been destroyed by the fire of September, 1808, was concluded, by which Sweden made over Finland with part of Lapland and the Aband Islands to Russia. St. Michael, north-west of the preceding circle, contains St. Michael, a small town, and Nydott, another small town and village. The circle of Viborg contains Viborg, the capital of the principality, a town of land in the Gulf of Finland, with about 10,000 inhabitants, and the strong fortress of Viborg, at the entrance of the harbour. North of this place lies Borgo or Borgo, a small town on the river of the same name, with a cathedral, a church, gymnasium, manufactures of linen, silk, cotton, refined sugar, and tobacco, and about 2500 inhabitants.

Lowis, formerly Denerby, north-east of Borgo, is a seaport, with two churches, and about 2800 inhabitants. The town of Viborg, the capital of the circle of Viborg, contains 28 towns, 1949 villages, and 28,733 ‘hemman’, hamlets, settlements, and hamlets. The number of inhabitants, except the Russians, profess the Lutheran faith. Finland has 420 parishes and 6124 steepled and bell-towers, and a church, a grammar school, and a manufacture in each town, and in the majority of the parishes, and three or four for each town. The clergy consists of one bishop, 53 vicars, and 137 curates. There are 66 hospitals, 202 medical men, and 1000 chaplains. The number of schools in the majority of the parishes; but public instruction is not widely extended, and the proportion of schoolers to the general population was not more than 1 in 109 about four years ago.
The Fins differ wholly from the Selavonians and Livonians. They have an alphabet and language peculiar to themselves. The majority are attached to agricultural pursuits; many of the few tribes are pastoral, and some devote themselves exclusively to hunting and fishing. Their social and moral condition, but of a strong robust make: their characteristic features are a flat face with hollow cheeks, dark grey eyes, and light brownish hair, a thin beard, and sallow countenance. The Tserremys or Tserremysees and Tatuwaks approximate somewhat to the Tartars in their exterior appearance, the Mardvins to the Russians, and the Voguls to the Calkucks. The Fins are a brave, honest, and hospitable race of men, but headstrong, frequently ferocious, and revengeful in their manners. Some tribes are so indolent that the name of Fin is in many parts synonymous with laziness; they have little activity of mind, and are notorious for their want of cleanliness. They are destitute of the vivacity and social qualities of the Russians, and are serious, reserved, and unamorous.

The Fins are, with few exceptions, Christians. The Eastern were converted by their Russian masters to the Greek faith; the Western, who at first embraced the Roman Catholic religion, have mostly followed the example of their former masters, the Swedes, and are converted, and few others. The Hungarians, who are descended from the Yugas of late antiquity. Among the tribes who adhere still to paganism are the Tserremys, Mardvins, Voguls, and a few others. In point of civilization none are so advanced as the Finlanders; many possess a natural taste for music and poetry. Assyrian or Chinese origin. The Rugen is now divided into Ostaks and Voguls. The last have dark-brown or black hair, and their dialect much resembles the Hungarian.

The Fins have no nobility. The peasant, however, always guards his cattle, and holds himself the servant of the crown in high respect. Independently of husbandry, fishing, and the chase, they are in some parts employed in the manufacture of tar, and in building barks and boats. Their dwellings in general are at a distance of one another, and consist of cabins, one for summer, another for winter, and a third for culinary purposes: these are surrounded by a yard, which also contains a barn and stable for stables. Their women are often very devoted to their domestic duties; they weave coarse woolens for the use of their families, and their winter attire differs little from that of the men.

The Fins are fond of ardent spirits; yet longevity is common among them.

FIR [A. 321.]

FIRDUSI, ABUL CASIM MANSUR, a celebrated Persian poet, was born at the village of Shashib, in the district of Tus, in the province of Khurassan. The Persian biographers differ considerably in the date of his birth, some placing it in the beginning and others in the middle of the 10th century; but as Firdusi himself mentions the 7th chapter of the 'Shah Nam' that he completed that work A.H. 400 (A.D. 1009), and that he was then nearly 80, he must have been born about A.H. 319 (A.D. 931).

His father was a merchant, and is said to have had the management of a beautiful estate called Firdus (i.e. paradise), whence the poet obtained the name of Firdusi; though, according to another account, this name was given by Nijzorgor and Nishorgor and Caana, and the Kyrians, between Lake Puyen and the Kymen, as far as Lake Ladoga. Schubert, in his account of the Russian empire, gives the subsequent enumeration, which does not differ essentially from that of Vevolovsk, whom we have followed in the preceding classification.

1. Laplanders or Samecals 22,000
2. Finlander and Fins of Ingria and Carelia 1,200,000
3. Esthbes or Esthians 500,000
4. Livys and Kurs 1,600
5. Permans 85,000
6. Suryanes or Siryanes 30,000
7. Voguls 100,000
8. Votyaks 100,000
9. Tserremys 200,000
10. Tatuwashes or Tatuwaks 370,000
11. Mordvines or Mardvins 92,000
12. Ostyaks of the Obi 108,000
13. Teptyars 111,000

Total 2,869,000
to him by Mahmud in consequence of the excellence of his verses.

Firdusi appears to have spent the first fifty years of his life in his native village, till attracted by the encouragement which Mahmud gave to learning and the fine arts, he repaired to his court at Ghazni, where his talents procured him instant and universal reception. After his return, Mahmud commanded him to write a history of the kings of Persia in verse, and promised to reward him with a thousand pieces of gold for every thousand couplets. The poet however preferred waiting for his reward till he had finished the work which was completed, after a labour of thirty years, in 60,000 couplets. But instead of receiving the great sum he had anticipated, he was doomed to a cruel disappointment. It appears that he had offended some favourite courtiers, who prejudiced the mind of Mahmud against him, and accused him of having introduced into the religion of the prophet the praisings which he had bestowed upon Zoroastz (Zoroaster) in his great poem. Instigated by these calumnies, Mahmud only sent him 60,000 silver dirhems. It is related that Firdusi was in the bath when the governor of Mandhiran (Hyrcania), and after the meanness of the sultan, he distributed the whole sum among the attendants of the bath and the slave who brought it, adding, 'The sultan shall know I did not bestow the labour of thirty years on one who gave me 60,000 silver dirhems.' On the appearance of this insult, he was sentenced to be trod to death by an elephant, and with great difficulty obtained a revocation of the sentence. Feeling that he was no longer safe at Ghazni, he left the city, after having written a bitter satire on Mahmud, and went to Mecca. He merely visited the tomb of the prophet, and then that of a panegyric on the sultan, which he must not present to his master till several days had elapsed. A translation of this satire is given by Sir William Jones, accompanied with the original Persian, in his Poëtes Ariostes Commentorii (Works, 5th edition, vol. vi., pp. 308-313), and also without the Persian in his Traité sur la Poésie Orientale, vol. xii., pp. 242-245.

The accounts given in the Persian biographies of Firdusi after his departure from Ghazni are vague and unsatisfactory. About the year 1070 of his life, he left Persia for India, from one kingdom to another, pursued by the emissaries of Mahmud, whose power was too much dreaded by the various monarchs of the East to allow them to harbour for any length of time the proscribed poet. He first took refuge with the governor of Mandhiran (Hyrcania), and afterwards fled to Bagdad, where he was hospitably received by the caliph Kadir Billah, who gave him the 60,000 pieces of gold which Mahmud had promised. While at Bagdad he is said to have added a thousand couplets to the Shah Namah, and composed the elegy of the death of the caliph, with a panegyric on him in Arabic; but this statement is in all probability incorrect, since all trace of the latter is lost, and none of the copies of the Shah Nameh, collated by Mr. Turner, contain the former. During his residence in this city, Firdusi added to his biographies the place of his birth, which consists of 9000 couplets, in the same measure and style as the Shah Nameh, copies of which are now rarely met with even in the East. But even in the capital of the Abbassid caliphs he was not secure from the power of Mahmud; the sect of the Kadiris dared not disobey the commands of the sultan, and the unfortunate poet was obliged to seek in countries still more remote a safer retreat. It is uncertain at what court he next took refuge; but it appears clear from all accounts that his friends procured his passage to Mecca, and he left Bagdad, and that he then returned to his native town, where he died A.D. 411 (A.H. 521), in the 89th year of his age. We know little of his family; the death of his son at the age of 37 is pathetically alluded to in the Shah Nameh, and his daughter is said to have refused the 60,000 pieces of gold, which were offered to her by the tardy justice of the sultan.

The Shah Nameh contains the history of the kings of Persia, from the reign of the first king, Kaumurers, to the death of the last monarch, Firdusi himself, which is deprived of his kingdom A.H. 91 (A.D. 641) by the invasion of the Arabs during the caliphate of Omar. During this period, according to Firdusi, three dynasties sat upon the Persian throne. The first, called the Pasihda- deris, lasted 1153 years; the second commenced with Kaikobad, and lasted 732 years. Alexander the Great, called Sikander by Firdusi, is included in this race, and is represented to be the son of Dardab, king of Persia, by the daughter of Balsakus (Philip of Macedon). After the death of Sikander, Persia was divided, during 200 years, into a number of petty monarchies called the 'confederacy of the kings.' The Sassanian race of princes succeeded these, and ruled over the whole of Persia for 501 years.

The poem of Firdusi is of little value as a history, though it certainly contains some of the antient Persian traditions. The whole history of Kaikhosraou, as related by Firdusi, bears so great a similarity to the account which Herodotus gives of the life of Cyrus, as to put it beyond doubt that both authors were both guided by the same source, or some representation of the same tradition. 'It is utterly incredible,' says Sir William Jones (Works, vol. iii., p. 166), 'that two different princes of Persia should each have been born in a foreign and hostile territory; should each have been doomed to death in infancy by his master; should each have been saved by the remorse of his destined murderer; should each, after a similar education among hermits as the son of a herdsman, have found means to reinstate his paternal dominion, and, having delivered it, after a long war from foreign enemies, have restored it to the summit of power and magnificence.' The leading circumstances in the life of Alexander the Great are also preserved in the Shah Nameh. We have nothing more to do with the romantic story told with the preface to the edition of the Shah Nameh, published by the command of Shah Siyâh Khan, which, though deserving of little credit, must not be omitted on account of its general currency in the East. It is related that he was murdered, the last march of it had restored it, should have restored it to the summit of power and magnificence.' The leading circumstances in the life of Alexander the Great are also preserved in the Shah Nameh. We have nothing more to do with the romantic story told in the preface to the edition of the Shah Nameh, published by the command of Shah Siyâh Khan, which, though deserving of little credit, must not be omitted on account of its general currency in the East. It is related that he was murdered, the last march of it had restored it, should have restored it to the summit of power and magnificence.'
Augustus appointed seven bands of firemen in Rome, each of which had the care of two divisions (regions) of the city: each band had a captain (tribunus); and at the head of the whole body was the prefect of the fire watch (Prefectus Vigilium). For further information the Title De Officio Prefecti Vigilum may be consulted. (Dig. i. Tit. 15.)

At the present day a species of squirt is used among oriental nations to extinguish fires.

With regard to such contrivances as might rightly come under the denomination of machines, it appears that they originated with Ctesibius, a distinguished Greek mechanician, who lived in Egypt in the reign of Ptolemy I Soter. The mechanism is intimately connected with pumps of different kinds, and clepsydras, or water-clocks. Hero, a pupil of Ctesibius, describes a sort of forcing-pump with two cylinders, employed for the purpose of extinguishing fires. Apollonius, architect to the Emperor Trajan, designed the machine consisting of leathern bottles with pipes attached to them: when the bottle was squeezed, a jet of water flowed through the pipe, and thus used to extinguish fires. Beckmann has found, in the accounts of many of the German towns, entries for the cost of machines, the existence of which would be very problematical without that evidence: thus, in the building accounts of the city of Augsburg for 1518, fire-engines are mentioned under the name of 'instruments of fire,' or 'water-syringes.'

It is not the earliest invention on which we can depend of a machine at all resembling those now in use is given by a Jesuit named Caspar Schott in 1657. This account related to a fire-engine made by Hautsch, of Nuremberg. It consisted of a water-cistern about 5 feet 4 feet high, and 2 feet in width; a large and very strong pipe, by means of which water was drawn, was drawn, drawn, and then poured into a larger vessel, what larger than the cistern. It was worked by 28 men, and a stream of water an inch in diameter was forced, by means of this engine, to an elevation of nearly 80 feet.

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The annexed figure represents the outward appearance of the engine, such as our readers have doubtless frequently seen. The body, A, is about 9 feet long and 3 feet broad, including the greater part of the mechanism of the engine. Along the lower part of this runs a metallic pipe, into which the water flows from the feed-pipe B, which is connected at the other end with a street plug or a cistern. If a supply of water cannot be obtained in this way, a cistern, C, is filled by means of buckets, and at the juncture between the cistern and the interior pipe a grating or strainer is placed, to free the water from dirt, gravel, &c., with which it may be mixed. The water having entered the interior pipe, is elevated and forced into the air-vessel by two pumps contained within the body of the box, D, and from the air-vessel is forced into the pipe P, which is connected with the bellows box by which the propelled water is directed to the proper point. The two pumps are worked by a double lever connected with two long handles, E E E E, which are conveniently placed for being worked by several men, who alternately elevate and depress the end of the lever at which the pistons are mounted, the tendency of either side by throwing the weight of the body on that side. At K is a handle which turns a cock or valve, whereby regulating the supply of water to the interior pipe through the feed-pipe B.

This much for the exterior. We will now show the position and action of the air-chamber, and the connection between it and the pumps; and in doing so we shall confine ourselves to that portion of the interior mechanism which is directly concerned with that part of the process.

Fig. 2 is a section through the middle of the air-chamber, and one of the pump-barrels. A is the air-vessel, made of metal, from the top of which proceeds nearly to the bottom a tube, BC, open at both ends. The air-chamber and tube are in communication with a horizontal pipe, D, which opens by two branches into two pump cylinders, one of which is hidden in the drawing, but the other is seen at F. Through this cylinder works the piston E, which is connected by the piston rod G with a toothed-wheel at the upper part (not given in the figure); to which wheel a reciprocating motion is given by the exterior levers to which it is attached. The other end of the pump cylinder is also connected with a cylinder, K, by a pipe; and the pump barrel is also open to another horizontal pipe, H, which is connected at the other end with the feed-pipe shown in the former figure. These communiction-pipes however are closed at different parts of the operation by two valves, one of which opens upwards from the pipe H to the pipe D; and the other also upwards from D to the air-vessel A. At the point L in the lower pipe is situated the cock, of which we have spoken, and the handle of which is seen at L.

This being the relation of the parts to one another, let the reader now suppose the piston E and its rod G to have a reciprocation motion given by the external levers, which are working the double lever on the outside of the engine, and he will be able to follow the rationale of the process. It must be understood that the piston-rods of the two pumps being connected with opposite sides of the fullerum of the lever, it necessarily results that when one acts the other descends, and vice versa. The air chamber being full of air of the ordinary density of the atmosphere, and the cock I being opened, by which the pipe H becomes filled with water, we will suppose the piston to be drawn up to the top of the pump cylinder F. The consequent results are these: the piston draws up with it the air which the cylinder contains, and thus creates a partial vacuum beneath, because all communication with the external air is cut off. The valve between the two pumps having now a stream of water pressing it upwards, while the space above it contains rarified air only, the valve is forced open, and the pump-barrel P and the pipe D become filled with water. When the returning stroke of the lever forces the piston down to its former position, the water is driven before it, but cannot return to the pipe H, because the valve communicating with the latter opens upwards. It is therefore forced through the other valve into the air-vessel A. At the second upward motion of the piston a partial vacuum is again produced beneath it, but the water now contained in the air-vessel cannot return to fill that vacated space, on account of the mode in which the valve opens. A fresh supply is therefore gained, as before, from the pipe H through the valve communicating with D. This supply is, by the subsequent downward pressure of the piston, forced into the air-vessel, in the same manner as to the first portion. Thus each successive ascent of the piston causes a rush of water into the pump-barrel, and each descent urges that portion into the air-vessel.

We must now inquire what takes place in the air-vessel into which the water is thus forced. The air in this vessel has no communication with the external atmosphere except through the pipe B C, which is fitted air-tight into the neck of the vessel at B. When the water ascends in this vessel above the bottom of the air-chamber, the air above which becomes compressed into a smaller space, as all escape is guarded against. With this compression its elasticity a
also increased in the same ratio; and the effect of that increase we will now show. In the article BAROMETER it will be seen that the average pressure of the atmosphere, under ordinary circumstances, is about 15 pounds on the square inch, which is sufficient to lift a column of water about 33 feet high, or one of mercury 30 inches high: but when, through any external force, the air is compressed to one-half its former bulk, its elasticity is doubled, or becomes equal to the pressure of 66 feet of water. Now let us suppose the air contained in the tube B C is pressing on the surface of the water beneath with a force of one atmosphere, or 15 lbs. on the square inch, which is the object described. If the water is driven up the tube with a force of that amount, which, as we have said, is sufficient to carry the weight of 33 feet of water, if the condensation of the air be less than the above, the effect will be proportionally diminished; but as long as the density exceeds that of the external air, so long will the water be forced up the tube; and thus a continuous stream is insured, so long as the object is kept. If the condensation be carried to a greater extent, the height to which the water will be ejected-will increase in the same ratio; so that, if the bulk of the confined air were reduced to one-third, one-fourth, or even one-fifth of its original bulk, the ascensional power of the water would be about 66, 99, or 132 feet respectively.

These are the principles on which all such engines act, although the arrangement of the mechanism may greatly vary. A construction somewhat different has been employed by Mr. Rowan for the Sun and other fire-engines in which the entrance of mud and gravel with the water from the feed-pipe is more effectually prevented. Many improvements, more or less valuable, have been suggested and partly acted upon within the last few years. A fire-engine composed entirely of metal has been constructed by Mr. Tilley, of London. Another, which is both efficient and portable, has been made by Mr. Merryweather, and is used principally as a stationary engine for the protection of large buildings. Engines on this construction have been made for the Dukes of Devonshire, Northumberland, and Rutland.

But the most important deviation from the general construction of fire-engines is the steam fire-engine of Mr. Braithwaite. This was first employed at a fire at the Acts Breakfast, where, it is said, the power in throwing the water on to the building. The force and boiler of the engine are similar to those of the 'Novelty,' a locomotive engine constructed by the same engineer for railway traffic. The pipe by which the water is forced from the engine is represented two inches in diameter and can be directed to any quarter. The cylinders are placed horizontally, and the steam-piston is connected with the waterpump plunger by a rod working through two stuffing boxes. The steam-cylinder is 7 inches in diameter, and the number of water-pumps are 6½ inches in diameter. This engine, the total weight of which did not exceed 45 cwt., consumed 3 buhales of coal in 5 hours, by which expenditure it was enabled to throw out from 30 to 40 tons of water per hour, which, as it escaped, was collected and used for the same purpose on one occasion to 90 feet. When an alarm of fire is given, the fire belonging to this engine is kindled, and in 18 minutes the water in the boiler is brought to 212°; and by an ingenious contrivance, bellows are worked by the motion of the wheels, by which the heating of the water is hastened.

Another engine, on the same construction, by Mr. Braithwaite, possessed 10 horse-power (the former being about 6), and ejected the enormous quantity of 90 tons of water per hour.

In 1832 a steam fire-engine was made for the king of Prussia by the same engineer, in which the steam could be got up in 20 minutes to a pressure of 70 lbs. on the square inch. This engine ejected the water through a pipe 1½ inch in diameter to the height of 115 or 120 feet: the numerator to this fraction is increased by one, and the denominator of water ejected about ½ ton in that time.

The power of steam has likewise been applied to a floating fire-engine by Mr. Braithwaite, the machinery of which is so constructed, that the power of the engine can be at once changed from propelling the vessel to working the pumps, and thus does double duty. To propel the vessel, the gearing of the coupling-boxes is connected with the paddle wheels; but in order to apply the engine to the propulsion of the wheels, the paddle wheels are disconnected, and the engine brought into connexion with the pumps.

In many cases a supply of water is obtained for the extinction of fires in large buildings by having a reservoir at the top of the buildings, from which pipes are conducted to various parts; and cocks or valves in those pipes being opened, the water will flow downwards.

The construction of the leathern pipes, or hose, for fire-engines has received much attention. The pipes were occasionally made, in former times, of canvas, covered with canvas, and the latter, another, in several layers; but the use of leather seems to be now fully established in this country. An improvement in the materials of these pipes is said to have been lately made in France, by the substitution of flax for leather. The pipes are woven in the same manner as the sticks of patent lamps, and may be made of any length, without seam or joining. When wetted they swell and become water-tight. It is said that they are more portable than leather, and not so susceptible of injury. The expense also is not more than half that of leather.

The leathern tubes, or pipes, are usually sown up in the manner of boots; but Messrs. Hancock and Tellers, of Philadelphia, a few years ago, devised a mode of fastening the tubes together by means of metallic rivets, which plan has received further improvements from Mr. Jacob Perkins, of London.

The difficulty of directing the play of the stream of water in an apartment embraced in flames, without great danger to the fireman, induced Mr. Bramah, about 40 years since, to devise the so-called hose, for throwing water on fires. This hose is hemispherical, and perforated with small holes, and when thrown into the middle of the apartment a minute stream rushes from each hole; and as the direction of the holes are various, at all angles, within it, and of each other, the ceiling, wall, and floor, become wetted equally with water, which could not be the case with one large aperture. This was the intention of the inventor, but we do not know whether it has ever been acted upon.

Within a few years the firemen belonging to the different insurance companies in London have been formed into a body—the Fire Brigade,—the establishment of which has been found to be attended with very beneficial results—results which generally follow the adoption of a good plan of defence. Still more recently a smoke-proof dress has been introduced among the extinguishing corps by Lieut.-Col. Paulin, of Paris. It is a kind of tunic or hood of leather, covering the head and bust, and is fastened round the middle of the body. Into the head of the covering is inserted a strip of leather, about 4 inches broad, which is fastened to the back of the dress. A small lamp, somewhat resembling those used by the metropolitan police, is fastened in front, and a whistle for giving signals is placed opposite to the mouth of the wearer.

FIRE ESCAPE. In the perilous situation of human beings in the upper part of buildings, when on fire, has roused the ingenuity of many persons to devise the means of escape; and as the subject is one of great importance, especially in large towns, the following observations may not be without some service.

The means of escaping through the window of a burning house are obviously of two kinds; one from within by the individual himself who is in danger, and the other by the assistance of others from without. Of the first kind is a contrivance made by Mr. Macan, who has in use in which an assemblage of straps, or belts, form a kind of seat for the individual, who holds in his hand a rope which passes through a series of holes in a block, and is, at the same time, connected with two loops fastened to the sill of the window. The individual, standing in one strap and bound by others, lowers himself to the ground by allowing the rope, which is attached to the block, to slide through his hands. Contrivances of this kind, whatever may be the ingenuity displayed in conceiving them, are subject to this drawback,—that they require a calm attention to minutiae of fixing, adjusting, &c., at a moment when agitation and fear render the mind ill fitted for the observance of rules of conduct.

Among the multiplicity of fire-escapes which have been
suspended from a cross head, and has a belt buckled round it, is drawn up by a rope passing over the pulleys.

The other contrivance, and the last which we have space to notice, is by Mr. Merryweather. It consists of ladders about six feet long, all of which are made exactly alike, the upper end being smaller than the lower: each end is furnished with a pair of iron loops or sheaths, so contrived that the top of each ladder can be inserted into the loops at the bottom of another, and thus several can be made ready to be used. A ladder is made to fold flat against the wall in a semicircular brace of a large grooved roller, which traverses up and down the spar between the two pulleys. This brace carries a hook on the inner side of the spar, to which a car or cradle is fixed, by which persons may be lowered to the ground. The cradle, which consists of a seat and foot-board

Devised, we will briefly mention a few for which premiums or medals have been awarded by the Society of Arts.

In 1809 Mr. Davis received a premium of fifty guineas for inventing an apparatus, which consisted of three ladders applied to each other by means of iron braces on the top, each of the two lowermost, which are so contrived that each ladder may slide into the one beneath it. On the top of the lowest ladder two pulleys are fixed on the inside, over which two ropes pass, and are situated between the lower and second ladder, and one end of each passes up into the head board, and the other end is made to wheel along the wall in ascending by an ingenious appendage contrivsed by Mr. Boddely; which consists of a short side-piece corresponding in form to the bottom part of a ladder. On the upper part is an iron axle made of iron, and turned off, and a pair of iron rings are fixed upon it, the outer rings connecting rod of iron preserves the proper position of the sidepieces when not mounted on the ladder. Each end of the axle is provided with rising springs similar to those in an umbrella-stick, which allows the ladder to be used on the wall, but prevents their sliding off again until the springs are depressed. This apparatus is fitted on the top of the ladder, in the same manner as one ladder is fitted to another.

Seven ladders of this ladder have been fitted to each other, and raised in half a minute by three persons; and by means of a pulley, passing over the top of the ladder, we have seen three persons descend from a height of 30 feet, by a belt fastened round the body, in about two minutes and a half.

Whatever kind of fire-escape be preferred, it is necessary that the localities where they are deposited and the mode of using them should be well and generally understood.

FIRE-FLY. [ELATERIDAE; LAMPIRIDAE.]

FIRE, ST. [HETE, HELVETII; JOVA.] FIRE, GREEK, an invention of the middle ages which was often employed in the wars of the Christians and Saracens. This subject has given rise to much inquiry and excited much discussion; the obscurity by which it is enveloped, the correctness of the date at which the first experiments were made, the frequent changes in the material, the various modes of mounting and directing this artificial flame, which was imported by Callinicus, a native of Heliopolis in Syria, who deserted from the service of the caliph to that of the emperor.

FIRE, ST. [HETE, HELVETII; JOVA.]

It is justly observed by Gibbon that the historian who prematurely propounds such an extraordinary composition should suspect his own ignorance and that of his Byzantine guides, so prone to the marvellous, so careless, and in this instance so jealous of the truth. From their obscure and perhaps fallacious hints, it should seem that the principal ingredient was naphtha, a kind of pitch, the thickened, more tenacious, and inflammable oil which springs from the earth, and catches fire as soon as it comes in contact with the air. The naphtha was mingled, I know not by what method or in what proportion, with sulphur and with the pitch that is employed in the manufacture of pitch, called asphalt. One of the properties stated to belong to naphtha is well known to be and indeed is obviously incorrectly ascribed to it; if it were spontaneous inflammable it could not even be collected, and of course could not be used with the other ingredients which are named. Whatever may have been the precise nature of the mixture, the account of its effects, from which somewhat of the marvellous must be deduced, is thus strikingly portrayed by Gibbon:—From this mixture, which produced a thick smoke, there issued a fierce and obstinate flame, which not only rose in perpendicular columns, but likewise burnt with equal vehemence in descent or lateral progress; instead of being extinguished, it was nourished and quickened by the element of water; and those that approached, whether on foot, on horseback, or in chariots, were all engulfed in the flames and consumed. Such was the fury of this powerful agent, which was mostly denominated by the Greeks the liquid or the maritime fire.

For the annoyance of the enemy, it was employed with equal effect by sea and by land, in battles or in sieges. It was either poured from vessels in the form of large balls, or launched in red-hot balls of stone and iron, or directed in arrows and javelins, twisted round with flax and tow which had deeply imbibed the inflammable oil: sometimes it was deposited in fire-ships, the victims and instruments of a more ample revenge, and was most commonly blown through
long tubes of copper, which planted on the prow of a galley, and fancifully shaped into the mouths of savage monsters, that seemed to vomit a stream of liquid and consuming fire. According to Gibbon, the secret of the Greek fire was concocted above 400 years to the Romans of the East; it was at length either discovered or stolen by the Mohammedans; and in the holy wars of Syria and Egypt they retorted an invention contrived against themselves on the heads of the Christians. Through the whole of the early of the French writers, it is thus described by Joinville: 'It came flying through the air, like a winged long-tailed dragon, about the thickness of a hosehead, with a report of thunder and the velocity of lightning; and the darkness of the night was in a moment wholly dispelled by the light. The use of Greek fire was continued to the middle of the 14th century, when the more efficient employment of gunpowder was substituted. When Ypres was besieged by the Bishop of Norwich in 1383, the garrison defended itself with Greek fire, throwing it from the branches, or gills, having one auricle and one ventricle to the heart, the cold red blood, and extremities formed for swimming. Having given the ordinary definition of a fish, it may now be well to proceed with a short account of fishes in general.

In considering fishes, perhaps the most important thing which offers itself to our attention is the apparatus called the branchiæ, or gills. This apparatus is situated on each side of the neck, and consists of numerous laminae fixed on branches. These laminae are 1 ramus and 2 laminae, and with interior, or blood-vessels, and are so constructed as to present a considerative surface to the water, so that the blood may receive a sufficient portion of the oxygen contained in that element. As the water in contact with the gills becomes deteriorated, and a need is felt to replace them. In most fishes this is effected by their taking the water in at the mouth and expelling it from under the gill-covers. The blood, which is constantly sent to the branchiæ from the heart, is distributed by means of the arteries to every part of the body, whence it returns to the heart by means of the veins.

As the breathing apparatus in the fish is suited to aquatic habits, so likewise is every part of its structure. The body is covered with scales, and externally ornamented with a series of organs constituting what is termed the pectoral fins, or (fig. 1.-1), dorsal fins, and caudal fins, or tail. All these fins are not always present, nor when present are they always in the same relative positions; and we shall hereafter find that both the absence of certain fins, and the peculiar position of these organs, afford characters in the classification of fishes. The fins consist of a thin elastic membrane supported by rays. The rays are of two kinds—those of the corals, and those of the true rays. The former are termed spinous rays; and when the rays are formed of numerous portions of bone united by articulations, and frequently divided longitudinally into several filaments, the rays are called feathery. The anterior origin of motion is at the tail; the dorsal and caudal fins apparently serve to balance the fish, and the pectorals to arrest its progress when required.

The bones of fishes are of a less dense and compact nature than in the higher orders of animals, and always remain in an isolated state, similar to that of the embryo of the mammalia. The skeleton may be divided into four chief parts—the vertebral column, the head, the respiratory apparatus, and the limbs. The vertebral column consists of a series of vertebrae which are composed at each end of a centrum, or body, and the intervertebral are mere rings. To the vertebrae are attached the ribs; in fact, the ribs are the main support of all the other bones. The head varies in form in many different classes of vertebrate animals. The same organs are seen in both situations, but are almost always traceable. We shall confine our observations to those which are most frequently referred to in technical descriptions.

The upper jaw consists of maxillary and premaxillary bones; in the fish figured the maxillary (fig. 1.) constituting the chief portion of the upper jaw, the maxillary bones (fig. 1., 7) being placed behind and
parallel to them and articulated to the vomer (fig. 3, b). In the salmon tribe, and some other fishes, however, the intermaxillary bones (fig. 2, e) are smaller in proportion, and form a continuous line with the fore-part of the maxillary bones (fig. 2, f). In the Chondropterygians the maxillary and intermaxillary bones are reduced to mere rudiments, their functions being performed by the bones analogous to the palatines, and sometimes by the vomer.

![Figure 1: Skeleton of the Common Perch.](image)

a. the premaxilla; b. the maxilla; c. the pre-operculum; d. the operculum; e. the branchiostegals; f. the sub-operculum; g. the intermaxillary bone; h. the sub-operculum; i. the gill rakers; j. the maxilla.

Fig. 2. Upper Jaw of a Trout.

- a. the premaxilla; b. the maxilla; c. the sub-operculum; d. the operculum; e. the branchiostegals.

The lower jaw is generally composed of at least two bones on each side, the dental portion in front, and the articulating portion behind.

The palatines (fig. 3, m n) are extended longitudinally on each side, and form part of the roof of the mouth; they are often furnished with teeth.

The opercular bones. The chief portion of the sides of the head behind the eye consists of the opercular bones: these are generally four in number, and are termed the operculum (fig. 1, g), the sub-operculum (fig. 1, h), the pre-operculum (fig. 1, i), and the inter-operculum (fig. 1, j). The first of these covers the gills.

The Branchiostegals, or gills (fig. 1, o), are often mentioned in descriptions, are situated under the opercular bones.

The teeth in fishes are almost entirely ovoid; they are usually of a simple spine-like form, and recurved at the tip. Teeth are found in almost every bone in the interior of the mouth; in the superior and inferior maxillary, and intermaxillary bones; likewise on the branchial arches, pharyngeal bones (which are situated in the throat), and on the tongue. There is considerable variety in their structure, as will be found in the various descriptions of fishes found in other parts of this work.

The scales are composed of two substances, one resembling horn in its texture, and the other of a harder and bone-like nature; they are generally attached to the skin by their anterior edge, and consist of numerous concentric laminae (secreted by the skin), the smallest of which is first formed. Certain scales, forming a continuous series, in a slightly waved line from the head to the tail of the fish, are pierced in or near their centre, and furnished with a tubular through which a thin matter is poured, which serves to lubricate the body of the animal. This series of tubes forms a line visible on the sides of the body, and which is termed the lateral line.

The structure, form, and position of the scales of fishes are very variable, and have furnished M. Agassiz* with characters for a new classification of these animals.

As regards the senses, those of taste and touch appear to be but slightly developed in fishes. When we find the tongue thickly covered with teeth (as is often the case), and used as an organ of prehension, and when we consider the quick manner in which the food is swallowed, it would certainly appear that their sense of taste is very slight. The sense of touch is probably most developed in the cirri attached to the mouth of those fishes that have them. The long filaments with which the fins of some fishes are furnished also perhaps serve, through the sense of touch, to indicate the presence of weeds, or other objects in the water.

The eyes are differently placed in the various species of fishes, in accordance with their habits; for the most part they are placed laterally, and in some (those that live at the bottom of the water) we find them directed upwards. In some of the species of sharks (those of the genus Zygemia) they are situated at the end of an elongated lateral process on each side of the head.

The sight in fishes is acute, and the range of vision is probably somewhat limited. The eyes (which are furnished with a spherical lens) are generally large, but in some species they are very small, whilst others appear to be destitute of them.

Although fishes appear not to possess certain portions of the auditory apparatus, observed in animals of a higher grade, they nevertheless possess the sense of hearing.

There are reasons for the belief that the sense of smell in fishes is tolerably acute; their olfactory nerves are of large size, and disposed over a considerable extent of surface.

By far the greater number of fishes are of carnivorous habits; there are some however which feed upon vegetable substances, and we find the stomach modified accordingly as in other animals.

The sexes of fishes, if we except the sharks and rays, offer no very decided external characters by which they may be distinguished; as in the higher animals. However, observes Mr. Yarrell, 'the respiratory organs occupy more space in the males than in the females; and, on the other hand, the abdomen is larger in the females than in the males: the males may therefore be known from the females by their somewhat sharper or more pointed head, the greater length of the gill cover, and the body from the dorsal fin downwards being not so deep compared with the whole length of the fish.'

The sexes of fishes are in the generality of the species of a more simple nature than is observed in the higher orders of the vertebrata, consisting, as will be found, towards the season of producing their young, of two elongated oval lobes of roe, one on each side of the body, placed between the ribs and the intestinal canal; the lobes in the female, called hard roe, contain a very large number of roundish grains, called ova or eggs, which are enclosed in a delicate membranous tunic or bag, reaching to the side of the anal aperture, where an elongated fissure permits egress at the proper time. In the males, the lobes of roe are smaller than in the females, and have the appearance of two elongated masses of fat, which are called soft.
At the season for depositing the spawn, which varies with almost every genus, some species repair to the gravelly shallows of rivers, and others to the sandy beds of the sea. This movement is called by fishermen "going to hill, or roading;" other species resort to bunches of seaweed. In many instances, when ready to deposit her spawn, a female is accompanied by two males, one on each side,—a provision of nature which seems intended to secure the impregnation of the largest quantity of ova, and the range of the influence of the male fluid is enormously increased by diffusion in water. The adhesive nature of the surface of each egg supplies the means of attachment to any of the various substances near which it may happen to find itself; and the time required for the appearance of the young fish is very variable, depending upon the species, the season, and its temperature. The young fish is first apparent as a line wound round the central vitelline portion of the egg, and ultimately escapes by rupturing the external capsule with its tail.

We now proceed to give an outline of Cuvier's classification of fishes, since it is that which is perhaps most generally adopted: it is nevertheless in many respects very artificial.

Fishes are divided by this author into two series, that of ordinary fishes, or Osteichthyes*, distinguished by having the skeleton bony; the osseous matter being disposed in bones; the suture of the cranium distinct; maxillary and intermaxillary bones, either one or both present: and that of the Cartilagines or Chondrostei distinguished by having the skeleton cartilaginous; the bones destitute of bones; sutures of the cranium indistinct; maxillary and intermaxillary bones either wanting or rudimentary, their place being supplied by the palatine or vomer.

These two series are divided as follows:


Family Percidae Family Thysites
    Loricarii Pharyngognathin
    Spadicei Choristodes
    Mamidae Gobidae
    Squamipinnata Lophidae
    Scybcridae Labridae
    Tanoidae Centriscidae

Order 2. Malacostraci.

1. Abdominales
2. Subbranchiases

Family Cyprinidae Family Gaddidae
    Esocidae Pleuronectidae
    Siluridae Discoboli
    Salmonidae Echeneididae
    Clupeidae

Order 3. Aporides Muraenidae

Section 2. Pleotomarii Gymnotodidae

Section 3. Lophobranchii Synaptidae

Series 2. Cartilaginei or Chondrostei

Order 1. Eleutheroptomii

Stomiidae

Order 2. Plagioptomii Squalidae

Raididae

Order 3. Cyclostomi Pteromyzidae

The characters of the two great series or sections into which fishes are divided it has been shown are taken from the nature of the skeleton. It remains for us now to make a few observations upon the minor divisions.

In the Osteichthyes, there are three sections. Those of the first, the Perciformes, possess the following characters:—Branchiae in continuous pectinated ridges, furnished with an opercular and branchiostegous membrane; jaws complete and free. Section 2. Pteromystii;
impostors, disgraced himself by not exposing the imposi-
tion; he made many vain excuses, but was found guilty of
misprision of treason. It does not appear that the king
proceeded against him upon this charge till he was moved
by new provocations. When the bath touching the succes-
sion and the king's supremacy was offered to him, the
bishop of Rochester, as Sir Thomas More had done, refused
to swear it. The king, now more than ever irritated against
him, caused he be indicted upon the statute and con-
mstors, and his bishop's visitation. That is, say the
new (Hist. Reform., vol. 1.), and all his goods taken from
him; only some old rags were left to cover him; and he
was neither supplied well in diet nor other necessaries,
of which he made sad complaints. Books were also denied him
host. This was the charge to which the king referred these
inexecables matters with the most bitter censure of the
Roman Catholic party; while many of the Re-
turers, especially the Lutheran preachers who had fre-
ly been persecuted by Fisher (see Burnet, Hist. Ref.,
part I, book 2, privately reprinted in his lifetime). During
his imprisonment Pope Clement, in spite of the king, and
in kindness to Fisher, sent him a cardinal's hat. When
the king heard of this, he desired that the bishop might be
examined about it; but Fisher protested that he had used
no endeavour to refute it: nevertheless his new dignity
precipitated his ruin. His continued denial of the king's
supremacy was no longer passed over: on the 17th of June,
1535, he was called to account for this offence. The Lord
Chancellor summoned Fisher to appear on the 22d of June.
Together with the judges, were appointed commissioners for
his trial; he was found guilty, and condemned to die as a
traitor. On the 22d of June he was beheaded.

The character of Fisher is remarkable for firmness. In
the midst of heresy and corrupting influences of various
Catherine, undaunted by the anger of the vindictive king,
this quality peculiarly shone forth. Again, with regard to
the supremacy, the obstinacy and tyranny of Henry VIII.
were before him; it was clear that no circumstances or
reasoning would alter the opinions of this noble and
immovable prelate. Fisher's fearlessness was immovable, not being convinced that he was in the wrong;
his fearless firmness allowed him to maintain an open
position that he was in the right. He was a learned and
decent man, and his conduct fully proved his sincerity.

FISHERIES are localities frequented at certain seasons
by shools or great numbers of fish, sometimes of one par-
ticular description only, where they are taken upon a large
scale. The right of frequenting these fish-grounds has
frequently been questioned and sometimes the subject of treaties, while exclusion from
them or invasion of presumed exclusive rights to their
enjoyment has been the cause of warlike preparations. The
principal fishing fisheries, which are of this kind, of the
most important are eel, ling, hake, herrings, lobsters,
mackerel, oysters, pilchards, salmon, whales, anchovies,
sardines, sturgeon, and tunny. With the exception of the
classified desorptions, the fishermen of this country are
engaged in the taking of these fish, and pursue them, so
calling to an extent which makes each an important branch
of national industry. The quantity of other fish taken by
British fishermen is in the aggregate exceedingly great,
and furnishes constant employment throughout the year
to a great number of persons in almost all parts of Great Britain and Ireland; but it has not been usual to
apply the word fisheries otherwise than as we have already
mentioned.

Of the British fisheries, some are carried on in rivers or
the estuaries, and others in the bays or along the coasts.
Our principal cod-fishery is on the banks of Newfoundland:
and for whales our ships frequent the shores of Greenland,
Davis's Straits, and the South Seas. Of late, whale-
fishing has also been carried on near the shores of New
Holland and of the Cape of Good Hope.

The Appendix to the Report of the Commissioners of
Inquiry into the State of the Irish Fisheries, which was
presented to parliament in 1836, contains an historical
sketch of the progress of the British and Irish fisheries,
drawn up by W. B. C. Morgan, M.D., one of the commis-
sioners; and from this sketch the following particulars are
primarily taken—

The taking of herrings was extensively pursued in Scot-
land in the ninth century, and continued until the Conven-
ion of Royal Burghs. From this time the exportation of fish
before the resident population was supplied at a stipulated
price. In consequence of this interference, many of the
fishermen abandoned the pursuit at home, and settled in
Holland—a circumstance which first drew the attention of
the English government. But in 1538 the British fisheries
enactments were passed under James III., IV., and V. of
Scotland for the promotion of the fisheries; and James VI.,
before his accession to the English throne, directed the
building of three towns for the same purpose; but this
measure was not much attended to, partly because the
Association, which was joined by many persons of
these measures of protection appear to have been unsuccess-
ful; for six years later we find that the fisheries were
underwritten by Simon Smith, who, in addition to all the
advantages conceded to Sir Phineas Andrews, was also
allowed the privilege of fishing in the United Kingdom in
return for fish shipped to foreign countries. Charles II.,
in his restoration, appointed, in 1677, a Council of Royal
Fishery, to which the duke of York, the earl of Clarendon,
and other persons of honour and wisdom were named, with
powers of all other persons in the country. These measures
were compell'd each to take a certain number of barrels of
herrings yearly at 30s. per barrel, 'until a foreign market
should be established to the satisfaction of the country.' Beyond these encouragements, a duty of 2s. 6d. per
barrel was imposed upon foreign herrings imported; and a
promise was made of 'all such other advantages as experience should discover to be necessary.' Great as were these encouragements, the fisheries were not much
improved for sixteen years, at which time a charter was granted to a new
fishing company, which was reissued in 1699, also failed, and
was renewed in 1706. Of the fisheries of the north-east of
England, the herring fishing was of the earliest in the reign of
William III. Two further attempts, made in 1724 and 1728,
were aike unsuccessful. Various reasons have been as-
signed for these repeated failures. Among these reasons
may be mentioned, the rule which made London the head-
quarters of the fishery, being far from the nearest port in the
kingdom, and the superiority of the Dutch in the art. Andrew
Yarington, in the second part of 'England's Improvement
by Sea and Land,' sums up all other reasons in this one fact—'We fish intolerably dear, and the Dutch exceedingly
cheap.'
this year the whole buss fishery of Scotland, according to the statement of Adam Smith ("Wealth of Nations," b. iv. c. v.), brought in only four barrels of "sea Sticks," (herrings cured at sea) each of which, in bounties alone, cost the government 112. 15s., and each barrel of merchantable herrings cost 126. 17s. 9d. The expectation of this bounty, and the bounty being given to the vessels and not to the fish, "ships were equipped to catch the bounty and not the herrings. By the 23rd Geo. III. (1785-6) the tonnage bounty was reduced to 20s., and a bounty of 4s. per barrel was given on the first 30s. per ton; the whole bounty from 30s. per ton, except when more than three barrels per ton were taken, in which case 1s. per barrel was given on the excess. On an average of ten years 54,334 barrels were taken annually, at a cost to the government of about 7d. per barrel.

In 1786, the British Society for extending the Fisheries and improving the Sea Coasts of the Kingdom was incorporated, and a joint-stock was subscribed for purchasing land and building thereon free towns, villages, and fishing-stations in the Highlands and Islands of Scotland. This joint-stock was subscribed and bound by a few individuals, who, did not look for any profitable return. The members of the society were chiefly proprietors of estates, and their object was the improvement of their property. No dividend has yet been made on the money expended by the corporation; but it was expected that the improvement of the fishing-towns, hauntes, and fishermen's allotments, with the harbours, stores, and other buildings which they have constructed, may yield a return in rent.

Another act was passed in 1806 for the regulation of the herrings, and the bounty was again raised to 60s. per ton on decked vessels of not less than 60 tons burthen, with an additional bounty of 20s. per ton for the first 30 vessels entered in the first year. Premiums amounting to 3000l. were also granted for boats of not less than 15 tons burthen. This act described for fishing, herringing and branding herrings, and a board of seven commissioners was appointed for administering the law. This act, which was at first passed for a limited time, was made perpetual in 1815 (59th Geo. III., c. 45). The tonnage-bounty had in the mean time been extended to fishing-boats of not less than 45 tons burthen. During the year 1814 only five vessels had been fitted out for the fishery from Yarmouth, and not one for the deep-sea fishery from any other port of Great Britain. Purged by the sudden and unexpected bounty the whole coast of Great Britain was divided into districts, in each of which officers were appointed to oversee the operations of the fishermen, and to prevent frauds in regard to the bounty. The principal regulations affecting the curing of herrings were extended to apply to the fishery of all the fishermen. In 1817 a further boon was granted to the fishermen by allowing them the use of salt duty free; a peculiar advantage, which ceased in 1823 by the repeal of the duty on that article.

The Secretary for 1830-1 were the following bounties on production, the effect of which is to tax the people of this country in order that foreign countries may be supplied with articles of consumption at prices below their actual cost, came at length to be seen and acknowledged. In 1821 the tonnage bounty of 60s., above-mentioned was repealed; the bounty of 4s. per barrel, which was paid up to the 4th of April, 1826, was thereafter reduced 1s. per barrel each succeeding year; so that in April, 1830, the bounty ceased altogether. That this alteration of the system has not been productive of any sensible effect, is apparent from the following table prepared from the reports of the commissioners of the British fisheries, wherein are stated the number of barrels cured, branded, and exported in each of the years ending the 4th of April, from 1815 to 1837. The average annual number of barrels of herrings cured and exported respectively in the five years that preceded the alteration was 193,488 and 224,376. In the five years from 1826 to 1830, while the bounty was proceeding to its annihilation, the average numbers were 336,896 cured, and 268,844 exported. From 1826 to 5 years ending the 4th of April, 1837, the average numbers were 396,910 barrels cured, and 225,848 exported.

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<th>Exported.</th>
<th>Total Number employed</th>
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<td>2,700</td>
<td>6,300</td>
</tr>
<tr>
<td>1823</td>
<td>190</td>
<td>3,800</td>
<td>2,900</td>
<td>6,700</td>
</tr>
<tr>
<td>1824</td>
<td>200</td>
<td>4,000</td>
<td>3,100</td>
<td>7,100</td>
</tr>
<tr>
<td>1825</td>
<td>210</td>
<td>4,200</td>
<td>3,300</td>
<td>7,500</td>
</tr>
<tr>
<td>1826</td>
<td>220</td>
<td>4,400</td>
<td>3,500</td>
<td>7,900</td>
</tr>
<tr>
<td>1827</td>
<td>230</td>
<td>4,600</td>
<td>3,700</td>
<td>8,300</td>
</tr>
<tr>
<td>1828</td>
<td>240</td>
<td>4,800</td>
<td>3,900</td>
<td>8,700</td>
</tr>
<tr>
<td>1829</td>
<td>250</td>
<td>5,000</td>
<td>4,100</td>
<td>9,100</td>
</tr>
<tr>
<td>1830</td>
<td>260</td>
<td>5,200</td>
<td>4,300</td>
<td>9,500</td>
</tr>
<tr>
<td>1831</td>
<td>270</td>
<td>5,400</td>
<td>4,500</td>
<td>9,900</td>
</tr>
<tr>
<td>1832</td>
<td>280</td>
<td>5,600</td>
<td>4,700</td>
<td>10,300</td>
</tr>
<tr>
<td>1833</td>
<td>290</td>
<td>5,800</td>
<td>4,900</td>
<td>10,700</td>
</tr>
<tr>
<td>1834</td>
<td>300</td>
<td>6,000</td>
<td>5,100</td>
<td>11,100</td>
</tr>
<tr>
<td>1835</td>
<td>310</td>
<td>6,200</td>
<td>5,300</td>
<td>11,500</td>
</tr>
<tr>
<td>1836</td>
<td>320</td>
<td>6,400</td>
<td>5,500</td>
<td>11,900</td>
</tr>
<tr>
<td>1837</td>
<td>330</td>
<td>6,600</td>
<td>5,700</td>
<td>12,300</td>
</tr>
</tbody>
</table>

The number of boats and of fishermen, and other persons employed in taking, gutting, curing, and packing cod and herrings in each of the six years to April, 1837, were as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Boats</th>
<th>Number of Fishermen</th>
<th>Number of Curers</th>
<th>Total Number employed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1831</td>
<td>11,000</td>
<td>11,000</td>
<td>11,000</td>
<td>33,000</td>
</tr>
<tr>
<td>1832</td>
<td>11,800</td>
<td>11,800</td>
<td>11,800</td>
<td>35,400</td>
</tr>
<tr>
<td>1833</td>
<td>12,600</td>
<td>12,600</td>
<td>12,600</td>
<td>36,800</td>
</tr>
<tr>
<td>1834</td>
<td>13,400</td>
<td>13,400</td>
<td>13,400</td>
<td>39,200</td>
</tr>
<tr>
<td>1835</td>
<td>14,200</td>
<td>14,200</td>
<td>14,200</td>
<td>41,600</td>
</tr>
</tbody>
</table>

The impolicy of the bounty system has been placed in a very striking light by the evidence of Mr. Tornam, of Liverpool, a factor for the sale of fish. The fishermen of that part of the coast are mostly inhabitants of a village on the coast called Skerries, where the houses are near and in better repair than they were during the time of bounties, and the men themselves are "better clothed, better fed, more industrious, and more temperate than they were during the bounty. Nothing was more calculated to demoralize them than the bounties, as they were given; nothing could have been more mischievous or more injurious to the herring-bounty system; it was, in fact, a bounty on idleness and perjury. Their increased prosperity has arisen from their astonishingly increased industry, and their greater reliance on their own exertions, without looking to extraneous aid. In Scotland the fishermen have been able, from the profits of their business since the removal of the bounty, to replace the small boats they formerly used by new boats of larger dimensions, and to provide themselves with fishing materials of superior value.

A select committee of the House of Commons was appointed in 1833 to inquire into the state of the British Channel fisheries. A second committee was appointed in 1835 to consider the state of the salmon fisheries in Scotland, and in the previous year commissioners had been instructed to investigate the condition of the Irish fisheries. From each of these bodies reports have proceeded which have been laid before parliament and contain a considerable amount of information upon the subject.

Taking these branches of the inquiry in the order here given, we consider it as nearly as possible, the actual condition of the fisheries connected with the coasts and rivers of the United Kingdom. The appointment of the committee in 1833 arose out of the distress which was at that time said to affect the several fisheries; and, in its report the committee stated that these fisheries were generally in a very depressed and declining state; that they appear to have been gradually sinking since the peace in 1815; that the capital employed does not yield a profitable return; that the number of vessels and of hands of work is diminishing; and that the fishermen who formerly could maintain themselves and their families by their industry were in a greater or less degree pauperised.

The cause of this unfavourable change, to which, as being in its opinion the most readily susceptible of remedy, the committee gave its principal attention, was the interference of the fishermen of France and Holland; but the principal cause of the distress was stated to be the great end-
crossing scarcity of all fish which breed in the Channel, compared with what was the ordinary supply 15 to 20 years ago, operating prejudicially to the fishermen, at the same time that a continued fall of prices has taken place in the markets. This fall of prices could not have occurred in consequence of an increase in the supply. That there was a diminished quantity taken by the English fishermen may possibly have been true; but considering that the supply in our markets was actually increased so as to provide our growing population at progressively decreasing prices, we can only account for the facts adduced to the committee by supposing that the foreign fishermen, of whose interference such grievous complaint was made, were better skilled and more persevering in their calling than our own countrymen— a supposition which seems to be borne out by the constitutional duties of our existing, since this remarks were delivered, been still more abundantly supplied with fish for our tables; while the cry of distress on the part of the fishermen has passed away, doubtless owing to the greater degree of skill and the Devon and Cornish coasts, asserted.

A complaint, the opposite to that brought forward by the committee, has of late been preferred against our fishermen by the owners of the boats, who allege that, having advanced all the capital necessary for the undertaking, and having probably also contributed to the support of the men during the dead season, under the faith of an agreement to receive at stipulated prices all the produce of their nets, the men so bound to them sell a considerable part of the fish which they take to boats despatched from the coast of France. Numerous and well-authenticated facts have been adduced, have been alleged, was undertaken to satisfy the desires of certain interested parties who wished to make out a case for the benefit of government.

One branch of fishing wholly different in its object from all other branches has been described by the committee of 1833 under the title of the *Store-Boat Fishery*. This fishery prevails principally upon the Kentish, Norfolk, and Essex coasts, and is not the catching of the express articles, not for food but as manure for the land, for which there is a constant demand. This branch of fishing is represented by the committee to have much increased, and to give employment on the Kentish coast alone to from 400 to 500 boats, which remain upon the fishing grounds frequently for a week together and until each has obtained a full cargo of dead fish.

The facility which the pretence of employing vessels in herring gives to the operations of smugglers has led to an act of parliament, 6 Geo. IV., c. 106, under which vessels and boats employed in the herring trade are required to be licensed by the commissioners of the customs. The licenses thus granted specify the limits beyond which fishing-boats must not be employed; this distance is usually four leagues from the shore, and it is informed that our fishermen are injured by this restriction, because some valuable fishing grounds lie beyond the prescribed limits and are thus abandoned to foreigners.

The *pitchard fishery*, which is carried on upon parts of the coasts, has some importance. The number of boats engaged is it is about 1000, which give employment to about 3500 men at sea and about 5000 men and women on shore. The pitchards visit our shores in August and September, and again in November or December, when some are in large schools in shallow water. As soon as caught they are salted or pickled and exported to foreign markets, chiefly to the Mediterranean: the average export amounts to 30,000 hogsheads per year. The quantity was much greater formerly, when a bounty of 8s. 4d. per hogshead was paid upon all the fish exported. This bounty has now ceased, and as additional reasons for the diminution of the fishery, it is said that Lent is not now so strictly observed as formerly in the countries in which the exports are made, and that the heavy duty, equal to 12s. per hogshead, imposed on the importation into Naples, which has been the long principal market, has had a material effect.

The extent of the British *herring fishery* has already been noticed. The places where it is principally carried on are Yarmouth, Lowestoff, Hastings, Folkestone, Cudirgan Bay, and the coasts, in Ireland and Wales; the coasts of Caithness, Sutherland, Aberdeen, Banffshire, Morayshire, and Ross-shire, in Scotland; and Galway, Killybegs on the coast of Donegal, Mayo, the estuary of the Shannon, the coast between Dingle Bay and Kenmare, Banty Bay, Waterford, and from Mizen-head to Cahore point on the Wicklow coast, in Ireland.

The following table, constructed from the reports of the late commissioners of the Irish fisheries, shows the number of boats and men employed, and the produce of *cured fish* in each year from 1821 to 1839.

<table>
<thead>
<tr>
<th>Years</th>
<th>Number of Boats</th>
<th>Number of Fishermen</th>
<th>Barrels of Herring cured.</th>
<th>Barrels of Fish exported</th>
<th>Cwt. of Fish exported.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1821</td>
<td>7,135</td>
<td>36,139</td>
<td>9,276</td>
<td>28,669</td>
<td>400</td>
</tr>
<tr>
<td>1822</td>
<td>6,085</td>
<td>14,929</td>
<td>9,276</td>
<td>31,234</td>
<td>500</td>
</tr>
<tr>
<td>1823</td>
<td>7,062</td>
<td>36,052</td>
<td>9,276</td>
<td>34,033</td>
<td>500</td>
</tr>
<tr>
<td>1824</td>
<td>7,083</td>
<td>36,052</td>
<td>9,276</td>
<td>36,033</td>
<td>500</td>
</tr>
<tr>
<td>1825</td>
<td>7,025</td>
<td>36,044</td>
<td>9,276</td>
<td>34,021</td>
<td>500</td>
</tr>
<tr>
<td>1826</td>
<td>7,010</td>
<td>36,044</td>
<td>9,276</td>
<td>34,021</td>
<td>500</td>
</tr>
<tr>
<td>1827</td>
<td>7,010</td>
<td>36,044</td>
<td>9,276</td>
<td>34,021</td>
<td>500</td>
</tr>
<tr>
<td>1828</td>
<td>7,010</td>
<td>36,044</td>
<td>9,276</td>
<td>34,021</td>
<td>500</td>
</tr>
<tr>
<td>1829</td>
<td>7,010</td>
<td>36,044</td>
<td>9,276</td>
<td>34,021</td>
<td>500</td>
</tr>
<tr>
<td>1830</td>
<td>7,010</td>
<td>36,044</td>
<td>9,276</td>
<td>34,021</td>
<td>500</td>
</tr>
<tr>
<td>1831</td>
<td>7,010</td>
<td>36,044</td>
<td>9,276</td>
<td>34,021</td>
<td>500</td>
</tr>
<tr>
<td>1832</td>
<td>7,010</td>
<td>36,044</td>
<td>9,276</td>
<td>34,021</td>
<td>500</td>
</tr>
<tr>
<td>1833</td>
<td>7,010</td>
<td>36,044</td>
<td>9,276</td>
<td>34,021</td>
<td>500</td>
</tr>
<tr>
<td>1834</td>
<td>7,010</td>
<td>36,044</td>
<td>9,276</td>
<td>34,021</td>
<td>500</td>
</tr>
</tbody>
</table>

The principal herring-fishery off the coast of Norfolk and Suffolk commences in September and ends in the beginning of December. Mackerel fishing begins 1st May and ends 1st July. No material changes have occurred in the seasons, but herrings are more numerous of late years on the Yorkshire coast. For both fisheries decked-vessels of 30 to 60 tons register are generally used.

Our principal salmon-fisheries are carried on in the rivers and estuaries of Scotland. As no bounty has been at any time payable upon the taking or exporting of this kind of fish, it has been difficult to ascertain its actual or comparative amount. Some partial returns have been obtained from persons who have rented the different fishing grounds, but these do not offer a complete view of the fishery, and its produce being consumed within the kingdom, the customs-house, which takes no note of goods conveyed from port to port, is of no help towards supplying the deficiency. A detailed account has been given in the fisheries of the salmon-fisheries in the rivers on the coast of Sutherland, from which the following table, giving the produce for three years to 1835, has been taken:

<table>
<thead>
<tr>
<th>River</th>
<th>1833</th>
<th>1834</th>
<th>1835</th>
</tr>
</thead>
<tbody>
<tr>
<td>River Slm</td>
<td>lbs. 45,839</td>
<td>72,488</td>
<td>63,016</td>
</tr>
<tr>
<td>Brora</td>
<td>lbs. 23,467</td>
<td>35,091</td>
<td>40,343</td>
</tr>
<tr>
<td>Helmsdale</td>
<td>lbs. 23,782</td>
<td>24,199</td>
<td>30,140</td>
</tr>
<tr>
<td>Naver and Borgie</td>
<td>lbs. 28,134</td>
<td>54,122</td>
<td>57,412</td>
</tr>
<tr>
<td>Hope</td>
<td>lbs. 10,966</td>
<td>28,962</td>
<td>25,343</td>
</tr>
<tr>
<td>Grudy</td>
<td>lbs. 1,163</td>
<td>13,314</td>
<td>13,207</td>
</tr>
<tr>
<td>Inchard</td>
<td>lbs. 1,643</td>
<td>2,365</td>
<td>4,750</td>
</tr>
<tr>
<td>Laxford</td>
<td>lbs. 5,135</td>
<td>17,456</td>
<td>24,015</td>
</tr>
</tbody>
</table>

The produce of the salmon-fisheries in some other of the rivers of Scotland, during each of the same three years, was as follows:

<table>
<thead>
<tr>
<th>River</th>
<th>1833</th>
<th>1834</th>
<th>1835</th>
</tr>
</thead>
<tbody>
<tr>
<td>River Fylke</td>
<td>lbs. 292,247</td>
<td>304,156</td>
<td>321,566</td>
</tr>
<tr>
<td>Beauty</td>
<td>lbs. 8,894</td>
<td>15,627</td>
<td>15,891</td>
</tr>
<tr>
<td>South Esk and North Esk</td>
<td>lbs. 29,096</td>
<td>42,205</td>
<td>54,659</td>
</tr>
</tbody>
</table>

The average weight of the fish may be estimated at 10 pounds.

The produce of the fisheries in the rivers Tay, Dee, Don, Spey, Findhorn, Beauty, Burriedale, Langwell, and Thurso, and of the coasts adjacent, are conveyed in steam-boats and small sailing vessels to Aberdeen, where they are packed with ice in hogshead and sent to the London market. The shipments thus made from Aberdeen between the years ending with 1833, were as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Bars.</th>
<th>Kite.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1833</td>
<td>10,449</td>
<td>4,527</td>
</tr>
<tr>
<td>1834</td>
<td>8,676</td>
<td>4,079</td>
</tr>
<tr>
<td>1835</td>
<td>11,549</td>
<td>5,671</td>
</tr>
</tbody>
</table>

Each boat contains on the average from 10 to 15 cwt. of fish and weighs 120 lbs. A statement, which does not however appear to be entitled to much confidence, has been given of the quantity of salmon brought by sea to London from Scotland and Ireland in each of the years 1834 and 1835.

<table>
<thead>
<tr>
<th>Year</th>
<th>Bars.</th>
<th>Kite.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1833</td>
<td>20,534</td>
<td>18,234</td>
</tr>
<tr>
<td>1835</td>
<td>5,057</td>
<td></td>
</tr>
</tbody>
</table>

The most productive salmon-fisheries in Ireland are
situated near the mouths of the rivers; the most important are the following:—

The Boyne with its tributaries, the Mattock and Blackwater.

The Glenarm, the Main and the Glenariff, in Antrim.

The Bush with its tributaries, the Pound, Burn Gasket, and Dervock.

The Bann with its tributaries, the Roe, the Agivey, the Claudy, the Ballinderry, the Blackwater, the Uplands, the Bann, and the Milltown.

The Foyle with its tributaries, the Roe, the Faughan, the Dermot, the Mournes, the Darg, the Mournbeg, the Killburn, the Strule, and Cammon.

The Lannon or Rathmelton which joins Lough Swilly.

The Liffey with its tributaries, the Onewery, and the Clune.

The Ballynas and the Rave.

The Esk or Donegal river, with its tributary the Driminy.

The Erne.

The Newry and its tributaries, the Skudagh, Buckdoon, Glenisland, and Beltra.

The Moy and Ballryver.

The Boyle and its tributaries, the Belia and Lung.

The Ocmore, the Gowla, the Galway.

The Shannon with its tributaries, the Fergus, the Maig, and the Annacotty.

The Laune and Maune, the Kenmare and the Currame.

The Middleton and its tributaries, the Ballinastoe, the Corney, the Gurchrue, and Dungunvey.

The Ilen and Bandon.

The Blackwater and its tributaries, the Owbeg, the Funnech, and the Annaglin.

The Suir, the Barrow, and the Nore.

The Thames and its tributaries, the Enniskerry, Powervour, and Glenere, and the Lifey.

Mackerel are fish of passage which visit every part of our coasts in the spring and early part of the summer, and are taken in great abundance. In this country they are used fresh or are salted and conveyed by rapid land journeys from the coast to London. For the encouragement of the mackerel and other similar fishes, the carriages in which the fish are thus conveyed are exempted from the post-horse duty. The general desire to obtain this fish in perfection has led to the well-known relaxation of our laws against Sunday trading, which permits the open hawking of mackerel on that day, a practice which is punishable with regard to any other fish, or indeed to articles of any kind, with the exception of milk. The fishing-boats on the Thames are generally well supplied with fish conveyance by land carriage with fresh fish, both round and flat, and from these fishing grounds. A good deal of fish likewise comes to port by steam-vessels from the Isle of Man.

The demand for fresh fish in the west of England is said to be extensive and increasing. In the season of 1833, according to the Report of the Commissioners, probably 120,000 of pilchards were sold for home consumption, besides a large supply of mackerel, hake, &c., fresh and salted. The fish is distributed throughout the country in ear and in fish cakes, and are often sold at from 1d. to 1s. 6d., and herring at 2s. per lb; cod-fish at 1s. 6d. per lb.; and red mullets 2d. to 6d. each; turbots 2d. to 6d. per lb.; mackerel 1d. to 6d. each.

The different fishing grounds of Scotland and Ireland, and the kinds of fish found most abundantly at each, are as follow:—

**Scotland.**

Leith.—Herrings, cod, ling, haddock.

Burntisland.—Herrings.

Stonehaven.—Herrings, haddock, halibut, cod, ling, skate, mackerel.

Colliston.—Herrings, haddock, cod, mussels (inhabitants all fishermen).

Peterhead.—Herrings, cod, haddock.

Port Gordon.—Herrings.

Findhorn.—Herrings, cod, haddock.

Cromarty.—Herrings, lobsters.

Caithness.—Herrings.

Wick.—Herrings, cod, ling, hake, salmon, haddock, flounders.

Thurso.—Herrings.

Tongue.—Herrings.

Ullapool.—Herrings.

Lock Carron.—Herrings, cod, ling, hake.

Inverary.—Herrings, cod, ling, salmon.

Greenock.—Herrings, cod, ling.

Lochay.—Herrings.

Cumberland.—Herrings, turbot, sole, flounders.

Orkney.—Herrings, cod.

Shetland Isles.—Herrings, cod, ling.

Stornoway.—Herrings, cod, ling.

**IRELAND.**

Coast of Dublin.—Cod, haddock, whiting, herrings trout, salmon.

Louth.—Cod, haddock, conger, ling, mackerel, whiting herrings, hake, sole, flat-fish.

Down.—Cod, haddock, ling, whiting, conger, turbot, sole, plaice, brill, mackerel, herrings (200 boats), mullet.

Antrim.—Cod, ling, conger, pollock, flat-fish, turbot, haddock.

Donegal.—Sole, plaice, oyster, herrings, turbot, cod, ling, eels, haddock, dores, hake, whiting, conger, mackerel, sprat, glassen.

Sligo.—Turbot, cod, and all kinds of fish that frequent the Irish coast.

 Mayo.—Turbot, sole, cod, ling, haddock, hake, whiting, glassen, conger, gurnet, pollock, mackerel, herrings, skate, sprat, bream.

Galway.—Cod, ling, pollock, mackerel, breem, herring, conger, sole, fish, haddock, gurnet, whiting, hake, turbot, glassen, sole, dores, hake, glassen, hake, ling, glassen.

Clare.—Turbot, cod, ling, haddock, hake, sole, whiting, gurnet, mackerel, thornback, dores, ray, skad.

Kerry.—Turbot, haddock, gurnet, pollock, pollock, plaice, sole, dores, cod, whiting, ray, conger, mullet, mackerel, shad, bream, herrings, pilchards, hake, ling, glassen.

Cork.—Turbot, sole, cod, ling, haddock, mackerel, conger, hake, whiting, shad, pilchards, herrings, plaice, pollock, halibut, dores, skate.

Waterford.—Cod, ling, hake, haddock, glassen, herrings.

Wexford.—Cod, ling, hake, gurnet, whiting, pollock, turbot, mackerel, herrings, pilchards, lobsters, conger, bream, soleis, plaice.

Wicklow.—Herrings, cod, oyster, ling, haddock, whiting, mackerel, soleis, plaice, pollock, trout, salmon.

Cod.—The cod fishery at Newfoundland was carried on as early as 1560 by the Portuguese, Bascays, and French, but it was not until 1585 that the English ventured to interfere with them. In that year Sir Francis Drake being sent to the island with a squadron, seized the foreign ships which he found engaged in the fishery, and sent them to England. At the latter part of the sixteenth century the French were in the habit of employing in these fisheries about 500 sail of ships, a great many of which were of good burthen, and mounted from sixteen to forty guns, to man which they had by a lucrative computation about 16,000 men. This writer adds, that the French by their extraordinary frugality, joined with their other great advantages, such as the cheapness of salt, and having the best and most convenient part of the country for fishing, have quite beaten the English.
out of this trade, as may be instanced in many of the out-
ports of our nation, and particularly Barnstable and Biddef-
ord, which formerly employed in this trade above fifty
ships, and now do not fit out above six or eight small ships."

By the treaty of Utrecht, which acknowledged the sove-
reignty of the whole island of Newfoundland to be in the
reign of England, the privilege of fishing on part of the coast
was reserved to France, notwithstanding which the English
fishery there increased to a great extent. In 1763 there
were 106 vessels employed in carrying on the fishery, 123
ships for conveying the fish when cured to England, and
142 ships for its conveyance to British colonies.

The principal fisheries of Newfoundland are prosecuted
on the banks which nearly surround that island: the
object of these fisheries is solely cod-fish. [NEWFOUN-
LAND.] Salmon, mackerel, herrings, and some other kinds
of fish, are taken off the coasts of the island; and the seal
fishery is carried on successfully, yielding a considerable
number of sea-skins and a large quantity of seal-oil for
exportation.

The cod-fish cured and exported to England and to for-
to foreign countries in 1765 amounted to 391,276 quintals; and
the subsequent success of the fishery will be seen from the
following account of its produce exported in each of the
three years from 1832 to 1834:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Number of Ships</th>
<th>Total Tonnage</th>
<th>Total Number of Tons of Oil</th>
<th>Total Tons of Whalebone</th>
</tr>
</thead>
<tbody>
<tr>
<td>1832</td>
<td>98</td>
<td>69,178</td>
<td>176,117</td>
<td>36,242</td>
</tr>
<tr>
<td>1833</td>
<td>94</td>
<td>61,016</td>
<td>160,064</td>
<td>35,939</td>
</tr>
<tr>
<td>1834</td>
<td>95</td>
<td>52,030</td>
<td>144,911</td>
<td>34,398</td>
</tr>
</tbody>
</table>

The total produce of the fisheries in these three years,
exclusive of the oil, was valued as follows:

- 1832: $4,486,898
- 1833: $4,564,598
- 1834: $4,656,596

These fisheries may be said to be the sole pursuit of the
settlers in Newfoundland, and of the traders who frequent
the island. Nearly every family has a small piece of land
under garden cultivation, but agriculture is not pursued as
a substantive occupation.

In the other British North American colonies, with the
exception of Upper Canada, fisheries are established, and
the produce enters more or less into their foreign commerce.
The kinds of fish exported are chiefly cod, herrings, salmon,
and mackerel. The actual value of these exports from each
colony, in the three years 1832 to 1834, was as follows:

- Lower Canada: $45,775
- Nova Scotia: $31,885
- New Brunswick: $36,275
- Prince Edward's Island: $4,930
- Cape Breton: $19,550

The total: $135,263

Whales.—The whale fishery was carried on successfully
during the twelfth, thirteenth, and fourteenth centuries by
the Biscayan. The whales taken by them in the Bay of
Biscay appear to have been of a smaller species than those
since found in more northern latitudes. The Biscayan fishery
has long ceased, owing probably to the great destruction of
the animals. It is to the voyagers who, near the end of
the sixteenth century, attempted to find a passage through
the northern ocean to India, that we owe the discovery
which led to the establishment of the fishery in the seas of
Greenland and Spitzbergen. The English and the Dutch
were the first to embark in this adventure, but the French,
Danes, Hanseatic, and others were not slow to follow their
example. At first the whales were so numerous that the
fishing was comparatively easy, and was so successfully
pursued, that in addition to the ships actually engaged in
the fishery, many other vessels were sent in ballast to the
shores of Spitzbergen, and the whale righted home with the
full cargoes of oil and whalebone. It was then the practice
to boil the blubber on the spot, and bring home the oil in
casks. In the progress of the fishery the whales became
less numerous, and, when found, more difficult to take. It
therefore became necessary to pursue them farther to the
open sea, and at length it was found more economical to
bring the blubber home in order to its being boiled, and the
settlements before used for that purpose were abandoned.

The part of the Arctic Sea which lies between Spitzbergen
and Greenland, and which was formerly frequented by the
whale ships, is now almost wholly abandoned because of the
scarcity of the fish, and the northern whale fishery is now
chiefly pursued in Davis's Straits. The change has not
occurred within the last twenty years, as appears from the
following statement of ships which arrived from the
northern fishery in each year from 1815 to 1834, distin-
guishing between those from Greenland and those from
Davis's Straits. In this table will also be found the aggre-
gate number of the ships, and the number of tons of oil
and tons of whalebone imported.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Ships from Greenland</th>
<th>Total Number of Tons of Oil</th>
<th>Total Tons of Whalebone</th>
</tr>
</thead>
<tbody>
<tr>
<td>1815</td>
<td>98</td>
<td>176,117</td>
<td>36,242</td>
</tr>
<tr>
<td>1816</td>
<td>94</td>
<td>160,064</td>
<td>35,939</td>
</tr>
<tr>
<td>1817</td>
<td>96</td>
<td>144,911</td>
<td>34,398</td>
</tr>
<tr>
<td>1818</td>
<td>98</td>
<td>133,899</td>
<td>33,380</td>
</tr>
<tr>
<td>1819</td>
<td>94</td>
<td>118,512</td>
<td>32,464</td>
</tr>
<tr>
<td>1820</td>
<td>90</td>
<td>104,235</td>
<td>31,765</td>
</tr>
<tr>
<td>1821</td>
<td>90</td>
<td>90,703</td>
<td>30,718</td>
</tr>
<tr>
<td>1822</td>
<td>84</td>
<td>77,265</td>
<td>29,859</td>
</tr>
<tr>
<td>1823</td>
<td>78</td>
<td>63,823</td>
<td>28,988</td>
</tr>
<tr>
<td>1824</td>
<td>77</td>
<td>50,383</td>
<td>28,918</td>
</tr>
<tr>
<td>1825</td>
<td>76</td>
<td>36,943</td>
<td>28,850</td>
</tr>
<tr>
<td>1826</td>
<td>75</td>
<td>23,503</td>
<td>28,805</td>
</tr>
<tr>
<td>1827</td>
<td>74</td>
<td>14,229</td>
<td>28,850</td>
</tr>
<tr>
<td>1828</td>
<td>74</td>
<td>8,976</td>
<td>28,799</td>
</tr>
<tr>
<td>1829</td>
<td>73</td>
<td>6,851</td>
<td>28,799</td>
</tr>
<tr>
<td>1830</td>
<td>72</td>
<td>4,726</td>
<td>28,799</td>
</tr>
<tr>
<td>1831</td>
<td>71</td>
<td>2,591</td>
<td>28,799</td>
</tr>
<tr>
<td>1832</td>
<td>70</td>
<td>1,456</td>
<td>28,799</td>
</tr>
<tr>
<td>1833</td>
<td>69</td>
<td>912</td>
<td>28,799</td>
</tr>
</tbody>
</table>

It appears from the foregoing table that the average
results of the Greenland and Davis's Straits fishery, com-
puted from twenty years' experience, are as follows:

- Number of ships returned to Great Britain: 115
- Tonnage of oil: 37,013
- Tons of whalebone: 591
- Tons of oil procured by each ship: 101
- Tons of oil yielded by each whale: 1,024
- Tons of oil procured by each ship: 101

The average prices during the twenty years embraced
in this table were—of oil, 28l. 15s. per ton, and of whalebone,
16s. 3d. per ton; it follows that the annual average
produce of the fishery has amounted to 421,704.

The proportions in which the different parts of the
kingdom participate in this fishery is shown by the following
statement, applying to the year 1834.

<table>
<thead>
<tr>
<th>Port</th>
<th>Number of Ships</th>
<th>Tonnage</th>
<th>Tons of Oil</th>
<th>Tons of Whalebone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hull</td>
<td>39</td>
<td>8,906</td>
<td>1,836</td>
<td>1,836</td>
</tr>
<tr>
<td>Whitby</td>
<td>3</td>
<td>783</td>
<td>156</td>
<td>156</td>
</tr>
<tr>
<td>Newfoundland</td>
<td>13</td>
<td>1,141</td>
<td>228</td>
<td>228</td>
</tr>
<tr>
<td>Newry</td>
<td>3</td>
<td>310</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td>Yarmouth</td>
<td>3</td>
<td>903</td>
<td>181</td>
<td>181</td>
</tr>
<tr>
<td>Whitby</td>
<td>5</td>
<td>3,576</td>
<td>714</td>
<td>714</td>
</tr>
<tr>
<td>Aberdeen</td>
<td>6</td>
<td>1,906</td>
<td>381</td>
<td>381</td>
</tr>
<tr>
<td>Dundee</td>
<td>5</td>
<td>1,356</td>
<td>271</td>
<td>271</td>
</tr>
<tr>
<td>Montrose</td>
<td>3</td>
<td>554</td>
<td>111</td>
<td>111</td>
</tr>
<tr>
<td>Kirkwall</td>
<td>1</td>
<td>140</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>Leith</td>
<td>5</td>
<td>1,947</td>
<td>389</td>
<td>389</td>
</tr>
</tbody>
</table>

Previous to the revolt of the North American provinces
this fishery, as well as that in the Southern Ocean, was
prosecuted with great spirit by the colonies of Massachus-
etts. Just before the beginning of the war they employed
annually 183 ships of 13,920 tons in the Northern, and 1,212
ships of 14,026 tons in the Southern whale fisheries. This
display of enterprise on the part of the colonies was thus
FITZSTEPHEN, WILLIAM, author of the earliest description of London extant, was of Norman extraction, but born in the metropolis. He became a monk of Canterbury, and was much esteemed by Archbishop Becket; he was one of his clerks, and an intimate in his family, filling different offices at different times in his train and household. He was also an eye-witness of the archbishop’s murder at Canterbury, and continued with him after his other clerks and dependents. Fitzstephen is supposed to have died in 1191. His ‘Description of the City of London’ was part of another work, ‘The Life and Passion of Archbishop Becket.’ Dr. Pegge fixes the time of the composition of this work between the years 1170 and 1182: and adds, that we may challenge the author to introduce an account of its capital, or any other of its great cities, at so remote a period as the 12th century. It was accordingly noticed by Leland and Stow, the latter of whom inserted a translation of it in his ‘Survey of London.’ Dr. Pegge, in 1772, published Fitzstephen’s ‘Description of the City of London’, which contains an accurate translation and notes. This is the best edition. Fitzstephen, if we may judge from his quotations, was well versed in the Latin, and had looked into some of the Greek classics. (Fitzstephen’s ‘Descer of Lond.’ newly translated, &c., by an Antiquary, (Dr. Sam. Pegge), 4to., London, 1772; Chalmers’s ‘Biogr. Dict., vol. xiv. p. 342.)

FIUME, formerly St. Veit am Flauen (in the Illirian language Reka or Reka), the chief town of the circle of the same name in the Austrian government of Trieste and kingdom of Illyria, is situated in a narrow valley at the efflux of the Isonzo, and 7 miles from the Adria, in 45° 20' N. lat. and 14° 26' E. long. The district, in the time of the Romans, formed part of Liburnia, and upon the partition of the empire became an appanage of the Eastern empire, from which it was wrested by Charlemagne in the beginning of the 8th century. It was a lazaretto, governed by its own dukes, one of whom, by name Cheresini, proclaimed himself king of Fiume about the year 900; and his posterity retained the title for more than a century afterwards. It subsequently became a fief of the patriarchs of Aquileia, then of the Venetians, and finally sold by them to Frederick III, emperor of Germany, in the year 1471. Fiume is well situated, and is composed of the old and new towns, in which there are altogether about 10,500 houses and 9500 inhabitants. The new town lies next the sea, and is confined by the Adriatic, bounded by the road hill with a very wide gap, and small and feeble feet. They belong to the order Insecta, or Percha, and take their food on the wing. (Hirund.-&c.; Gastric.; Insecta.)

FIUSSELLA. (Tubicilide; Clavigella, vol. vii. p. 241.)

FITZGARRY. (Bewick, Dufk. or P. C., No. 63.)

FITZGREGORY. (Bewick, Dufk. or P. C., No. 63.)

FITZJAMES. (Bewick, Dufk. or P. C., No. 63.)

FITZHUGH. (Bewick, Dufk. or P. C., No. 63.)

FISHGUARD. (Pembroke.)

FISSISTROTES, the swallow tribe of birds, distinguishable by their broad bills with a very wide gap, and small and feeble feet. They belong to the order Insecta, or Percha, and take their food on the wing. (Hirund.-&c.; Gastric.; Insecta.)

FISSURELLA. (Cervicobranchiata, vol. vi. p. 443.)

FLACCIUS. (Lacrymalis. [Lacrymal Organs, Diseases of.])

FLASTRUM. (Tubicolide; Clavigella, vol. vii. p. 241.)

FITZCOPE. (Bewick, Dufk. or P. C., No. 63.)

FITZJAMES. (Bewick, Dufk. or P. C., No. 63.)

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FITZCOPE. (Bewick, Dufk. or P. C., No. 63.)

FITZJAMES. (Bewick, Dufk. or P. C., No. 63.)
of his epigrams, inviting him to abandon poetry for the bar, as a surer means of making his fortune. He seems to have died young at Padua; and Quinctilian speaks of his death as a loss to literature. He wrote his Argonautica in imitation of Apollonius. The poem is full of digressions and epistles, and to this, in a measure, may be partly attributed the unfavourable reception which it met with. Some of the descriptions however are remarkably fine and poetical; and it is observed that Flaccus is more elegant in those parts of the poem which are of his own invention than in those which he has borrowed or imitated from Apollonius. His style is at times obscure, and he is very fond of displaying his erudition, which is often out of place. We have only eight books or cantos of his Argonautica, the last of which is incomplete; the whole poem is supposed to have consisted of ten or twelve books. The poem was finished and approved by Pausanias, L. B. Pio published in 1519 an edition of it, adding the termination of the eighth canto as well as the ninth and tenth cantos of his own composition.

FLAG, the ensign or colours of a ship; from the Anglo-Saxon flestan, to fly or float in the wind. Flags borne on the masts of vessels designate the country to which they respectively belong; and they are likewise made to denote the quality of the officer by whom the ship is commanded.

The Great Britain and the Royal Sovereign, which is only to be hoisted when the king or one of the royal family is on board the vessel: the second is that of the anchor on a red field, which characterizes the lord high admiral, or lords commissioners of the Admiralty: and the third flag, that of St. George, St. Andrew, and St. Patrick are blended. This flag is appropriated to the admiral of the fleet, who is the first naval officer under the lord high admiral. The Custom-house and the East India Company have distinguishing bearings in their respective flags.

In the British navy a fleet is divided into three squadrons—the centre, the van, and the rear; the centre being distinguished by red colours, the van by white, and the rear by blue, and respectively commanded by an admiral, a vice-admiral, and rear-admiral. Each of these divisions, if large, there are three divisions in each squadron; and each squadron has then its admiral, vice-admiral, and rear-admiral, who respectively hold the command of its centre, van, and rear divisions. The admirals are divided in like manner, there being an admiral, a vice-admiral, and a rear-admiral of the red squadron, and so of the white and blue squadrons; but in all cases an admiral carries his flag at the main, the vice-admiral at the fore, and the rear admiral at the mizen.

The ensigns, or flags carried at the masts are plain red, white, bearing the red cross of St. George, and plain blue; and the ensign worn by the ship that carries a flag, as well as by every ship belonging to the same squadron, is always of the same colour as that of the flag-officer commanding it.

FLAGGULATION. The idea of propagating the Deity by self-mortification dates from a remote antiquity. Herodotus relates (i. 42) that the Egyptians flagged themselves at one of their annual celebrations. Flagellation was administered as a trial of fortitude to the young Lacedaemonians, who it seems, in accordance with the peculiar institutions of Lycurgus, did not attach to this cas tigation the idea of degradation which modern Europeans do. In Rome however the punishment of flagellation was only applied to slaves, and it seems to have been pretty common amongst the early Christians, who received their trials from the kind of whips with which they were lashed. Some were called Restiones, because they were lashed only with cords; others Bucecis, from being flogged with thongs of ox-leather. It is in reference to this custom that Plautus makes one of his persons say—"Ervit Buccecid iterit gotthi quam ego sim Restio." 'They shall be Bucecis whether they will or no, before I be Restio.' The Jews employed flagellation as a punishment, but never as a voluntary act of devotional exercise. This practice was unknown to the primitives. As a means of mortification, it is imitated by the terrible penitence known under the appellation of the black death, which desolated all Europe during the 14th century, the flagellation mania broke out with new fury. Not only all the scenes of the 13th century were re-enacted, but the excesses of fanaticism became even worse before. The flagellants spread over all Europe, and a band of them reached London in the reign of Edward III. Their

the legends which describe the lives of the saints who lived before the beginning of the fifth century never speak of self-mortification amongst the various torments which the above-mentioned saints inflicted on themselves, although they record frequent instances of the devil's venting his malice on the men by sending them thorns which pierced them. The first known instances of this kind of self-mortification occur about A.D. 400, and from that time they became continually more frequent till the year 1056, when Cardinal Peter Damian de Honesmis promoted by all his influence the practice of self-mortification, which the learned author of the 'Ecclesiastical Annals,' Cardinal Baronius, calls 'a laudable usage of the faithful.' Damian's efforts were attended with great success, and the chroniclers relate that persons of religious dispositions were seen everywhere being marked with the marks of flagellation, and that they had covered their heads and faces with their own skins in order to draw down on themselves the blessings of Heaven. This practice began to spread so widely that many of the less bigoted clergymen endeavoured to discountenance it, but unsuccessfully, and it became every day more prevalent among the besotted crowds of that dark age. About the year 1260 the intoxication was complete. People being no longer satisfied to practise similar mortifications in private, began to perform them in public on pretence of greater humiliation. Regular associations sprang up for the purpose of flagellation, and the extravagancies which they committed were of such a nature that even the contemporary writers, although accustomed to such scenes, seem to have been struck with astonishment. Such at least was the case with the monk of St. Justin, first author who gives a circumstantial account of these fanatics.

'When all Italy was sullied with crimes of every kind,' says the above-mentioned annalist, 'certain sudden superstition hitherto unknown to the world first seized the inhabitants of Ravenna; afterwards it spread through all the inhabitants of Italy. To such a degree were they affected with the fear of God, that noble as well as ignoble persons, young and old, even children five years of age, would go naked about the streets with only their private parts covered. They would stretch out their arms and hands towards the image, and then, in their case, in public, two and two, in the manner of a solemn procession. Every one of them held in his hand a scourge made of leather thongs, and with tears and groans they lashed themselves on their backs till the blood ran; all the time weeping and giving thanks, as if they really had been spectators of the passion of our Saviour, imploring the forgiveness of God and of his holy mother, and praying that lie who had been appeased by the repentance of so many sinners would not disdain theirs. And not only the faithful themselves, but all the people and the women, thousands, and tens of thousands of those penitents, notwithstanding the rigour of the winter, ran about the streets and in churches with lighted wax candles in their hands, and preceded by priests who carried banners and crosses through the streets with humble and devout deportment. The same scenes were exhibited in small towns and villages; so that the mountains and the fields seemed to resound with the voices of men crying to God.' The same annalist relates that music, songs, and every kind of merriment ceased, and that women vied with men in these devotions. This general superstition produced however some good effects.

'Then,' continues the same author, 'those who were at enmity with one another became friends. Usurers and moneylenders bestrode their horses, and the rich right owners. Others who were contaminated with different crimes confessed them with humility, and renounced their vanities. Gaols were opened, prisoners were set free, and punished persons permitted to return to their native habits.'

This sudden repentance was the effect of the terror inspired by the general belief that the end of the world was at hand. Such mental fever could not last very long, and indeed it seems to have soon subsided. But in the 14th century, the idea of the imminence of the end of the world caused by the terrible pestilence known under the appellation of the black death, which desolated all Europe during the century, the flagellation mania broke out with new fury. Not only all the scenes of the 13th century were re-enacted, but the excesses of fanaticism became even worse before. The flagellants spread over all Europe, and a band of them reached London in the reign of Edward III. Their
number consisted of 190 men and women. Each day at
an appointed hour they assembled, ranged themselves in
two lines and paraded the streets scouring their naked
shoulders and chanting a byran. At a given signal, all
were expected to follow the epic ethos of the
mythology, and the flagellants flogged themselves on
the ground; and he who was last, as he passed by his cam-
panions, gave each a lash, and then also lay down. The
others followed in succession till every individual in his
turn had received a stroke from the whole brotherhood.
The citizens of London gazed and marvelled, pitied, and
condemned; but they went on farther. Their faith was
too weak, or their skins too delicate; and they allowed the
strangers to monopolise all the merits of such a religious
exercise. The missionaries did not make a single convert,
and were obliged, to return. It was one of the many other success by
the conviction of having done their duty to an unbelieving
generation. (Linday's History of England, vol. iii. c. 18;
and Stow's Annals, p. 246. ed. 1631."

The purity of the first flagellants was not long preserved
by their followers, and it was but natural that a flane-
table, who thought that self-torment was a sufficient atone-
ment for all possible sins, should fall into great excesses.
The flagellants were soon accused of many crimes; the
celebrated Gerson attacked them in his writings, and Pope
Clement VII. declared them heretics and thundered out
anathemas against them. The flagellants were persecuted
everywhere, and many of them were burnt as heretics. It
was however with great difficulty that this sect was com-
pletely extirpated. For farther particulars about the flagel-
nants, the reader is referred to the works of Boileau, Histoire des Flagellans; an English paraphrase
of the same work appeared under the title 'Memoriales of
Human Superstition by one who is not a Doctor of the

FLAGEOLET. The flageole, or flag, was a flute kind, played on by means of a mouth-piece, in the
manner of the old English flute and pitch-pipe. Its
compass is two octaves, from F, the first space in the treble
clef, to F in altissimo. The scale of the Quadrille Flagoleet is
rationalised for the English, and the Double Flageolet
is an octave higher than the ordinary instruments.

The Double Flagoleet consists of two instruments, united
by one mouth-piece, producing, as its name indicates, double
notes. The use of the Flagoleet is now almost entirely
confined to the ball-room; it is succeeded by the Octave
Flute, or Flauto Piccolo.

FLAMBOURGH HEAD. [YORKSHIRE.]

FLAME is the combustion of gaseous or of volatile
fluid or solid matter. It is attended with great heat, and
sometimes with intense light and perceptible heat. The
temperature may be intense, when the light is feeble: this
is the case with the flame of burning hydrogen gas, it being
scarcely visible by day-light, though its heat is intense: the
combustion of hydrogen is then an example of flame result-
ing from the separation between its two elements, oxygen
and the air. As the quantity of solid matter contained in a given
volume of this gas is small, the light which its flame yields
is inconSiderable; but it is greatly increased by combining it
with carbon, by which there are obtained two gases, namely,
carburetted hydrogen, employed under the name of gas-
light, and olefant gas. Now 100 cubico inches of hydrogen
gas weigh 215 grams, but the same volume of carburetted hydrogen weighs 17:2 grams, and of olefant gas 30:1 grams: the difference of weight shows that of the chains of 17:2 grams which combines with 215 grams of hydrogen, and this is how the two gases give out more light than hydrogen, and in proportion
to the charcoal which they contain.

In the burning of a candle, the wax or tallow being first
rendered fluid by heat, rises in thewick, and although the
wick supplies some hydrogen and carbon, by far the greater
portion of these is yielded by the wax or tallow, which
burn by the assistance of the oxygen of the air. The supply of
hot vapour diminishes as it ascends, and eventually fails, and
then the flame of a candle gradually tapers to a point and
ultimately ceases.

Two opinions have been entertained as to the mode in
which flame is produced and propagated. According to
Sir H. Davy, the flame of combustible bodies "must be con-

considered as the combustion of the two elements of the
flameable gas or vapour and air; for it cannot be regarded as
a mere combustion at the surface of contact of the inflam-
mable matter; and the fact is proved by holding a taper or a piece of burning phosphorus within a large flame
made by the combustion of alcohol; the flame of the candle
or of the phosphorus will appear in the centre of the other
flame, proving that there is oxygen even in its interior part." (On the Safety Lamp, p. 45.)

On the other hand, the opinion is advanced that the internal part of the flame is comparatively cool, the actual combustion being diffused over the surface, and
concentrated at the apex. Dr. Sym adds numerous curious
and important experiments in proof of his opinion; but the
two most decisive facts in its favour are related by
Mr. Davies (Annals, vol. x. p. 447), and they appear fully
to warrant the inference he has deduced from them, that
the interior of flame will not support combustion, and that on
account of its containing no oxygen.

A piece of phosphorus was placed upon a small wooden
stand in a Wedgwood dish; spirit of wine was then poured
into the dish in such a manner that it did not reach the
phosphorus. The spirit of wine was lighted, and its flame
completely enveloped the combustible body. In the
course of a few seconds, the phosphorus always burst into a
vivacious flame when the spirit of wine was extinguished.
When the flame of the spirit of wine was blown upon, so that the edge of it came in contact with the phosphorus, the phosphorus immedi-
ately burst into a flame, but the flame was instantly ex-
tinguished, though in several instances the spirit of
wine continued to burn for three or four minutes. The
combustion of the phosphorus was thus shown to be
attributable to the oxygen of the air, while the flame of the
alcohol was restored to its natural position.

Mr. Davies states also that a lighted wax taper, surrounded
by alcohol, was extinguished when the alcohol was inflamed.
That flame is merely a thin film of white hot vapour, and
that this combustion does not carry away
sufficient oxygen to remove the inflammable matter contained within which cannot burn for
want of oxygen, is proved by inserting one end of a small
hollow glass tube into the dark central portion of the flame
of a large candle or of a gas light; the interior unburnt
vapour or gas passes through it, and may be lighted at
the other end of the tube.

A most intense light, employed by Lieutenant Drum-
mond in geodetical operations, is produced by passing a
stream of oxygen gas directed through the flame of alcohol
upon a small spiral of wire; the light is then suitable for
the examination of objects in spaces too small for the
ordinary microscope. It appears that it is the vapour of the
light, raised to this high temperature, to which the intensity
of the light is owing: this is shown by the roof of the lantern
being covered with flakes of carborundum.

The brilliancy of flame is much diminished by various
cooling processes: thus when a piece of glass is put over or
into the flame of a candle, it becomes covered with charcoal
in the state of soot, which diminished heat of the flame
is capable of igniting it. The same happens when the
combustion goes on with alcohol, and with charcoal. The flame
is also lessened by the presence of water, and even by the
extent with oil and tallow than with alcohol; the latter
containing less carbon and more hydrogen than the former, its
carbon is not so readily deposited by cooling.

It is on the cooling power of the metals with regard to
flame that the safety-lamp is mainly based; and the com-
bustion of the safety-lamp depends. [SAFETY-LAMP.] The uses to
which flame is applied are numerous and highly important;
it is employed for the purpose of giving heat in reverbera-
tory furnaces and in the blow-pipe, and for that of yielding
light in lamps, and the bodies for these uses are produced by
various other chemical processes, and by other means than the combustion of substances containing
hydrogen and carbon, though they are the elements from
which it is obtained for all the numerous purposes of com-
mon life and manufacture.

FLAMEN, FLAMINES, one of the orders of priesthood
in ancient Rome, like the Sali, the Feceales, and others,
instituted, according to tradition, by Numa Pompilius. The
Flamines were each destined to the service of one par-

ticular god; the Flaminius, or Flamen, was the priest of
theCeres, secreted to the worship of Jupiter, and was the first in rank;
the Flamine Martianus, who attended to the worship of Mars,
&c. They enjoyed great consideration, and their wives, called Flaminice, attended the sacrifices and other sacred
ceremonies. The Flamiones were distinguished by a peculiar pileus, or hat, of a conical shape, which was fastened under the chin. Their number, which was originally only three, was increased afterwards at all seasons, and introduced, at last even the corpses, being deified after death, had a Flamén appointed for them. The Flamiones were chosen both from among the patricians and the plebeians.

FLAMINGO, Flammen of the French, Phaenocpit- terus of the antiques and moderns. A large flock of birds whose natural position seems to be between the Waders (Gralla- tores) and the Anatides. The form approaches in some points to Recurvirostra [Avocet] and Platalea (the Spoonbills), and in others comes nearest to the Anserinae (Geese). The Phalacrocoracine Platalea, with Recurvirostra and Platalea, between his family Pinipitaeidae (Phalaropes, &c.) on the one side and the Anserinae on the other. Mr. Vigors, in his paper 'On the natural affinities that connect the orders and families of birds,' thus marks its position among the Grallatores: 'Intermediate between Ardea and Ciconia appear those forms which display so remarkable a dilatation of the bill, the Ciconiera [Boat-Bill] Phaenocpiterus, and Pla- taeae of Linnæus. The two last of these groups are equally distinguished by a greater development of the membrane that connects the toes than is observable in the other Waders which join them on each side; and in one of them, the Phaenocpiterus, this character is carried so far to the extreme as to have occasioned some systematists to place them under the order of the Ciconiæans (Great-ers). But the whole of the family have a membrane, more or less extensive, at the base of the toes; and if we compare the feet of the common Ciconia alba (Stork), of the Plataeae, and the Phaenocpiterus together, we shall see a great difference in the condition, especially as the latter reaches the extreme in the latter genus.' Mr. Swainson appears to be one of those who place the Flamino among the swimmers. In his 'Natural History and Classification of Birds' (1836), he says, 'the Flamino, which has the longest bill of any of the family, is a good walker, so that it only swims occasionally.' The close correspondence of many parts of the organization of the bird with the same parts in the Anatidae will be remarked by the reader when he comes to the anatomical description hereinafter stated.

Feet very long; three toes in front, hind too very short, articulated high up on the tarsus; anterior toes united to the nails by a leated membrane (membrane découpee). Nails short, flat. Wings moderate; first and second quills longest.

Temminck, whose generic character we have given, says that the Flaminoes live on the sea-beach or in marshes formed by salt lakes, where their food consists of testaceous mollusks, marine insects (criustaceans), and the spawn of fish, which they collect by plunging their long neck into the water and turning the head upside down, so as to employ with greater advantage the bend of their bill. They join in large troops and live in societies. Their nest is made in the marshes, and consists of earth, petals, and upon this nest the birds sit astride, because their length of limb hinders them from incubating otherwise. Whether they are reposing or fishing, sentinels are appointed which keep a sort of guard. If anything alarms the védete he utters a trumpeting kind of cry, and the whole flock, fear them into the air. They rarely take their repose in any other than open places; and it is asserted that their sense of smelling is so acute that they scent from afar the hunter and fire-arms. Their mould appears to be simple and moderate. The young birds, differing from those of their parents. The red or rosy plumage which covers the adult shows itself gradually, after many molts and a period of about four years. The females are less than the males, and the colours of the former want the purity which distinguishes in the latter; the young, at their departure from the nest, are white. The body of the Flamino has hardly a greater covering of down than that of the other Waders, the Avocets alone excepted; and accordingly they do not swim habitually, like the latter birds, when they wish to go from one bank to another in deep water. The palmed foot of the Flaminoes appear to be given them to enable them to sustain themselves on the slimy bottoms of rivers and creeks into which they wade as far as their long legs will allow them. They sometimes make an angle like the Géese. In walking they often apply their upper mandible to the ground, and lean on it as a point of support.

M. Temminck positively asserts that the Flamino of Europe and of Asia, and over the warm climates of America are different. He states that he knows the plumage of the American Flamino from its youth to its adult state, and declares that they are all different from the various states of the Flamino of the antient continent. The orange-red bill pervades the whole body of the American species when it has arrived at its complete state of development is sufficient to distinguish that bird from our European Flamino, which is of a rose-colour, with wings of purplish red. The young of the latter (Phaenocpiterus Antiquorum) has the plumage whitish, covered with brown mottlings (mêches), very distinctly marked and long, principally on the greater wing-coverts; the American Flamino (Phaenocpiterus ruber) is covered in its youth with a dull whitish-gray plumage. Three species then are recorded by M. Temminck.

1. The Flamino of the Antients, Phaenocpiterus Antiquorum, Flammen Flaminctore, of Buffon, the Flammat and Flamino of old authors. Locality, south of Europe, Africa, and part of Asia.

2. The Flamino, Phaenocpiterus ruber, Red Flamino. Locality, South, and part of North America.

3. Phaenocpiters minor, Flammat Pygmea, previously described by Vieillot as Phaenocpiters parvus. Locality, South America.

M. Lesson observes that at all events it would be more convenient to retain the original name of Linnæus, Phaenocpiterus ruber, for the Flamino of the Old Continent, and to suffer that given by Molina to the American bird, viz., Phaenocpitrus ruber, to go out of use. While Wilson, who does not appear to have recognized any specific difference, records the last-mentioned Flamino under the name of Phaenocpitrus ruber. The latter is used by most of the English zoologists to designate the Flamino of the Old Continent. In all events, it is strong to prevent confusion, adopt the nomenclature suggested by M. Lesson, wishing, at the same time, that Molina’s name had not been a name of locality.

Before we enter into the history of these several species it will be useful to describe the anatomical structure of the Flamino, and Mr. Owen has enabled us to do this in his Notes on the Anatomy of the Flamino, Phaenocpitrus ruber of Linnæus, which died in the menagerie of the Zoological Society of London in the summer of 1822. After examining the anatomical differences observable in the groups of the Wading Birds are so considerable, that we find them generally alluded to by Cuvier in the characters of the Grallatores, in the ‘Regne Animal,’ he remarks that, where they are omitted, we may presume that the illustrious author had not had the opportunity of examining the internal structure of the birds in question, and that they either had not before been dissected, or that their anatomy had been described with too little exactness to warrant his statement, the same as of previous writers. This appears, in his opinion, to have been the case in the three genera which Cuvier has placed at the end of the order, viz., Chionites, Forsteri; Glareola, Gmel. and Phaenocpitrus, Linn.; and these, observes Mr. Owen, are the most interesting of the family and an adequate proof of the representative of so many distinct families. With respect to the Flamino, Mr. Owen supposes that an opportunity of dissecting it had never occurred to Cuvier, and that probably the absence of any allusion to coccio in Perrault’s ana-
mandible, form together a sort of filter, and, like the plates of whalebone in the Baleen, allow the superficial moisture to drain away, while the small mollusca and other littoral animals are detained and swallowed. The structure of the gizzard is in accordance with the size of the esophagus, which serve for nutrition. In the typical Grallatores, as Ardea and Ciconia, which swallow entire fish and other food in large morsels, the osophagus is remarkable for its great and uniform capacity; but in Phainocrypterus it is of the most half an inch in diameter when dilated. At the lower part of the neck it expands into a considerable pouch, which measured, in the specimen here described, 3 inches in diameter, and 4½ inches in length. In Perrault's specimen the diameter was only 1½ inch, and it became contracted, as he describes its furnishing internally with many small longitudinal rugae. The circular fibres around this part were very distinct. Beyond this pouch the osophagus again contracts to about 4 lines in diameter, and so continues for 3½ inches, when it terminates in the proventriculus. This glandular cavity was 1 inch 8 lines in length, and 5 lines in diameter: the gastric follicles were broad, short, and simple, and were arranged in two long oval groups, blending together at the edges. The proventriculus terminates in a small but strong gizzard, of a flattened spheroidal form, measuring 1 inch 5 lines in length, and the same in breadth; the lateral muscles were each half an inch in thickness. The gizzard was lined with a moderately thick and yellow-coloured cuticle, disposed in longitudinal ridges, the extremities of which projecting into the inner surface form a network of small cavities in the gizzard of the Ostrich. In a Flamingo dissected by Colonel Sykes, in which the duodenum was blocked up by two large tape-worms, the muscles of the gizzard were 1 inch in thickness. The duodenal fold extended towards the left side 6 inches from the pylorus. This intestine was 4 inches in diameter. The pancreas, which occupied its common situation between the two portions of the fold, had a more complete peritoneal covering than usual. The intestinal canal soon diminished in diameter to 3 and then to 2 lines. The small intestines formed an oval mass, and were disposed in twenty-one elliptical spiral convolutions, eleven descending towards the rectum, and ten returning towards the gizzard in the interspaces of the preceding; a disposition analogous to that of the colon in man in its commencement. The villi of the intestines were arranged in longitudinal zigzag lines. There were two ccac, each about 3 lines in length, and 5 lines in diameter. The testes were about the size of grains of wheat, and were situated on the anterior part of the renal capsules. The latter bodies were about the size of hazel-nuts. Both male glands were of a bright yellow colour. The fat of this bird is of a remarkable orange tint. The principal diseased appearances were in the lungs, which were filled with tubercles and ronmice. I was much struck with finding the inner surface of the latter cavities to use the form of an ornament to the laciniae of the branchial tubes, covered over with a green vegetable mould or mucor. As the individual was examined within twenty-four hours after its death, it seemed reasonable to conclude this mucor had grown there during the lifetime of the animal. Though it would appear that intestinal parasites are not exclusively derived from the animal kingdom, but that there are Entophyta as well as Entozoa.'

'The tongue of the Flamingo is remarkable for its texture, magnitude, and peculiar armature. It is almost cylindrical; when stretched, above, below, and laterally, but is chiefly composed of an abundant, yielding, cellular substance, with a fat of an almost oily consistency. It is supported by a long and thin con cave cartilage articulated to the body of the or typtus by a shallow ginglymoid joint allowing of a free motion. Excepting the straight hyglossi, the muscles all terminate at the base of the tongue. The tendons of the former muscles run along the under part of the lingual car tire, and expand to be inserted at its extremity, where a few fibres again proceed forwards to the extreme point of the tongue.' In the museum of the Royal College of Surgeons in London (Gallery) is a preparation, No. 524 E, of the crop, proventriculus, and gizzard of a Flamingo, Phainocrypterus ruber of Linneus; and No. 1470 of the same museum is a preparation of the tongue of that bird.

Tongues of Flamingo. From a specimen in the Royal College of Surgeons.

Species of the Old Continent. Phainocrypterus ruber (Linn.); Phainocrypterus Antiquorum (Temm.).

Description.—Length from the end of the bill to that of the tail four feet two or three inches, but to the end of the claws sometimes more than six feet. Bill 4½ inches long; upper mandible very thin and flat, and somewhat moveable; the under mandible thick, both of them bending downwards from the middle; nostrils linear and placed in a blackish membrane; end of the bill as far as the bend black, from thence to the base reddish-yellow, round the base, quite to the eye, covered with a flesh-coloured core; neck slender and of great length; tongue large, fleshy, filling the cavity of the bill, furnished with twelve or more hooked papillae on each side, turning backwards; the tip a sharp cariagrass substance. The bird when in full plumage wholly of a most deep scarlet, except the quills, which are black. From the base of the thigh to the claw thirty-two inches, of which the feathered part takes up no more than three; bare part above the knee thirteen inches, and from thence to the claws sixteen; colour of the bare parts red, and toes furnish ed with a web deeply indented. Legs not straight but slightly bent, the skin rather projecting. (Latham.)

Nest formed of earth, and in the shape of a hillylock, with a cavity at top; eggs two, white, of the size of those of a goose, but more elongated.

Utility to man.—Flesh pretty good meat; the young thought by some equal to partridges. The inhabitants of Provence, however, are said to throw away the flesh of them, and fancy only the fat from the fat end, and send it, as the other birds at particular entertainments. Not so the Roman epicures. Apicius has left receipts for dressing the whole bird with more than the minute accuracy of a modern cookery book, and the 'Phainocrypterus ingens' appears among the luxuries of the table in Juvenal's eleventh satire. The brains and the tongue figure as one of the favourite dishes of Heliogabalus, and the supreme excellence of the latter was dwelt upon by the same Apicius and noticed by Pliny where he records the doctrine of that 'nepotum omnium aliumorum garum.' (Lib. x. c. 48.) Neither has it escaped the pointed pen of Martial—

'Nut nihii panae rubens nomen; sed lingua gallica.'

1. Nostra saepta: quid si garrula lingua foret? Lib. xii. 152.
The 'garula lingua' most probably alludes to the tongues and brains of singing birds, which sometimes formed one of the monstrous dishes at the enormously expensive Roman entertainments. Dumler does not forget the delicious tongue of the Flamingo, observing that a dish of these tongues is worthy of a place at a prince's table. The bird itself seems to have been held in high repute by the ancients, for it appears to have been one of the victims offered to Caligula, who is said to have been sprinkled with, while sacrificing, with the blood of a Phoenicopter the day before he was murdered.

The plumage of the adult is pure rose-colour without spot or streak; the head, the neck, the back, and all the lower parts are of this beautiful tint, which is more lively and pure in the living bird than in the preserved skin, for the fugitive brilliancy of this tint becomes tarnished and passes into whiteness from exposure to the light. The great wing coverts and those of the tail are slightly deeper in colour than the other parts of the plumage. The whole wing is covered with feathers of a brilliant scarlet or purple, surmounted by a wide rose border; the tail-feathers are black. Back of the bill, cere, and region of the eye deep purple; middle of the lower mandible orange-red, and the point black. Joint of the knee, toes, and their membranes of a fine red, the tarsi have a livid tint. Total length nearly three feet. Young of the year.—White or whitish, marked with small brown streaks (nuches) spread over the head, the neck, the breast, and the coverts of the wings. The first red tints show themselves on the wings. Bill black tip of a reddish livid tint.

Locality.—Lakes of Africa. Those received by Professor M. Temminck were natives of the Cape of Good Hope. The young bird in the museum at Paris was brought from Senegal.

Phoenicopteridae.

Locality.—The European Flamingo is recorded as having been seen everywhere on the African coast and the adjacent islands quite to the Cape of Good Hope. There is a specimen in the South African Museum. Le Vaillant found thousands of Pelicans and Flamingoes on the river Klein-Brak, where the water is brackish owing to the flowing of the tide. It has been occasionally observed on the coasts of Spain, of Italy, and on those of France which he on the Mediterranean sea; it has been met with at Marseilles and some way up the Rhone. The prince of Moesogno notes it as very rare and accidental in the neighbourhood of Rome. In some seasons it has been remarked at Aleppo and in the parts adjacent. It has been noticed on the Persian side of the Caspian Sea, and thence along the west coast as far as the Wolga, but at uncertain times, and chiefly in considerable flocks, coming from the north-east mostly in October and November. Collin records it in his catalogue of birds in the Dukham (Deream) as the Ross Hans of the Hindoos. It breeds in the Cape de Verde islands. This species is very shy. Dumler killed fourteen at once by secreting himself and two more: they are not to be approached openly. Kolben speaks of their numbers at the Cape, where by day they resorted to the borders of lakes and rivers, and lodged at night in the long grass on the hills.

* Sort. in Calig. 22. † Ibid. 57.
order into the ranks of the close and cumbrous phalanx. Panic pervaded the Macedonians; many threw down their arms and fled, and Philip himself, seeing the rout becoming general, left the field, and took refuge towards Tempe. The Macedonians lost 8,000 killed and 5,000 wounded that day. Soon afterwards the king asked for a truce, which was granted by Flamininus, in order that messengers might be sent to Rome to treat of peace. The Senate appointed ten legates, who, in concert with Flamininus, drew up the conditions, which were that Philip should evacuate every Greek town and fortress beyond the limits of his paternal kingdom, that he should give up all his ships of war, reduce his military establishment, and pay 1000 talents for the expenses of the war. Flamininus was then continued in his command for another year, 195 B.C., to see these conditions executed. In that year, at the meeting of the Isthmian games, where multitudes had assembled from every part of Greece, Flamininus caused a crier to proclaim that the Senate and people of Rome and their commander Titus Quintius, having subdued Philip and the Macedonians, restored the Corinthians, Phocaeans, Locrians, Eubeans, Thessalians, Pheitiota, Magnetes, Perrhaebi, and Achaeans to their freedom and independence, and to the enjoyment of their own laws. Bursts of acclamation followed this proclamation, and the crowd pressed forward to express their gratitude to Flamininus, whose conduct throughout those memorable transactions was marked with a wisdom, moderation, and liberality seldom found united in a victorious Roman general. He checked by his firmness the tempest of enthusiasm which would have overthrown the destruction of Philip, while he satisfied all just claims of the rest; and although his Macedonian expedition led ultimately to the entire subjugation of both Macedonia and Greece, yet he was at the time the means of restoring peace to both countries. Flamininus returned to Rome, having subdued Philip and the Macedonians, restored the freedom and independence of the Greek states for half a century longer. In the following year, 195 B.C., Flamininus was entrusted with the war against Nabis, tyrant of Lacondon, who had treacherously seized the city of Argos. Flamininus advanced into Laconia, and, after fiercely combining his forces, he carried the city of Corcyra, with a reinforcement of 8,000 foot and 800 horse, marched up the country, where he found Philip posted in a rugged pass on the banks of the Aous, among the mountains of Eastern Epirus. After some fruitless negotiations with the king of Macedonia, the Romans, under the guidance of an Epitro pole shepherd, attained by a mountain path the rear of the Macedonian position, and Philip was obliged to make a hurried retreat across the chain of Passes of Mount Theban. He was followed by the Romans and their allies, the Boiotians and the Athenians, who overran and ravaged the country. Meantime L. Quintius Flamininus, the brother of the consul, sailed with a fleet to the eastern coast of Greece, where, being joined by the ships of the Rhodians and of Athens and Pergamus, he succeeded in capturing a force of Euboeans, Cretans and Boeotians, which were allied or subject to the king of Macedonia. The consul himself, marching into Phocis, where he took Elatea, and having there fixed his winter-quarters, he succeeded in detaching the Achaeans from the Macedonian alliance. In the following year Flamininus, being confirmed by the Senate in his command as proconsul, before beginning hostilities, refreshed a conference with Philip on the coast of the Malian gulf, and allowed him to send legates to Rome to negotiate a peace. The Senate however having required that Philip should evacuate all the territory of Greece which he had occupied, including Demetrias in Thessaly, Chaerles in Euboea, and Corinth, the negotiations were broken off, and Flamininus resumed military operations. He marched from Phocis into Thessaly, where Philip was besieged near Larissa with a body of 16,000 phalanx men, 2000 peltasts, and 5000 Thracian and other auxiliaries. After some previous demonstrations and partial attacks, the two armies met between Pherea and Larissa, in a country broken by small hills called Cynocosephale, or Dogs' Heads. The Macedonian right wing, where the king commanded in person, and where he had formed his phalanx on a hill, but Flamininus observing the left wing moving in column with a narrow front to their assigned post, attacked it with his elephants and their companions; and on this occasion, as on others, succeeded. In the pursuit of this body a truce of the victorious legion being led beyond the flank of the right wing, ventured to attack it on the rear, and he succeeded in spreading dis-
lowed the Roman prisoners who had been sold as slaves to the Greeks by Hannibal during the second Punic war, and which, after the war, had obtruded its face from the great map of the Greek states. The Achaeans alone are said to have liberated 1200, for whom they paid 100 talents as compensation money to their masters. Altogether there never was perhaps a Roman triumph so satisfactory as this to all parties, and the Achaeans in the year 183 n.c. Flamininus was sent to Prussia, king of Bithynia, upon the ungracious mission of demanding the person of Hannibal, then, in his old age, a refugee at the court of Prussia. Hannibal, however, by taking poison, avoided being given up. In the time of Flamininus a mausoleum was made in the room of C. Claudius deceased (Livy, xlv. 44), after which he is no longer mentioned in history.

FLAMSTEED, JOHN. The life of the first astronomer royal was known to the world chiefly by the results of his work, not by the history of the year 1632, when private affairs have been brought to light in an unexpected manner, and have excited great interest, not without creating some party feeling among those who cultivate the sciences connected with astronomy. In 1632 Mr. Francis Baily undertook the preparation of a star chart, and afterwards to observe the starry heavens, in the handwriting of Flamsteed and his friends, containing the curious history of which we shall give a brief abstract. The result of this discovery was a representation to the Board of Visitors of the Royal Observatory, who recommended the republication of the catalogue with other data, and the writing of papers of Flamsteed. The Lords of the Admiralty having decided to print this at the public expense, Mr. Baily undertook the preparation of the work, which appeared in 1635. In the account of the Rev. John Flamsteed, &c., &c., to which is added his British Catalogue of Stars, corrected and enlarged. From this work, which is certainly the most remarkable scientific biography of the present century, we have entirely drawn the materials of this personal account of Flamsteed. Mr. Baily from a manuscript by Flamsteed, headed 'Self Inspections, by J. F.,' which is a very interesting autobiography.

John Flamsteed was born at Denby, near Derby, August 13, 1646. His father was in some business, and the death of that of a master: he lost his mother when very young. At the age of fourteen he caught cold while bathing, which produced a weakness in the joints, from which he never recovered. He began his mathematical and astronomical studies at the early age of fourteen, and it is said, constructing astronomical instruments. In 1665 he visited Ireland for the purpose of consulting a Mr. Greentrax, who professed to cure disorders by the touch, and of whose experiments in London a curious account exists. [Boyle, Roxby, and Flamsteed were all medical students by this time.] In the present year he returned to Derby, where his father lived, and where he had received his education. Here he continued his studies till 1669, and with great success. In or before 1667 he discovered the real causes of the equation of time, and wrote a tract on the subject, which was afterwards appended by Dr. Wallis to his edition of the works of Horrox, published in 1673. In 1669 he made an astronomical communication to the Royal Society through Oldenburg, their secretary, concealing his name under the anagram 'Johns hen s a role fundes, which, being transposed, gives

Johannes Flammsteidius: this same anagram appears in the title-page of the tables appended to the doctrine of the sphere in Sir Jonas Moore's system of mathematics, in the preparation of which Flamsteed had a share. An answer from Oldenburg, addressed to himself, showed him that he was discovered, and from that time, or rather from the date of a visit which he very shortly afterwards paid to London, he was in correspondence with most of the scientific men, but particularly with Sir Jonas Moore, who, in 1674, proposed to establish Flamsteed in a private observatory, which he intended to build at Chelsea. In the mean time however the fact of the very large errors to which astronomical tables were subject came to the notice of Charles II., on the occasion of a proposal made by a French gentleman for finding the longitude [Green-

wick Observatory], and that king determined to establish an observatory. Flamsteed was appointed astronomer royal, and was ordered to take up his residence at Greenwich, and carried on his observations at the queen's house, in Greenwich Park, until the observatory was ready, which was in July, 1676. From this time Mr. Baily dates the commencement of modern astronomy; nor can such chronology be more correct, for it was at this period that we are to learn Flamsteed's observations as the earliest with which it is desirable to compare those of our day, and also that Flamsteed's catalogue is the first which attained a precision comparable to that of later times. Flamsteed was in fact Tycho Brahe with a telescope; there was the same freedom of adopting instrumental means, the same sense of the inadequacy of existing tables, the same long-continued perseverance in actual observation. But Tycho Brahe, a rich noble, found his exchequer in a king's purse; while Flamsteed, a poor creature, was at first at the exchequer himself, upon an ill-paid salary of one hundred pounds a year. Up to the year 1684 he had imposed on him the task of instructing two boys from Christ's Hospital, as one of the duties of his post; and, besides this, he was obliged to have recourse to the charges of carrying on his observations. At the very same time, that part of the public which cared about the matter were beginning to require that he should print his observations.

Almost at the outset of his labours he was so well known that Dr. Bernard invited him to become a candidate for the Savilian professorship of geometry at Oxford, which he declined to do. He had at this time nothing but a sextant and clocks of Sir Jonas Moore's, and some instruments belonging to the Oxford Case and Catherine's Hospital. He formed the society, and after repeatedly urging the government to provide him with an instrument fixed in the meridian, he caused a mural arc to be constructed at his own expense, which was erected in the year 1665, but proved a failure. In the year 1667, before the time at which he had in 1673, having in the previous year obtained the degree of Master of Art from Cambridge. It is not certainly known that he had been a student in that university, though it is certain that he was for some months at Cambridge in 1674. Perhaps he obtained the degree by the authority of his name, on condition of a short residence.

In 1684 his father died, and he was presented to a small living by the Lord-Lieutenant. Both circumstances increasing his means, he resolved to keep at the expense of a mural arc, upon an assurance from the government (which was never fulfilled) that the outlay should be repaid. This instrument was first used in September, 1689, and from that moment 'everything which Flamsteed did, every observation which he published,' was in the highest degree trusted, believed, and made the subject of the highest form, and was available to some useful purpose. When he died, the government of the day attempted to claim these instruments as public property.

The public career of Flamsteed, from this time to the end of his days, was one of the most illustrious in the history of science. He had that enormous mass of observations which furnished the first trustworthy catalogue of the fixed stars; that he made those lunar observations on which Newton depended for the illustration and verification of his lunar theory; and that he originated and practised methods of observing which may be said to form the basis of those employed at the present time. Were it not for the celebrated quarrel between him on the one side, and Newton and Halley on the other, there would hardly be a life of so much utility, and so much of the best things which men have done, written for a popular account. It is to be remembered that the following is an ex parte statement; but on the other hand, it is not one formally drawn up for the public, but partly contained in the manuscript autobiography which never was published, and partly written by him from his correspondence with his friends. Many confirmatory circumstances of the general tenor of the facts appear in the letters of Newton himself; and even those who have (since the publication of Mr. Baily's work) defended the character of Newton, have not attempted to contradict the account, but have mostly confined themselves to an attempt to show that Flamsteed did not appreciate the pursuits of Newton. The following is a sketch of the transaction.

Newton had been on terms of cordial intimacy with Flamsteed, but a coolness, the cause of which is not discoverable, had begun to exist in the year 1696. In a letter to Dr.
Wallis, intended for publication. Flamsteed mentioned his having supplied Newton with observations of the moon, but that this the latter took very ill, saying, in a letter to Flamsteed, 'I do not love to be printed on every occasion, much less to be dunned and teased by foreigners about mathematical things; or to be thought by our own people to be trifling away time, which should be a king's business.' Before this time he had furnished Newton with all the lunar observations which he had made.

When Flamsteed had completed his catalogue (having already expended 2000l. more than his salary), he began to think of printing his results. But George Grenville, having heard of the extent of Flamsteed's labours, offered, in 1704, to bear the expense of printing. A committee, consisting of Newton, Sir Christopher Wren, Dr. Arbuthnot, Dr. Gregory, and Mr. Roberts, was appointed to consider whether they should lose the benefit of printing all of them. The superintendence of the printing, the choice of workmen, &c. was in the hands of the committee, and not in those of Flamsteed. The latter gives the detail of various vexations to which he was subjected, and which ended (for the time) in a demand that Flamsteed should give up a manuscript copy of the catalogue of stars, which was the result of the observations, and was intended to be published at the end. This was done, with remonstrance, by Flamsteed; but the catalogue (as many of the facts were not published) declares that he understood it was to be kept sealed up until the whole of the rest was finished. It was three years before the first volume was printed; and during this time many small circumstances occurred which, if Flamsteed's catalogue had been the end, would have produced the most determined intimation on the part of the committee to give annoyance. Prince George died in 1708, before the second volume was begun; and the office of the committee was gone; but they still retained the papers in their keeping. Flamsteed, on his return from a journey, or, as Flamsteed published, applied himself again to his observations. In March, 1710-11, he was surprised by being told that the seal of his catalogue had been broken, and that it was going through the press. Flamsteed immediately obtained an order of the house of commons to suppress the publication, but none of it was printed. This was not the fact; for in a few days Flamsteed himself received several printed sheets, and learned that Halley had publicly exhibited others in a coffee-house, and boasted of the pains he had taken in correcting their errors. The result was, that in 1715 appeared the book known by the name of Halley, and entitled History Celestis libri duo, &c. Flamsteed, exceedingly irritated by the conduct of Newton and Halley, and being not naturally of a gentle temper, now kept no terms whatever with Halley; and Flamsteed was one of the members of a board of visitors for the observatory (made up of members of the Royal Society), and Flamsteed was summoned to the Royal Society, October 26, 1711, to know if his instruments (his own property) were in order, &c. Here a warm quarrel arose. Flamsteed, as he calls it, to his venery truth—reserving only about nineteen-seventy sheets of each, which had been printed as he wished, and which afterwards formed part of his first volume. From this time to his death, which took place at the end of December, 1719, he was occupied in printing his 'History Celestis,' which, however, he did not live to finish. It was completed by his widow, with the aid of Mr. Crosthwait, his assistant, and his friend the celebrated Abraham Sharp, and was published in 1725. The maps, known by the name of Flamsteed's Atlas, were published by the British Government. The 'History Celestis Britannica' contains a complete account of the instruments and methods employed, together with a large mass of sidereal, lunar, and planetary observations, and the tables of the former, namely, the British Catalogue. This work seems to us to occupy the same place in practical astronomy which the Principia of Newton holds in the theoretical part.

The very singular story of which we have given an outline did not, as we have supposed, appear without comment from the admirers of Newton's sanguine character. Mr. Tully, in a supplement to his account of Flamsteed, has condensed all the various replies (if so they are to be called) into four, to each of which he has given a rejoinder. To us it seems that the first three of the articles are utterly irrelevant, unless it be demanded as a postulate, that anyone had a right to treat Flamsteed in any way which could be proved to be for the good of science.

1. It is said that Flamsteed did not appreciate Newton's lunar theory. And the same theory, as exhibited in the first edition of the 'Principia' (for the second was not published till after the quarrel), contained several points which were contradicted by observaions, &c. Flamsteed, as he says, rejoinder.

2. That it can be proved, from Flamsteed's lists of observations and from the correspondence of both parties, that the latter furnished Newton with every lunar observation which he had made; and that it was not so, he was under no obligation to give the imperfect catalogue and the 175 sheets of observations, appears, from the whole correspondence and from his subsequent exhortations when he began to print for himself, to have been earnestly desirous of expedition.

With regard to the breaking of the seal, it is asserted that the contents were public property. This excuse did not occur to the mind of Newton himself, who, according to Flamsteed, only pleaded the queen's order. But the mere breaking of the seal of the catalogue and the transmission of some understood reason for its not being immediately submitted to the inspection of the committee. If, as we have heard suggested, the deposit was a pledge on the part of Flamsteed that the manuscript should be returned, or refused to fulfill this pledge, undoubtedly the committee were justified in breaking the seal. But supposing it to be so, we may contend that the committee in such a case ought not, as men of honour, to have touched the seal, until they had first ascertained, by the fullest notice given to Flamsteed, that he was unwilling to fulfill the previous stipulation. It seems to us, on the whole, that the case is rather strong against Newton and Halley, and that their cause has been hurt, since the publication of the preceding details, that he was not acting with due care and precaution. It is by no means true that high intellect and high moral sense must exist together; and if, as Mr. Baily surmises, fifty years ago the editors of the 'General Dictionary' could not state what they knew of the quarrel from the fear that Flamsteed was going to print, we can understand the recent publication, a gratifying proof of a better spirit.

Among the matters contained in Mr. Baily's preface is a complete refutation of a story derived from a provincial history, that Flamsteed, when young, was convicted of highway robbery, and that a pardon was granted him. On searching the records, no such pardon is found entered, and various other circumstances make it physically impossible that Flamsteed could have been thus engaged at the time stated.
Hainault, and on the west by West Flanders. It extends from 5° 42' to 51° 22' N. lat., and from 3° 25' to 4° 26' E. long.

East Flanders is politically divided into six departments, or:

- Alost, containing 3 towns and 74 communes.
- Oudenarde, 2 55
- Ecluse, 1 17
- Ghent, 2 76
- St. Nicholas, 2 26
- Termonde, 1 25

11 towns and 273 communes.

The principal towns are Ghent, the capital, Alost, Oudenarde, Deinze, Ecluse, Grammont, Lokeren, St. Nicholas, Ninove, and Termonde. [Ghent; Alost; Oudenarde; Ecluse; Grammont; Lokeren; St. Nicholas; Ninove; Termonde.]

Deinze, about 9 miles south-west from Ghent, and 11 miles north-north-west from Oudenarde, near to the western border of the province, is a very ancient town; it was sacked by the Normans in 860, and was bought by Count Robert of Flanders in 1316. It contained in 1830 a population of 36,444, living in 546 houses. The town contains two churches, four schools, a town-hall, and a prison. It is a place of much importance, and is celebrated for the manufacture of the Goblet, which is made in 13 distilleries: a great part of the inhabitants are employed in linen-weaving.

Ninove is situated 20 miles south-east from Ghent, and 123 miles west from Brussels, on the left bank of the Dender. It is a well-built town, containing 816 houses and 4,409 inhabitants. There are two churches and a chapel, a town-hall, an hospital, and ten schools. The principal trades carried on are in grain, flax, linen, and oil; there are four salt-refineries, seven flax-mills, some potteries, tobacco-manufactories, and oil-mills. The town owes its origin to the Goths, who built the castle in 411: it was enclosed with walls in 1194.

The principal rivers that traverse this province are the Schelde, the Lys, and the Dender. It is further watered by several lesser streams and branches, which are tributaries to the Schelde, and the trade of the province is facilitated by many canals, the most important of which are those from Bruges to Ghent, from Ghent to the Neuzen canal, and the Moerwout canal, which branches off from the last-mentioned canal five miles north from Ghent, and joins the river Durme at Slettersputte.

East Flanders is low and level. In many parts of the province there are beds of peat, which are worked, and supply cheap fuel to the inhabitants, besides which the ashes are used as a dressing for the soil. Animal and vegetable remains, in a state of high preservation, are often found in these peat beds.

The chief productions of the earth are wheat, rye, barley, oats, potatoes, flax, hemp, hops, mustard, and tobacco. There is but little wood of large growth in the province; plantations for fire-wood and hop-poles are of frequent occurrence. Oaks are planted for the sake of the bark, and are cut down before they attain any considerable size.

The draught-horses bred in the neighbourhood of Ghent and Alost are large, well-formed, and powerful animals. Many of these horses are used in London for drawing the drays of brewers. Oxen are seldom used in Flanders for purposes of labour. The province contains 26,000 horses, 120,000 horned cattle, and 35,000 sheep, estimated in round numbers.

The population of East Flanders at the beginning of 1833 amounted to 742,793, of whom 180,813 inhabited the towns, and 561,980 the rural districts. The births and deaths in 1829 were:

- Births:
  - Males: 12,501
  - Females: 11,970
  - Total: 24,471

- Deaths:
  - Males: 9,226
  - Females: 9,495
  - Total: 18,721

Various manufactures are carried on in the province. Coarse hessian cloths are made by the women and young persons in the country districts. Lace, to which the name of Valenciennes has been applied, is made principally at Ghent, Alost, and St. Nicholas. Tulle, or bobbin-net lace, has been introduced of late years. Silk-weaving is pursued at Ghent and St. Nicholas. Cordage, bricks, hats, soap, and woollen-cloths are made in various parts of the province, which also contains numerous potteries, sugar-refineries, soap-manufactories, and breweries.

In 1834 there were fifty-seven steam-engines employed in cotton spinning-mills, principally at Ghent.

The civil government of the province is administered by a governor, who resides at Ghent. Courts of assize are held at Ghent, Oudenarde, and Termonde. A court of appeal, which has jurisdiction likewise over the adjoining province of West Flanders, is established at Ghent. That city is also the seat of a bishop. The number of schools in which daily instruction is given is 762, of which 158 are in the towns, and 664 in the country districts. The number of scholars frequenting these schools in February, 1833, was 28,750 boys and 23,427 girls, together 52,177. There is also at Ghent a normal school, supported by the government. Besides the daily schools there are many in which instruction is given on Sunday; one of these, established in 1810, receives 1400 boys and 1600 girls, at the annual cost of 346l., raised by voluntary contributions.

FLANDERS, WEST, a province of Belgium, bounded on the north and north-east by the North Sea; on the east by Zealand and East Flanders; on the south-east by Luxembourg, and on the south, south-west, and west, by France. It lies between 50° 41' and 51° 23' N. lat., and between 2° 33' and 3° 30' E. long.

This province is divided into eight departments, viz.:

- Bruges, containing 1 town and 37 communes.
- Ypres, 4 37
- Courtray, 4 37
- Thuelt, 4 37
- Roulers, 3 18
- Furnes, 2 25
- Ostend, 1 25
- Dixmude, 1 25

15 towns and 229 communes.

The principal towns are Bruges, Dixmude, Courtray, Ypres, Ixleigh, Menin, Nieuport, Ostend, Poperinge, Roulers, Thuelt, Troucout, Furnes, Wattenec, and Wervick. [Bruges; Courtray; Ypres; Ixleigh; Menin; Ostend; Poperinge; Roulers; Thuelt; Troucout; Furnes.]

Dixmude, a town containing 3189 inhabitants, is situated 16 miles south-west from Bruges, on the right bank of the Yser. This place was no more than a hamlet until 1111, when the castle of Ixle was built in 1170, and fortified in 1270, and early in the fifteenth century it enjoyed so many privileges, that great numbers of inhabitants were attracted to it, and it became necessary to enlarge the town. This place was nearly destroyed by fire in 1533, and a similar calamity befell it in 1537, when the town-hall and more than 300 houses were burned. Dixmude contains a fine parish church, a chapel, a hospital, and two orphan-houses. The principal trade consists in agricultural produce. The butter sold there is highly esteemed.

Nieuport is a fortified port, but little frequented except by fishermen, is situated about 34 miles north-west from Furnes, and 19 miles south-west from Bruges, with both which it communicates by means of canals. Nieuport was formerly a hamlet, dependent on the town of Ninove, on which it was destroyed by a storm in 1111. In the next century the harbour was reconstructed, and very little little the place took the form of a town, when it received the name of Novus Portus, or Nieuport. It was surrounded by walls and a ditch in the fourteenth century, and was reduced to ruins by the English in 1363, but rebuilt and fortified two years after by Philip the Bold. It was besieged in 1488 by the French, and was successfully defended, although three times assaulted by the besiegers. The battle of Nieuport, in which the Archduke Albert was defeated, near the village of Nieuport, was fought in 1660 near to this town; it was taken by the French in 1745, 1792, and 1794. The population at the beginning of 1830 consisted of 3692 persons, of whom 1450 were males, and 1278 females. The town at that time contained 525 houses. Nieuport is a handsome church, a chapel, a town-hall, two hospitals, an orphan asylum, and a grammar school. The fisheries, and especially the herring fishery, is the most considerable branch of industry carried on.

Wattenec stands on the left bank of the Lys, six miles.
making is regularly taught. There are in the province 75 establishments for dyeing; the largest are at Courtray, Bruges, Poperinge, and Roulers. Woolen cloths, mostly of homely quality, fitted for the use of the working classes, are made at Bruges, Ypres, and some other parts of the coast. The principal articles imported are groceries, dyeing drugs, metals, timber, wine, and salt; the exports consist chiefly of linens, lace, linseed-oil, rape-oil, geners, horned cattle, and grain.

Agriculture. Flanders was remarkable for the cultivation of its soil long before any other country north of the Alps or Pyrenees. This was the natural consequence of its commercial prosperity: and although very little change has taken place, and very few improvements have been introduced for more than a century, it still ranks foremost amongst agricultural countries.

It is not the richness of the soil which is the cause of the abundant harvests which the Flemish peasantry reap, but their indefatigable industry. The greater part of the land in Flanders is naturally poor; and in extensive districts, which now have the appearance of the greatest richness at harvest time, the original soil was once little better than the blowing sands which are met with in the neighbourhood of the sea. Neither is it a genial climate which brings about the great crops. This is far from the case; it is not, at least, that the climate is inferior to that of France or the southern parts of Germany; and if there are not so many or so sudden changes of weather as in Great Britain or Ireland, the winters are longer and more severe. The average temperature in the summer may be said to be at least as great, if not greater, than in the same parallels in England, and the time of harvest somewhat earlier; but this does not make a difference of more than a week in the maturity of every kind of grain. The winters are more severe, in ordinary years, and the snow lies longer on the ground.

The soil may be divided into two classes. The first consists of the alluvial clay-loams near the coast; the second, of various sands and light loams which are found in the interior. The most fertile is that of the low lands which have been reclaimed from the sea by embankments; it is chiefly composed of a muddy deposit mixed with fragments of marine shells and fine sea-sand. These lands are called polders, and their great natural fertility causes them to be cultivated with less art and industry than those lands which are much inferior.

The cultivation in the polders has nothing remarkable to entitle it to much notice. barley seems particularly suited to the soil, and very heavy crops of this grain are obtained; especially in those polders which, having been more lately reclaimed, are not yet exhausted. Eighty and ninety quarters per acre have been obtained with little or no manure; and the second crop of barley sown in succession has often been the best. Oats are also very productive and of good quality, from ten to twelve quarters per acre. But these heavy crops once the season is well advanced, the produce is greatly diminished, and the land requires to be re-cultivated by manure and cleansed by fallows. The usual rotation of crops in the polders consists of:-

1. Winter barley after a fallow; 2. Beans; 3. Wheat; 4. Flax; 5. Clover; 6. Potatoes. If the potatoes have a favourable season, and the land can be cleared of weeds, the rotation begins again without a fallow year; but this is seldom the case, and the land is usually fallowed once in six years. The crops here mentioned are occasionally varied according to circumstances and market demands; and as well as the small quantity of dung made on the farm will permit. The polder farmer seldom thinks of purchasing manure; and even the ashes made by burning weeds are usually sold, to be sent to the poorer sandy soils, where a little more is perceptible. They keep a sufficient number of horses to till the land, and often put four to a plough, which is the common turn-wrest plough, there called the Wallon plough. If this number is not absolutely necessary, they overlook

| Births-Males | In towns | 3.093 |
| Femaletes | In country | 8.241 |
| Females | In towns | 2.863 |
| | In country | 7.711 |
| Marriages | 21.759 |
| Deaths-Males | In towns | 2.446 |
| | In country | 5.739 |
| Females | In towns | 2.434 |
| | In country | 6.737 |

* A great proportion of the inhabitants of the province are employed in spinning flax, and weaving and bleaching linen. The manufacture is altogether a domestic one, and is carried on in the farm-houses during winter, and at other times when the operations of the field are necessarily interrupted. Damask and table-linen are made in the towns of Courtray and Bruges. Much lace is made at Bruges, Ypres, Courtray, and Menin, the thread for which is spun at Courtray. More than a sixth part of the population of Bruges are said to be engaged in this manufacture, and there are 200 schools in the town in which the art of lace-making is regularly taught. There are in the province 75 establishments for dyeing; the largest are at Courtray, Bruges, Poperinge, and Roulers. Woolen cloths, mostly of homely quality, fitted for the use of the working classes, are made at Bruges, Ypres, and some other parts of the coast. The principal articles imported are groceries, dyeing drugs, metals, timber, wine, and salt; the exports consist chiefly of linens, lace, linseed-oil, rape-oil, geners, horned cattle, and grain.

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the saving which might be effected, and pride themselves
on the fat and sleek appearance of their team. No more
cows are kept than are necessary for the supply of the
family; and for want of winter provision for cattle few oxen
are stalled. The dung is mixed in heaps, and turned
over before it is carried upon the land. There are no habits
to receive the urine, this manure not being thought so useful
in heavy soils as in the light. In short, the agriculture
of the polders is far inferior to that of the interior, and not
much advanced before that of the other nations in Europe.
In many parts of the interior, especially to the north of Kent and Essex, on sandy
soils. When the polders have been too much exhausted
they are frequently laid down to grass; and in a few years
a very rich pasture is produced. If, instead of sowing only
a few refuse hay-seeds from the lofts, proper grass seeds with
manure and heath brush by a false and insincerely better than that
the solid dung is ploughed in, but that its effects are
much less durable. This has led to the practice of fre-
quently renewing the manure, and pouring the liquid
over the growing crops as a top-dressing. Considerable care
is necessary to maintain the strength according to circumstances; for too great a
loss might destroy the crop, or produce great luxuriance on
the leaf at the expense of the fruit or seed. The urine
and other hot substances impregnated with saline particles are
therefore diluted, if the litter is dry, before they are
used, or they are poured over the soil some time before the
seed is sown, that they may sink in and be more diffused.
At a distance from large towns it would be imprac-
tical to obtain the requisite quantity of manure, and accordingly
it is used on the farms of the interior, and the stock sells
for less on account of the supply; but every expediency is resorted to in order
to increase the quantity and improve the quality. Each
kind of vegetable or animal matter is carefully collected,
and made up into a pure product of fermentation which
mixed with water is already partially digested. Nature
exerts heat and putrefaction more than urine when it
is poured over subjects subject to decomposition. In
each farm-yard there is a cavity or pit into which the objects are
scraped up, but it is not till they are thoroughly
mixed with water that the fermenting process begins. The
place in which this is going on is called in French,
caisson, and in Flemish a smoor loop. It is generally
thought most advantageous that the manure should be
ploughed into land in an active state of fermentation, and
in order to accomplish this the soil is thoroughly
mixed with water, and each heap is moistened with urine.
The subsequent fermentation is then accelerated, and as soon as the key
beams to heat, it is spread out, and the manure is imme-
diately ploughed under.

With the exception of wheat from the yard and from the yard itself, together with what can be purchased, is not
sufficient, recourse is had to the refuse cakes of soda
which the soil has been pressed out. These are dissolved
in urine or in water, and put into the caisson to decom-
pose. When it is in a proper state it is used chiefly on
land on which flax is intended to be sown, as it is very
rich manure, and perfectly free from the seeds of noxious
weeds.

In the tillage of the land the Flemings use far and few
simple arrangements. The common plough for light lands
is a small light foot-plough, so called from a piece of wood
inserted in the beam, which is somewhat in the shape of
a foot, or rather of the wooden shoe in common use in Flem-
ings. It has no wheels, and is drawn by one or two horses.
It is the parent of the Rotherham plough, from which
most of the improved ploughs for light soils are derived. It
is the most perfect plough for light sands, acting like a sled
at the fore part of the turn-furrow, which is concave, and
completely turns over the soil. In the stiffer soils it may
wrest its way better, and sometimes until lighter than the heavy Wallon plough. It has two small
wheels attached to that part of the beam where a single
wheel is sometimes put by means of a small iron bar, which
is connected with the middle of the axle by means of a
rod so that when the plough is raised it always keeps the
same height, and is not caused by unevenness of ground, or by one of the wheels running in
the furrow, this bar always remains upright, and supports
the end of the beam. This plough is much steadier than

Flemish, of which a drawing and description are given
in vol. iii, p. 9. [BARKEN LAND.] The next step is to pro-
duce liquid manure, which consists of the urine of en-
and horses, the drainings from ditches, and the empti-
ngs of privies. The numerous towns and villages which
are situated or fortified, which give the occupation to
the country in all directions, facilitate the collecting and
transporting of manure. A regular trade is carried on in
everything which can enrich the land: nothing which can
be of any use for this purpose is lost or wasted. In
every farm there is a large vaulted estern, in which the
manure is collected, and where it is occasionally stirred
by excite fermentation, and make it more efficacious when
it is carried upon the land.

Experience has taught that manure put on light land is
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the furrow, this bar always remains upright, and supports
the end of the beam. This plough is much steadier than
the foot-plough, and better adapted to break up very stiff ground.

An instrument peculiarly Flemish is the *trainaceau*. This is a small triangular shape, covered with boards, which is drawn from the ground to smooth the surface and press in the seed. The harrows in common use are also triangular, and made entirely of wood; the pins are driven obliquely and point forwards, so as readily to enter the grain or tubers; the harrows are drawn by the angle. The back end of the hoes are not as well made, and more on the side from which they are driven in: thus, by reversing the instrument, a slighter degree of harrowing is given, which has an effect intermediate between that of the harrows and the above. The mollebaer, another Flemish instrument for levelling ground, has been already noticed. The Hainaut scythe and hook are generally used for reaping corn. The instrument is held in the right hand, and the hook in the left; by a swing of the arm the corn is cut close to the ground and towards that which is standing; the hook collects it and rolls it up into a sheaf, which is taken up by means of the leg and the scythe, and laid down to be tied. It is better than a faggot-hook, and does the work more easily. These are the only instruments in common use which differ at all from those of other countries. None of the more complicated modern inventions have been introduced, nor would they be readily adopted, however ingenious or useful they might be; for an adherence to old established methods, such as this, is marked in the north where so firmly rooted as amongst the Flemish peasantry.

The most important instrument in Flemish agriculture is the spade, which is used to a much greater extent than in England; and in some instances is the only instrument of tillage. The spade is made of an iron, and is well adapted to the loose sandy soils. The first step to improvement is generally a complete and deep trenching; and in the Waas district a sixth part of the whole farm is trenched every year; and where this is not done, the intervals between the stiches in which the land has been ploughed are dug out with the spade a foot or sixteen inches deep, and the earth thrown evenly over the beds in which the seed has been sown. By shifting these intervals a foot every year, the whole of the land which lies in stiches six feet apart is dug, and the upper and under soil mixed regularly. This process is extremely useful in producing an even crop, especially of flax, the roots of which strike deep.

The rotations adopted in light sands and loams are various. In the poorest and least improved, buckwheat, rye, and rape are generally followed; chief crops, with potatoes and clover, which require more manure. Every crop is manured except buckwheat, which grows well in the poorest soils, and becomes very luxuriant to give much seed in rich and highly manured lands. Bones have not been introduced except by way of experiment, and are of little value on light soils; but manure more generally known, especially in raising turnips, there is no doubt but they will be extensively used. This may lead to the folding of sheep to eat them on the land, and thus introduce an important improvement into Flemish husbandry.

On the better kinds of light soils, which are not well adapted for wheat, the usual course is 1st, rye, with turnips in the same year after the rye is cut; 2nd, oats; 3rd, buck-wheat, 4th, potatoes or carrots; 5th, rye and turnips; 6th, flax; 7th, clover.

When the sand becomes a good light loam, wheat is introduced in the rotation, after potatoes or after clover: the latter is thought the best practice, as the roots of the clover both nourish and improve the soil. Rye occurs more frequently than would be thought prudent if it were not for the turnips sown after it, which seem to correct the effect produced on the soil by the seeding of the rye; so that rye and turnips are sometimes followed by rye, and turnips and clover. On light clays, the turnips and turnips may alternate in light lands, as beans and wheat sometimes do in rich heavy clays. The turnips are never eaten on the land where they grow, but are always drawn and housed in the end of September, the green tops being cut off and given to the cows and pigs, and the roots stored in dry cellars. The land is then immediately ploughed after some dung has been put on; and if oats are the next crop which are sown in spring, it remains so all winter.

When the land is of a better quality, although still in the class of light loams, wheat recurs more frequently, and the rotation is varied as follows:—rye and turnips, potatoes, wheat, rye and turnips, oats, flax, clover, wheat. If the land is fit for barley, this grain is substituted for rye. Carrots are frequently grown in the barley, and also in the flax. They strike deep into the rich light earth, but come to no size while the principal crop is on the ground. As soon as this is taken off, the land is harrowed and carefully seeded by hand: liquid manure, diluted if the weather is dry and warm, is also frequently spread over the land. As soon as the time the carrots throw out their green tops, and swell in the ground: by the end of September a considerable number of them may be dug up. The best variety for this purpose is a large white which rises twelve inches out of the ground: it has been lately brought into notice in England, and will not doubt soon be more generally cultivated. [Carrot] There is another variety which is yellow, and also attains a good size; but it is inferior to the first in good weather, and is of less value in the winter provision of the cattle is considerable, and forms one of the most important part of the household of Flanders, where all the cattle are constantly kept in the stables in winter, and, except where there are natural pastures, in the summer also.

Flax is every where a most important crop, for it yields much excess all other crops in value. Where it can be reared in a tolerable quality, every other crop has a reference to this; and the rotation is arranged accordingly. There is no country where more attention is paid to flax than in Flanders, especially in the neighbourhood of Ypres. The land is brought into the highest state of richness and cleanliness before flax is sown in it; and the most abundant manuring with rape and cake of urine is thought essential to raise this crop in perfection. [Flax]

Corn [Colc] is an important crop for the seed from which the oil is expressed. It is sown in a bed in July or August, and planted out in rows two feet apart in October. The seed ripens early in the next summer, and a good crop of turnips may be had after it. The land is frequently warmed with manure heaped round it. The Flemish farmer is enabled to throw out his rape-seed on a cloth in the field soon after the stems have been cut and laid gently on the ground to dry the pods. Any delay in this operation would cause a great loss: with every care and attention, much seed is always left uncollecting; because the pods do not ripen equally, and some will have shed their seeds before others are sufficiently ripe to be gathered.

Potatoes were introduced into Flanders from England about the year 1740, and from being at first only cultivated as a rarity, soon became an important part of the food of men and beasts. There is nothing peculiar in the Flemish mode of cultivating this useful root. The sets are planted as a bulb is planted in England: sometimes they are laid in the furrows and covered with the plough: they are always earthed up round the stems, sometimes by a plough with a mould-board on each side, but generally by hand with a broad hoe. The land is usually more frequently ploughed than in England; sometimes the potatoes are put in a bed which has been for another valuable crop the same year.

In the heavier loams, which are chiefly to be met with in West Flanders and about Alost, the following rotation is adopted:—flax, clover, barley or oats, beans, potatoes, and turnips, 2nd, flax, potatoes, and turnips, 3rd, oats, flax, clover, barley, or turnips, 4th, potatoes, and turnips, 5th, potatoes, and turnips, and potatoes. Beans are not a favourite crop, and are not carefully cultivated. They are sometimes sown very thick, mixed with peas and tares, to be cut up in a green state for cows and pigs; and in this way they produce a great quantity of
green food, and clean the ground by excluding the air and
smothering the weeds. On a farm of 30 hectares, in a
very good loamy soil near Courtray, the land was divided
into 8 equal parts of 3 hectares each, and the crops were dis-
tributed as follows:

<table>
<thead>
<tr>
<th>Clover</th>
<th>Wheat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carrots</td>
<td>Beans</td>
</tr>
<tr>
<td>Potatoes</td>
<td>Flax</td>
</tr>
<tr>
<td>Rye</td>
<td>Oats</td>
</tr>
<tr>
<td>Turnips</td>
<td>C. 3a.</td>
</tr>
</tbody>
</table>

The manure used for these crops was partly dug from
the yard and cows’ urine, but chiefly the sweepings of
the streets and the emptying of privies from Courtray.

In a very rich loam, not far from Ypres, the following
crops were noticed in regular rotation: 1. turnips with
chervil and carrots; 2. oats; 3. clover; 4. wheat; 5. flax; 6.
tomatoes; 7. potatoes; 8. wheat; 9. potatoes; 10. wheat; 11.
oats. All these crops are of an exhausting nature, and it
requires a very rich soil, aided by abundant manuring,
to bear this rotation for any continuity; but each of these
crops had a good portion of manure, and so it is hard to prepare
the land so as to secure a good crop from a small quantity of
seed. The seed usually sown in Flanders is about one-third less
than in England, even when the seed is drilled, which it never is
in Flanders. The ground is rendered mellow and rich by the
manure, and the seed, which has been carefully selected, is
covered by earth and air over it with the spade: it is afterwards
rolled or trod in with the feet. Every grain vegetates, and should there be any looseness in
the growth, the urine taken up by the blade, and the
seed in the natural state, when placed at the end of the
season, will produce any Note which has been made sharp, to its
natural state. Where Flats are placed at the elev, they are always
taken in the following order:

- 1st, 2nd, 3rd, 4th, 5th, 6th, 7th.

When a Flat, not appearing at the elev, occurs in any
other part of the composition, it only affects the bar or
which it is placed, and is called an Accidental Flat.

The Double Flat is frequently employed
in very chromatic music. It lowers a note two semitones
below its natural state. Thus, a double flat follows:

\[
\text{\textbf{F}} \quad \text{\textbf{A}} \quad \text{\textbf{D}} \quad \text{\textbf{C}} \quad \text{\textbf{B}} \quad \text{\textbf{bb}}
\]

is, in fact, a natural, etc. This character is used chiefly in
Harmonic modulation (ECHOHARMONIC), in which it is
practically convenient, if not absolutely necessary, occasionally
used by composers, who use each name for each note in the
Harmonic and chromatic scales.

FLAX (Linum perenne) is an annual plant, culti-
ivated from time immemorial for its textile fibres, which
are spun into thread and woven into linen cloth. It has
grown from a root and a half to two feet high, and a
blue flower, which is succeeded by a capsule containing
ten flat oblong seeds of a brown colour, from which an
oil is expressed, which is extensively used in manufactures
and in painting. There are several varieties of flax cultivated;
both the wild and common are from Holland. As the
different varieties arrive at maturity at different times,and
the stems rise to different heights, it is very essential
that the seed be not mixed, as this would occasion great in-
veneence and loss in the pulling of the straw. There is
very fine long variety which is cultivated in the neigh-
bourhood of Courtray, in Flanders; it requires a very good soil
to grow in, and the stem is so long and slender that if it
were not supported the least wind would break it, and in flat,
in which case the quality of the straw would be much
impaired and the shoots broken; the straw is driven into the
ground at a line at eight or ten feet from each other, and long
straw rods are tied to them with osiers a foot or eighteen inches from the ground,
with a slight slanting to support the flat: a number of
these straws are planted in the same manner at a short
distance from each other in parallel lines, all over the field,
and the flax is thus prevented from being beaten down. A better
method, which is not commonly adopted, is to have
straws tied to them in regular rows, and thin ropes tied to them instead of
rods: by having these lengthways and others across them at right angles, a kind of large net is spread over the whole field, and none of the flax can possibly be laid flat. By using cheap rope or strong tar twine from old cables, the expense of the ropes is less, and it is thus possible to lay the whole of the flax. When the flax is pulled, the stakes are taken up, and removed to a dry place till they are wanted again.

The most common variety of flax is of a moderate length with a stronger stem, if it is not sown very thick it will then produce considerable length of flax, and produce proportionately large quantities. If the flax is sown, the quality of the flax is thereby improved, but it is not profitable to have finer flax with less seed, an inferior quality with an abundance of seed.

There is a small variety which does not rise above a foot, grows thin and ripens the seed sooner. When lineseed is the principal object, this variety is preferred, but the flax is shorter and also coarser. Another variety of flax has a perennial root, and shoots out stems to a considerable height. It came originally from Siberia, but it is now recommended at one time, but its cultivation did not spread. If it were sown in wide rows and kept free from weeds by hoeing, it might perhaps be profitably cultivated for the seed; and if the flax is inferior in quality, it might still be of some value for coarse manufactures; it requires however to be renewed every three or four years, being apt to lose its quality.

The soil best adapted to the growth of flax is a deep rich loam in which there is much humus, or vegetable mould. It should be mellow and loose to a considerable depth, and a good root is only too dry or too moist: either extreme infallibly destroys the plant. It may be cultivated either in the hot gravelly soils or cold wet clays, but any other soil may be so tilled and prepared as to produce good flax. It thrives well in the rich alluvial land of Zealand and the polder. Flax has had great success in the light lands of Flanders, but much more careful tillage and manuring are required. The land on which flax is sown must be very free from weeds, the weeding of this crop being a very important part of the expense of cultivation. These precautions suggest the importance of preparing the land. A long fallow such as is sometimes used in Essex, including two winters and a summer, may be a good preparation on the heavier loams, which should be trench-ploughed and worked deep; the manure should be dug in, and the sowing of the seed will be done in August; it should be put on the land in autumn, and well incorporated before the seed is sown. If the land is sufficiently clean, a crop of potatoes well manured may be substituted with advantage for the fallow; but at least double the usual quantity of manure should be applied. If this crop is kept under, enough may remain in the ground for the flax. Linseed is a very difficult crop; if the soil contains a great portion of clay; but in the lighter loams there is some doubt of its advantage for flax. At all events it should not be used immediately before the flax, which is a spring crop, and requires an excellent manure; they improve the soil and keep off insects, which are apt to injure the roots of the flax. For want of potash, those made by the burning of weeds and earth in a smothered fire are a good substitute. But the most effective manure is the sweepings of the streets in towns mixed with the emptying of privies and the cleaning out of the butcher's stalls and stables. On light soils much manure is required; and where night soil cannot be obtained in sufficient quantities, rape cakes, from which the oil has been expressed in the winter in raising the flax, are very good. In many parts of Flanders 500 rape cakes are used for every acre of flax, besides the usual quantity of Dutch ashes and of liquid manure, which is the drawing of dunghills and the urine of cattle collected in a cistern and allowed to become putrid. In southern climates flax is sown before winter, because too great heat would destroy it. It is then pulled before the heat of summer. In northern climates the flax, and especially the alternations of frost and thaw in the early part of spring, make it necessary to sow as early as possible. It is consequently sown as early in spring as may be, so as to avoid the effect of hard frost. This is in March or April in Great Britain and Ireland, and in Holland and Flanders. In no country is the ground better prepared for the growth of flax than in Flanders, and the seed was also carried by the Flemish, and induced the Englishmen to follow the whole process of Flemish cultivation for several crops preparatory to that of flax, which is the most important producer in that country, and that which, when well manured, gives the greatest profit to the farmer. The best flax grows near Courtray. The soil is a good deep loam, rather light than heavy. It is not naturally so rich as the soil of the polders in Flanders and in Zealand, but the tillage and cultivation are far more perfect, and the produce, if not more, is at least equal to that of the preceding crop; it has a reference to the flax, and is so cultivated as to improve the texture of the soil, which is abundantly manured in order to leave a considerable surplus in the ground. If the land has not been trenched all over with ploughs and spaded to the depth of twelve or twenty inches it has been equally well stirred by the narrow open drains which are dug out twelve or fifteen inches deep every year between the stitches in which it is laid by the plough. These drains, or water-furrows, are a foot wide, and from a foot to eighteen inches deep. They are taken from the surface over the land after the corn is sown. When the ground is ploughed again, care is taken that the place of these water-furrows shall be shifted a foot on each side. Thus in six years the whole soil is deepened and thoroughly mixed with whatever manure has been in it. It then produces harmonious effect as trenched, and even more perfectly. The whole of the land in which the best flax grows has been so treated for several generations, and may be looked upon as a species of compost eighteen inches deep. Potatoes or colza are usually planted with the flax, and the space at the side of the furrow is then filled with rye and turnips, a very slight manuring being required. The land is then ready for flax the next year. The ploughing in winter is necessary for the perfect germination of the seed. The date of the furrows and the sowings is very important, the land being killed with fire and stoned over the winter, and the seed sown broadcast by hand, very thick and even, about one hundred weight and a half to the acre. A bush-harrow or a hurdle is drawn over, merely to cover the seed, which would not vegetate if it were buried half an inch deep. According to the date of the seed, the rye or the turnips is trodden in by men, as is done with fine seeds in gardens. This is only in the lightest soils. Most commonly the straw is drawn over the land. This is a wooden frame with boards nailed closely together, and driven over the furrows, the circumstantialities are attended to by this industrious people. The weeding is repeated till the flax is too high to allow of it.

The seed which is used is generally obtained from Riga, it being found that the flax raised from home-grown seed is inferior after the first year. But when the light manure remains to be proved whether it would be cheaper to raise it or to import it.

When the flax begins to get yellow at the bottom of the stem it is time to pull it, if very fine flax is desired, such as is made into thread for lace or fine cambric; but the rips flax would remain to be proved whether it would be cheaper to raise it or to import it.
whole. The pulling then begins, which is done carefully by small handful at a time. They are laid upon the ground to dry, two and two obliquely across each other.

Fine weather is essential to this part of the operation. Soon after this they are collected in large bundles and placed with the root end on the ground, the bundles being slightly tied near the seed end: the other end is spread out that the air may have access, and the rain may not damage the flax.

When sufficiently dry they are tied more firmly in the middle, and stacked in long narrow packs on the ground. These packs are built as wide as the bundles are long, and about eight or nine feet high. The length depends on the crop; they are seldom made above twenty or thirty feet long.

If the field is extensive several of these packs are formed at regular distances; they are carefully thatched at top; and the ends, which are quite perpendicular, are kept up by means of two strong poles driven perpendicularly into the ground. These packs look from a distance like short mud walls, such as are seen in Devonshire. This is the method adopted by flax, so that it was very popular in another season. Some carry the flax as soon as it is dry under a shed and take off the capsus with the seed by vipiging, which is drawing the flax through an iron comb fixed in a block of wood; the capus which are too large to pass between the teeth of the comb are thus broken off and fall into a basket or on a cloth below. Sometimes, if the capus are brittle, the seed is beaten out by means of a flat wooden bat like a small cricket bat. The bundles are held by the root end, and the other end is laid on a board and turned round with the left hand, while the right hand with the bat breaks the capus, and the linseed falls on a cloth below.

The flax is then immediately steeped; but the most experienced flax-steeplers defer this operation till the next season. In this case it is put in bins, and the seed is kept out at leisure in winter. When flax is too cold, care must be taken that it be thoroughly dry; and if the seed is left on, which is an advantage to it, mice must be guarded against, for they are very fond of linseed, and would soon take away a good share of the profits by their depredations.

Steeping the flax is a very important process, which requires experience and skill to do it properly. The quality and colour of the flax depend much on the mode of steeping; and the strength of the fibre may be injuriously modified by an injudicious mode of performing this operation. The object of steeping is to separate the bark from the woody part of the stem, by dissolving a glutinous matter which causes it to adhere, and also destroying some minute vessels pass between the teeth of the comb are thus broken off and fall into a basket or on a cloth below. Sometimes, if the capus are brittle, the seed is beaten out by means of a flat wooden bat like a small cricket bat. The bundles are held by the root end, and the other end is laid on a board and turned round with the left hand, while the right hand with the bat breaks the capus, and the linseed falls on a cloth below.

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and; with this the flax is repeatedly struck close to the upright board, while the part which lies in the slit is necessarily changed by a motion of the hand. This operation beats off all the pieces of the wood which still adhere to the flax, without breaking it, and after a short time the flax is cleared of it and fit to be beucked. But the operations of breaking and stretching are tedious and la-

Currence when the flax is used (where large quantities of flax are required for manufact-

ures), having three fluted cylinders, one of which is made to rotate by horse or water power and carries the other two round. The flax plants are passed between these cylinders while thus revolving, and the stalk, or boon, as it is technically called, is by this means completely broken without injuring the fibres. The stretching is accomplished in the same mill by means of four arms projecting from a horizontal axle, arranged so as to strike the boon in a slanting dark; the latter of the plant are beaten away. In the last process by which flax is prepared for the spinner, the heckling, the instrument employed, called the heckle, is a square piece of wood studded with rows of iron teeth about four inches long, and disposed in a quincunx order. The fineness of the heckle is chosen with reference to the quality of the flax, and heckles differing in this respect from each other are used at different stages of the dressing, the coarsest first, and the finest to give the last degree of


of taste. In all probability it was not an unfortunate circumstance that a natural weakness of constitution and delicacy of health, which continued until about his tenth year, gave him a relish for solitary and sedentary amusement. That it was a fortunate one for him to have thus early and constantly before his eyes and mind to fix his feelings upon, and to exercise his powers to raise his intelligence, there can be no doubt. Seated behind the counter with paper and pencil, or with books, he studied more desultorily than would otherwise have been the case, yet perhaps more profitably and more diligently, because he was compulsorily, self-imposed task, but another term for enjoyment; for this reason is it that the self-taught, among whom Flaxman may to a certain extent be ranked, are generally found to apply themselves to whatever may be their pursuit with a zest and an earnestness that never enters into the make-up of his mother, which occurred when he was in his tenth year, his father married a second wife, who treated young Flaxman and his brother with such tenderness as to win their affection and esteem. It was somewhere about this period that having attracted the notice of the Rev. Mr. Mathew, he was introduced by that gentleman to his wife, a lady of very superior acquirements, who took delight in making him acquainted with the beauties of Homer and Virgil, while he would attempt to embody with his pencil such images as were parts of the narratives as he read them. By those kind and judicious friends he was encouraged to study the original languages; and although here also he was chiefly his own tutor, he made such proficiency as enabled him to read the master poets of antiquity, if not very critically, yet with tolerable ease. He would read through so much into their spirit and follow their conceptions, as is evident from his compositions after Homer and Aeschylus.

Choice of profession for him there was none, both nature and circumstances having so determinedly predestined him for it, that for any one to have entertained an idea of his views in the choice of any other pursuit would have been absurd. Accordingly, in his fifteenth year, he became a student of the Royal Academy, and in 1770 exhibited, as his first subject there, a picture, Neptune and his chariot, which was so highly esteemed by the admittance to which he procured his studies, he received a lesson which taught him that application and enthusiasm combined are not always a match for mediocrity when backed by favour; for on his becoming a competitor for the gold medal (the silver one he had previously carried off), Reynolds, the then president, awarded the prize to Engleheart, a now utterly forgotten name. Mortified, yet not dispirited, Flaxman returned to his studies, with unabated zeal, although for some time clouded by a considerable diminution to provide for the exigencies of the passing day, which he did by designing and modelling for others, particularly for the Wedgwoods, to whom his talents and his taste were eminently useful. Moderate as was the remuneration, such employment put him in a position pecuniary circumstances, because he already possessed one very important fund towards pecuniary independence, namely a contention in his mind and an utter disrelish of all expensive habits and amusements. And here it may be observed, that even in after-life, when he was in comparative affluence, and when his fame was by far the most brilliant circles, he continued to distinguish himself by perfect simplicity in his habits and mode of living, equally remote from affectation on the one hand and a spirit of penuriousness on the other. In short, he stood in complete contrast to the expenditure of the artist, whose undisguised object through life was money-making, and who was fortunate enough to amass upwards of 200,000l., so that he had the death-bed consolation of dying rich enough to make the world pay for his talk. Very far different was the character of Flaxman: enthusiast as he was in his art, he would never have got on in it as a mere profession.

The year 1782 formed an important epoch in his life, since not only did he for the first time quit his paternal residence in the Strand, and when his fame was as high as it could be for him, have been a passport to the most brilliant circles, he continued to distinguish himself by perfect simplicity in his habits and mode of living, equally remote from affectation on the one hand and a spirit of penuriousness on the other. In short, he stood in complete contrast to the expenditure of the artist, whose undisguised object through life was money-making, and who was fortunate enough to amass upwards of 200,000l., so that he had the death-bed consolation of dying rich enough to make the world pay for his talk. Very far different was the character of Flaxman: enthusiast as he was in his art, he would never have got on in it as a mere profession.

So, Flaxman,' exclaimed the latter to him one day, "I am told you are married—if so, Sir, you are ruined for an artist! Yet never was there augury less precarious than this ill-omened and rather uncourtsey speech, for never was there a happier union than that of Flaxman and Miss Denman, a woman equally amiable for her virtues and her accomplishments. That the president's simple prediction was not at all likely to be fulfilled became soon apparent by proofs of increased ability, which the artist gave in his monument of Collins the poet, and that of Mrs. Moreland, in Green's Park, and ultimately, on entering the year 1784, Mrs. Mathew, realising to the outward sense the conceptions of Homer, an Aeschylus, and a Dante. It was for Mrs. Harriett Naylor that he made a series of thirty-nine subjects from the Iliad and a series of fourteen from the Odyssey, illustrative of the principal events in the Homeric poems, so instinct with the intellectual power of art, as it is said he received no more than the paltry sum of about fifty shillings a-piece, a sum most incredibly small, amounting altogether to not more than a fashionable portrait-painter would make at a single sitting. But he was not in such a measure, for those productions at once stamped his reputation. Neirther were they unproductive of more immediate good effects, since they served to collect patronage around him, and among the rest Count D'Arblay, who had commissioned him to execute a group of Ahasan, and paid him no more than the usual price, was the most enthusiastic for his work, but to inadequate to the executed work, that the sculptor must have been a positive loser by it, actually out of pocket, became relinquishing what it would have produced had he retained it and offered it to some other purchaser. Flaxman however was not the man to be dissuaded from his projects for that he was too honourable, and to complain he was too proud. During his stay at Rome he executed for the late accomplished Thomas Hope an exquisite small group of Cephalus and Aurora. It was for him that he executed the third sublime composition, the Illustrations of Dante, amounting altogether to one hundred and nine subjects, viz. thirty-eight from the Inferno, as many from the Purgatorio, and thirty-three from the Paradise. Here, being left almost entirely to the development of his own imagination, without assistance from the previous ideas of other artists, he manifested still greater originality in mind and intellectual vigour than in the Homeric series, or that from Aeschylus. All the three constitute an almost new province of art, combining the distinguishing qualities of picture-making and sculpture.}

On his return from Italy, where he had spent upwards of seven years, not quite unprofitably, as regards his poetical affairs, certainly most profitably as regards both his art and his reputation, he took a house in Marylebone Street, Fanny Square, and in a very short time distinguished himself by his noble monument to Lord Mansfield. It is hardly necessary to add that he now found the doors of the Royal Academy graciously open to receive him, he being unanimously elected an Associate in 1787. In that year he exhibited there his portrait of Sir W. Jones, now in the chapel of University College, Oxford, and three bas-relief sketches of subjects from the New Testament, viz. Christ raising from the dead the daughter of Jairus, and two other heads from the life, and two from the text, Comfort and Joy. (Upon the head,) 'Feed the hungry,' was considered as the commencement of a cycle of sculptural compositions intended to show that the simple truths of the Gospel were fully capable of inspiring the sculptor and supplying him with appropriate subjects. Of this and the rest of the monuments in this family in Methodist church, Hants, which expressively figure the ideas of the following sentences: 'Thy will be done.'—'Thy kingdom come.'—"Deliver us from evil.' To these may be added the bas-relief of the text, 'Lay that morn,' in a monument to Mrs. Washington, of Lewistan, Kent, representing a mother sorrowing for her daughter, and comforted by an angel. His group of 'Come to Me,' blessed.—'Lead us not into temptation.—Charity,' the monuments of Countess Spencer in the church of Mrs. Tye, the poetess, not to enumerate others, are also replete with religious sentiment and fervour. That he should have been
pre-eminently happy in such subjects needs not greatly excite our surprise, because he was at home in them; in the methods of art and the exterior of form; the exterior of a heart tenderly alive to every sentiment of devotion. Hence it was that he so successfully broke through the conventional trammels of his profession, and opened an almost entirely fresh track for himself. On the contrary, what he might or might not have been as an artist, he did not rise at all higher than many others have done. Even his monument of Nelson, as well as others by him in St. Paul's, are equally cold in conception and execution, without any indication of their having been wrought by him with care. Whether the exterior of the statue was much better in the colossal figure of Britannia, which he proposed should be erected upon Greenwich Hill, admits of doubt; although that he could have executed such a work can hardly be questioned. A figure, however, of such stupendous size, if six hundred feet high, and less than 200 feet, was treated as an absurdly extravagant, if not impracticable and utterly visionary scheme, though in these days of gigantic enterprise, even if rejected as useless, it would not have startled as overpassing the bounds of feasibility.

In 1818 he was appointed to the then new professorship of sculpture at the Royal Academy, to which circumstance the world is indebted for his series of Lectures on the art, which, although of no extraordinary merit as literary composition, are useful to be studied with profit, not by those alone of his own profession, but by artists and men of taste generally. Till the year 1820 he had enjoyed the best species of prosperity which Heaven can bestow, and which those who had been his friends were wont to consider as a life of serenity and tranquil competence, with constant occupation in the art he loved, and increasing fame attending it; but he was now doomed to experience a most bitter sorrow in the loss of her who had been his affectionate companion for 29 years. He henceforward felt a blank in his existence which neither the solace of friendship nor the honours of public applause could fill up. Nevertheless, so far from yielding either to despondency or to the pressure of advancing age, he still continued to apply himself vigorously, and some of his most spirited efforts, as among his very best. The shield of Achilles, first modelled in 1818, afterwards cast in silver-gilt for George IV., is certainly one of the most splendid achievements of the art in modern times. To this period belong also his Psyche, and group of the Archangel Michael and Satan, both of them stamped with his genius. So far from having lost any of its energy, his mind and hand continued active till the very last; for while prevented by indisposition from being more, he sketched and designed on paper. The interior and exterior of the statue was but few and brief; and until three days before his death he continued able to employ himself in his usual pursuits and studies without particular inconvenience. That event took place on the 7th December, 1826; and on the 15th he was buried in the grave (in the churchyard of St. Giles in the Fields) by the president and council of the Royal Academy.

Whether we contemplate him as a man or as an artist, so much does he commend our love and our admiration, that it is difficult to avoid the semblance of overstrained panegyric. In him the man exalted and seconded the artist, for in all his best productions, those which are really to be regarded as the spontaneous offspring of his own mind and feelings, the offspring of a good and spiritual spirit and soul, his nature was as discriminable as those of a great and lofty one. It must indeed be confessed that in some of the mechanical parts of his art he did not greatly excel, neither do his works display that high finishing and delicacy of execution which characterise the head and hands of the sculptor. If Flaxman," says Croggnar, "had possessed skill in modelling and execution equal to his talent in invention and composition, he would certainly have had a great share in the progress of the revolution which has taken place in the art. Nevertheless, it is probable that he might, had he continued associated with his productions, we may affirm that they have been mainly contributed to awaken sculpture from a certain apparent lethargy, and to restore the golden style—the very essence of the antique—which he knew how to apply to his 'Legends.' This praise, if not very warm, is sufficiently discriminating and just upon the whole. It is well observed, in fact, how Flaxman helped to restore the art from the imbecility of the eighteenth and early nineteenth century, and how he gave it a new type, a new manner, in which it had fallen, and in which it appeared inclined to remain. He rendered it more poetic, taught it to address itself to the heart, to touch the noblest feelings of our nature, and, while it touched, to elevate them to that sphere of holiness where they exercise their own affections constantly abided.

FLEA. [FLEU]X.

FLECHÉ, LA. [SAINT].

FLECHÉ, a breast-work consisting of two faces, which form one another a salient angle. It is constructed of three or four benches of wood, with a breast, which is continued under it as a sort of rounded parapet, as at the foot of the place of 1 [Fig. 1, Bastion], in order to defend by its fire the ground before the bastion and revailin.

FLECHIER, ESPRIT, born in 1632 at Pernes, near Grenoblo, was studied in the college of the 'Fleches', and in the Christian Doctrine, of which congregation his maternal uncle was then the superior. Being ordained, he went to Paris, and became preceptor to a young gentleman. He made himself favourably known by writing panegyrical orations in honour of saints and also of deceased distinguished contemporaries, which were much liked at the time as specimens of eloquence. In 1673 the Abbé Fléchier was named a member of the French Academy; and in 1682 he was appointed by Louis XIV. almoner to the Dauphiness. In 1683 he was made bishop of St. Sauveur, and rector to the four parishes in the town which he was ordained to. He retracted his apostacy to Catholicism the Protestants of Poitou and Brittany. On his return to Paris he was appointed by the king bishop of Lavaur, but was soon after transferred to the see of Nismes. The revolution of the edict of Nantes, 22nd October, 1685, had reduced his diocese to a state of persecution against the Protestants, or Huguenots as they were called, who were very numerous at Nismes and in the neighbouring districts. Fléchier, who was naturally of a mild disposition, while obeying the intolerant orders of the king towards this part of his diocese, combined with them with such moderation, as could be expected from one in his situation. His letters contain painful evidence of the oppressions and cruelties committed at that epoch. When the persecuted Protestants rose in 1702-3 against their oppressors, they feebly resisted by killing a number of Huguenots, which act last was considered to rival and almost to excel Bossuet. Cardinal Maury (Essai sur l'Eloquence de la Chaire, vol. i.) examines with a critical eye Fléchier's oration in honour of Marshal Turenne, which was considered as his masterpiece, and points out his faults. The life of Fléchier is said to have been written by Cardinal Ximenes, rather too partial according to some critics, and a life of Theodosius the Great. His correspondence above mentioned furnishes some interesting materials for contemporary history.

FLECKNOE, RICHARD, is said to have been a Catholic priest. He was a minor poet and wit in the time of Dryden, and would have been long since forgotten had not that writer used his name as the title of a severe satire against Shaftesbury, and therein proclaims that he was "as senseless as a sconce, but without grace."

"Through all the realms of nonsense absolute."

Of course his name was transmitted to posterity with the same ignominy that has accompanied the heroes of Pope's 'Dunciad.' The reader of satires should not however take too much for granted, nor be too ready to admit as a fact that all objects of ridicule and invective are such fools and knaves as they are represented. Party feeling and private animosity may have occasioned the attacks directed by a powerful opponent, rather than a cool judgment and a rational inquiry into the public acts of those persons. The satires of Pope and Dryden, the satires themselves are in the hands of every gentleman possessing a moderate library, while the works of the persons satirised are utterly unknown, excepting to those who take an active interest in studying the literature of the period. Hence a vast number of persons are..."
by name familiar to the mass of readers, on account of their having been by our great satirists denounced as the writers of unredeemed trash, without any opportunity of being given of examining the justice of the sentence. Flecknoe, in particular, is a victim to these partial views. There is no doubt that the mere readers of Dryden take it for granted that Flecknoe was a most unqualified idiot, yet in the 'Prospective Review' (vol. 51 there is an article which proves more than enough, that Flecknoe was an imprudent, but though he did not possess any great genius, and was sadly defective in his vestigation, he still possessed much fancy, and wrote some small pieces which for happy turns of thought would not disgrace even the first writers in the age. His description of 'a man troubled at mort' (there quoted) is a masterpiece in its way.

FLEET PRISON, like the neighbouring street, takes its name from the brook or river of Fleet, which formerly ran by it, and still runs under Farringdon Street. The earliest notice of this prison is in 1578 in which its first year, confirmed to O. bert, brother of William Longchamp, chancellor of England, and to his heirs for ever, the custody of his palace at Westminster, with the keeping of his goul of the Fleet in London. King John also, by patent dated in the third year of his reign, gave the archdeacon of Wells the custody of his palace at Westminster and his goul of the Fleet, together with the wardship of the daughter and heir of Robert Leland. (Stow, Soc., edit. 1616, p. 393.)

The Times of the Prisons in England and Wales (sto. Warrenting, 1721, p. 217.), says, this prison was committed formerly those who had incurred the displeasure of the Star Chamber; and adds that, in the 16th Char. 1. when that court was abolished, it became a prison for debtors. The town's register of the Courts of Chancery, Exchequer, and Common Pleas. But the prison of the Fleet was, in all probability, a place for debtors from its earliest existence; numerous instances to prove it may be found through different centuries upon the rolls of the court. Adam de Lacy, a man of North Wales, was imprisoned there for debt in 1315 (Rot. Parl. vol. ii. p. 91) and we find a petition from one John Fearous, a debtor confined there, A.D. 1290, 18th Edw. I. (ibid. vol. i. p. 37).

In the year IV. A.D. 1400, it was determined by parliament that the council, with the chancellor and justices, should settle what fees the warden of the Fleet was to take (ibid. vol. v. p. 110); and it was determined in the parliament of the 23rd Hen. VI. that his office was not to be prejudiced by the statute of that year touching sheriffs and gaolers.

Howard (State, ed. supra, p. 219) has given a table of the regulations observed in the Fleet, with another of the wardens's fees, as both were finally settled in Hilary Term II. See also Religio Stai's 'State of the Prisons, 4to, Lond., 1812, p. 218—222.'

The warden is appointed by letters patent under the great seal. He receives no salary whatever, but is wholly remunerated by the fees above-mentioned. The liberty of hanging an indemnity against an escape, has been granted by the warden for the time being from very antient times, and the practice is expressly recognised by the statute of the 5th and 6th Will. III., c. 27. (Return to the House of Commons relating to the Fleet Prison, 29 Apr. 1830.)

Strype, in his edition of Stow, fol. Lond., 1720, b. iii. p. 290, gives the extent of what are technically termed the Rules of the Fleet. He says, 'To this prison there have been committed, upon a charge of regicide, six on the north side of Ludgate-hill, the west side of the Old Bailey, unto Fleet-lane, and down the same on the south side; and so the east side of the row of houses next the Fleet, taking in all the courts and alleys within the said limits.' most of which occurred in the Fire of London, and again by the rioters in 1750.

FLEETWOOD, CHARLES, notorious for the active part he took in the Rebellion, was descended from a private family in Lancashire, from which several distinguished persons had sprung. From a trooper in the earl of Essex's forces he rose to be colonel of infantry, and was made governor of Bristol. In October, 1645, he was returned to parliament for Buckinghamshire, and in 1647 was one of the commissioners named to treat with the king. At the battle of Worcester Fleetwood distingushed himself so much that he gained great favour both with Oliver Cromwell and the army in general: indeed afterwards, when the king was executed, and the parli- ament moved to have him named in the Act of attainder, he was moved to include him, though he did not possess any great genius, and was sadly defective in his vestigation, he still possessed much fancy, and wrote some small pieces which for happy turns of thought would not disgrace even the first writers in the age. His description of 'a man troubled at mort' (there quoted) is a masterpiece in its way.

FLEETWOOD had married Frances, the daughter of Thomas Smith of Winston in Norfolk, by whom he had three children, but this lady being dead, he was fixed upon by one Elizabeth, the daughter and companion of his first daughter, the widow of Ironton. Soon after he became his son-in-law the Protector nominated him commander-in-chief of the forces in Ireland, where he was also invested with a commissionership for the civil department. Crom- well, however, feeling that his interests were not perfectly secure in the hands of Fleetwood, who was a thorough re- publican, and strenuously opposed to the Protector being made king, sent his son Henry Cromwell to watch over his conduct. Some enmity was thus produced, and with that of his father's grandfather, as the result of which, he was one of the new lords, and made, by the chief of the fourteen major-generals to whom the government of the nation was absolutely committed, and who were deputed to search for such ruffians as had borne arms under Charles I., or were disaffected to the present government, with power to imprison them, and to decimate their estates. When Richard Cromwell became Protector, Fleetwood strove to obtain his liberty, and to suppress him in his authority; but while he was caballing against him, the nation, wearied with tumult and discord, pronounced the expedition unlawful. (Noble's Memoirs of the Cromwell Family, &c.

FLensburg or FIENSBOG, a Danish town, at the southern extremity of the Flensborg Fyord or Fjord, near the northern line of Holstein, and in the diocese of Schleswig. It lies in 54° 47' N. lat. and 9° 27' E. long., and is encircled by hills on the three sides facing the Fjord. It is a pleasant well-built town, inclosed by an old wall and ditch, outside of which there are three suburbs; it contains about 1200 houses and about 16,500 inhabitants. The streets are well paved and lighted. Flensborg has three German churches and one Danish, three market-places a town-hall, an orphan asylum, an hospital and midwifery school, public library, grammar and secondary school, several inns, and the lowest court of justice (a court of a house of correction, and nine refuges for the indigent.) It has several large manufactories, particularly of brass, refined sugar, tobacco, salicole, soap and tallow, paper, &c.

There are three shipbuilders' yards, and the people of the town are owners of between 200 and 300 vessels. It is a good harbour, deep enough for large ships, but the en- trance is difficult. Fairs for grain, cattle, horses, &c. are held periodically. The trade is considerable, and the exports are brandy, corn, hides and skins, soap, tallow, fish, &c.

Flensborg is the capital of the bailiwick of the same name, which has an area of about 336 square miles, divided into five hundred or harders, with one town, one market-town (Glirksburg), 29 parishes, and about 39,000 inhabitants.

The name Flensburg is a corruption of the Latin term for Flensburg, which is given in the English law, as it stood in the time of Edward I., and not in the time of Edward II., as often quoted. The author gives as the reason for the title of his work, 'that he was chosen for his... during his confinement in the Fleet Prison: who he was is not known. The work is divided into six books: the first treat of the rights of persons and of pleas of the crown; the second of courts and officers; the third of methods of acquiring titles to things; the fourth, and it is most ungrounded upon a seisin, and of writs of entry; the sixth of a writ of right. The author has followed Broun in the matter and manner of his work, having adopted his plan, and in many instances transcribed whole pages from him. He also followed Gavia in many instances; and various
obscure passages of both those writers are illustrated by Fletas. It seems to have been the author's design to give a consistent and, in favour of some principles, a critical account of the controv-
sersies which had taken place since Bracton wrote, supplying such parts as had been left untouched by him, and dilating
upon others which had been passed over with too little at-
tention. Thus Fleta serves as an appendix, and often as a companion to other works on the same subject, which had
previously been discussed by Bracton are passed over in Fleta in a very brief
manner, so that with all its new matter this volume is not more than
one-third the size of Bracton. (Reeve's Eng. Law.)

The work was originally published by Selden from an
antient manuscript in the Cottonian Library, together with
a small treatise in law French, entitled 'Fet Assavoir,'
which is a collection of notes concerning proceedings in
actions, and a learned dissertation by Selden himself. Two
early editions of this work were printed; one in 1685, and
the other in 1688, which last corrects many hundred errors
which had been caused in the first edition by an unskilful
copyist (Bridgman). It is also printed in Howard's col-
lection. [Barron.] Prince Henriau, in his 'Chrono-
logical Abridgment of the History of France,' tome i., p.
258, refers to Fleta as an historical authority.

FLETCHER, JOHN, was born in 1576, and was the
son of the Rev. Dr. Fletcher, afterwards bishop of Bristol.
He was educated at Cambridge with his friend Francis Benet in
1598. He now devoted his whole time to study, and was to
have been a good scholar. For an account of his works and his literary
connexion with Beaumont, see that article. He was carried
off by a plague which happened in 1625.

FLETCHER, GILES and PHINEAS, were the
sons of a clergyman who formerly belonged to the church of
St. Peter, Dumbarton. Phineas Fletcher was at one time
ambassador in Russia, and counsellor of John Fletcher the
tragic dramatist.

Giles, the elder, born about 1580, was educated at
Trinity College, Cambridge, and died at his living of Alder-
top, near Cambridge, in 1617. He is the poet whom he has left,
'Christ's Victory in Heaven, Christ's Triumph on Earth,
Christ's Triumph over Death, Christ's Triumph after Death,' will, as Dr. Southey observes, 'preserve his name
while there is any praise.' Its beauty is of a very peculiar cast, uniting many of the characteristics of
with a greater regard to antithesis. Lines like the following,

'The obsequies of him that could not die;
And death of life, and of eternity;
How worthy he died that was too fair;
And how he died, he was too rare.',

occurred perpetually, and give an air to his poetry which cannot be
well mistaken. The 'Wooing Song,' in the second part of
the poem, is as perfect a specimen of fanciful elegance as
can be found; and is more striking from being written in
octo-syllabic couplets, while the rest of the poem is
in a variation of the Spenserian stanza. The brother of Giles, was born
about 1584, and admitted scholar of King's College, Cam-
bidge, in 1600. In 1621 he was presented to the living of
Hilgay, in Norfolk, where he died about 1660.

He wrote, in addition to his general work, some Eclogues;
'a History of the founders and Benefactors of Cambridge
University,' in Latin hexameters, and a drama called
'Sicelides.' But the only work for which he is now known
is 'The Purple Island, or the Isle of Man,' a description of
the human soul as it is by nature, but especially the latter, much in
the style of 'Christ's Triumph.'

The two Fletchers, with Browne, make up a kind of
Spenserian school, possessing considerable common resem-
bances, with original qualities enough to procure for each
a very high reputation. It is not the more remarkable as
having tended to form the style of Milton's poetry, as may
be seen by any one well acquainted with both.

(Southey's British Poets; Chalmers' Biogr. Dict.)

FLETCHER, ANDREW, was the son of Sir Robert
Fletcher, of Cranferry, where he was born
in 1652. Sir Robert is said to have died when his son was a
child. He is, we suppose, the subject of a small duode-
cimo volume printed at Edinburgh in 1665, and entitled
'A Discourse on the Memory of that rare and truly virtuous
Prince which existed in these Islands, which was
written on the 13th of January last, in the 39th year of his age;
written by a Gentleman of his acquaintance.' It is a warm tribute
to the general worth and especially to the piety of his char-
acter. Andrew Fletcher's early education was superin-
tended by Gilbert Burnet, afterwards the celebrated bishop
of Salisbury, who was at this time parish minister of Sal-
town. To him Fletcher was probably indebted for his first
acquaintance with those political principles in which he ad-
ered through his life. Under the care of Burnet he also
laid the foundation of an excellent literary education.
When he grew up he spent some time in travelling on the
continent. On his return home he obtained a seat in the
House of Commons (Barnet) or member, for his
native county; and in that capacity he became distingui-
she is one of the foremost opponents of the govern-
ment. After some time however he deemed it prudent
to withdraw to Holland; on which he was summoned before
the lords of the comissary, but did not make his
appearance, was outlawed, and his estate sequestrated.
He ventured to come home in 1683, but soon returned to
the continent, and there he remained till 1685, when he thought
proper to engage in the attempt of the duke of Monmouth.
He again returned to England, but when he shot a man
dead in a private quarrel, and found himself irre-}

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about 1584, and admitted scholar of King's College, Cam-
bidge, in 1600. In 1621 he was presented to the living of
Hilgay, in Norfolk, where he died about 1660.

He wrote, in addition to his general work, some Eclogues;
'a History of the founders and Benefactors of Cambridge
University,' in Latin hexameters, and a drama called
'Sicelides.' But the only work for which he is now known
is 'The Purple Island, or the Isle of Man,' a description of
the human soul as it is by nature, but especially the latter, much in
the style of 'Christ's Triumph.'

The two Fletchers, with Browne, make up a kind of
Spenserian school, possessing considerable common resem-
bances, with original qualities enough to procure for each
a very high reputation. It is not the more remarkable as
having tended to form the style of Milton's poetry, as may
be seen by any one well acquainted with both.

(Southey's British Poets; Chalmers' Biogr. Dict.)

FLETCHER, ANDREW, was the son of Sir Robert
Fletcher, of Cranferry, where he was born
in 1652. Sir Robert is said to have died when his son was a
child. He is, we suppose, the subject of a small duode-
cimo volume printed at Edinburgh in 1665, and entitled
'A Discourse on the Memory of that rare and truly virtuous
Prince which existed in these Islands, which was
written on the 13th of January last, in the 39th year of his age;
written by a Gentleman of his acquaintance.' It is a warm tribute
to the general worth and especially to the piety of his char-
acter. Andrew Fletcher's early education was superin-
tended by Gilbert Burnet, afterwards the celebrated bishop
of Salisbury, who was at this time parish minister of Sal-
town. To him Fletcher was probably indebted for his first
acquaintance with those political principles in which he ad-
ered through his life. Under the care of Burnet he also
laid the foundation of an excellent literary education.
When he grew up he spent some time in travelling on the
continent. On his return home he obtained a seat in the
House of Commons (Barnet) or member, for his
native county; and in that capacity he became distingui-
she is one of the foremost opponents of the govern-
ment. After some time however he deemed it prudent
to withdraw to Holland; on which he was summoned before
the lords of the comissary, but did not make his
appearance, was outlawed, and his estate sequestrated.
He ventured to come home in 1683, but soon returned to
the continent, and there he remained till 1685, when he thought
proper to engage in the attempt of the duke of Monmouth.
He again returned to England, but when he shot a man
dead in a private quarrel, and found himself irre-
Seymour, and Sir Charles Musgrave. The part of the
dialogue given to Seymour is in particular highly charac-
terized. It is in this production that we find the remark-
No. v. p. 23 - 414.
Upon crows and the tops of secures the fleur-de-lis was
used by other nations as well as France from a very early
FLEURY, ANDRE HERCULE DE, CARDINAL
He was born in 1631 at Lully in Languedoc, studied at Paris in the
college of the Jesuits, was afterwards made almoner to the
king's chamberlain of Louis XIV., and in 1699 bishop of
Fribourg, which he resigned in 1713, on account of ill
health. Louis XIV. appointed him also preceptor to his
grandson, afterwards Louis XV., who became greatly attac-
ted to him. After the death of the regent in 1723
Fleury was made a member of the council of State, and
afterwards prime minister, in which office he continued for
seventeen years, till the time of his death. The period of
ministership was one of great activity, and during Louis
XV. Fleury was honest, economical, disinterested, a friend to peace, and a patron of learning. He was oblige-
against his inclinations, by the court party and Marshal Va-
wars, to take a part in the war of the Polish successon in
1733, in which France engaged chiefly in order to support
Stanislas Leszinsky, father-in-law of Louis XV. Although
that object was frustrated by the united forces of Austria
and Russia, yet the war terminated in 1738 in a mutually
advantageous to France, which gained by it the important
possessions of Silesia.
In 1741 Cardinal Fleury found himself driven by
Court influence into another war, that of the Austrian successon,
of which he did not live to see the end. He died in 1743,
at eighty-nine years of age; and from that time the govern-
ment of France was conducted by marquis de Louvois, his
followers, and their descendants, with much less activity
and decay. Fleury amassed no fortune, but he left the
reputation of a wise, benevolent, and faithful minister of state.
He completed the building for the royal (now national)
library, which he enriched with a number of valuable
manuscripts.
FLEURY, CLAUDE, ABBEY, was born at Paris in
1640, and died in 1723, aged eighty-three years. All
the contemporary writers coincide in the opinion that Fleury
possessed all the virtues and qualities requisite to constitute
a true and accomplished scholar. He was a great
compendium of learning, and in 1731 was elected to the
Academy of Inscriptions and Belles-Lettres. The
archbishop of Lyon, then Pope Clement XI., who
had entertained a high opinion of his talents, recommended
him to the king with the education of his natural
son the prince of Vermandois. Upon the death of the young
prince, Louis conferred on Fleury the abbey of Loc-Dieu,
in the diocese of Rheims, and five years after (1659) he was
appointed by the king to the bishopric of Angers, which
he accepted. A short time after his ordination to the
Better, Fleury thus became the associate of Fleury.
In 1660 he succeeded Labreunvielle as member of the
French Academy, and when the education of the three above-men-
tioneed was completed, Fleury recommended to the
king the patron of Argenteuil, in the diocese of Paris. This
grant was very acceptable to Fleury, as it afforded him a
comfortable retirement for the prosecution of his studies,
without depriving him of those resources which are found
trinsic to the life of a statesman, and which are
considered to be a sine qua non of a statesman. Fleury was
named a member of the Académie des Sciences et des Arts
of the Parisian academic society, and which, according to
the privilege granted by the king, might be translated into
the "Ecclesiastical History," and began the execution of it.
After the death of Louis XIV. (1716), the Regent Duke
of Orleans nominated Fleury confessor to the young
king Louis XV., a post which he held till 1722, when he resigned
it, and from that time till his death in his eighty-third
year. He died a few months afterwards.
Fleury commenced his literary career with the "Histoire
du Droit Francais" (1674). He afterwards published suc-
cessively "Institution au Droit Ecclesiastique," "Gau-
chisme Historique," translated into Latin by the author
himself, a work which has become classical, and is coni-
stantly reprinted; 'Les Mœurs des Israélites,' of which an English translation was made by Dr. Adam Clarke. Bishop Hobart's 'Introduction to the reading of the Old Testament, which should be in the hands of every young person;' 'Les Mœurs des Chrétiens,' also translated into English. These two last works are considered, for elegance and precision of style, as among the best in the French language. He also wrote 'Traité du Choix et de la Méthode des Études.' But the most valuable of Fleury's works, and that which has established his reputation as a first-rate writer, is the 'Histoire Ecclesiastique.' It comprehends a space of fourteen centuries, beginning with the establishment of Christianity, and terminating at the opening of the council of Constance. It was objected to the author that he related too many miracles, but he excused himself on the ground that such was the belief of the church to which he belonged. Though an orthodox Roman Catholic priest, he strictly adheres to the truth in his account of the scandals which have thrown odium on the church, and the best proof of his sincerity is that his 'Ecclesiastical History' was put into the Roman Index Expurgatorius. Fleury was engaged on the 20th volume of his History at the time of his death. It was continued till the year 1698 by Fobere, of the Oratoire, in 16 vols. in 4to. Fleury's 'Ecclesiastical History' is translated into English. The university library of Cambridge contains a manuscript of a 'History of France,' which Fleury drew up for the use of the French princes while he was engaged with their education, but it has never been printed. We must not omit to mention, that, notwithstanding his grave occupations, Fleury had leisure to compose a treatise on the duties of masters and servants. This little work, which has been much esteemed, is translated into English.

**FLEXURE, CONTRARY.** A point of contrary flexure in a curve is that at which the branch of the curve ceases to present convexity to a straight line without it, and begins to present concavity, or vice versa. [Curves.] But when a straight line passes through a point of contrary flexure, the curve presents either convexity on both sides or concavity on both sides.

The algebraical test of a point of contrary flexure is a change of sign in the second differential coefficient of either of the two, absissa or ordinate, with respect to the other. It is frequently stated, in works on the differential calculus, that the sole test of such a point is \( \frac{dy}{dx^2} = 0 \), where \( x \) and \( y \) are the absissa and ordinate. This is not correct; the above equation may be true when there is no contrary flexure, and there may be contrary flexures when the above is not true. It is necessary and sufficient for a point of contrary flexure that \( \frac{dy}{dx^2} \) should change its sign, which cannot be except when it is nothing or infinite. Examine therefore all the roots of the two equations, 

\[
\frac{dy}{dx} = 0 \quad \text{and} \quad \frac{1}{\frac{dy}{dx^2}} = 0
\]

and such of them as are accompanied by change of sign give points of contrary flexure. For instance, let the equation of the curve be 

\[
y = 3x^2 - 20x^2 + 50x^2 - 60x^2 - 4x - 1 = 0 \quad (x - 2) \quad (x - 1)
\]

then \( \frac{dy}{dx} = 0 \) when \( x = 1 \) and when \( x = 2 \) but there is only a point of contrary flexure when \( x = 2 \), for when \( x = 1 \) there is no change of sign.

**FLINDERS, MATTHEW.** was a native of Donington, in Lincolnshire. He went early to sea in the merchant service. In 1795 he was a midshipman in the Royal Navy, and went to New Holland with the ship that conveyed Captain Cook to the south seas. On board this ship he found a congenial mind in George Bass, the surgeon, who, like himself, was bold and adventurous, and had a passionate desire to explore new countries. Soon after their arrival at Port Jackson these enterprising young men launched a little boat, which was appropriately called 'Tom Thumb,' being only 8 feet long. In this boat Flinders and Bass, with no other companions than a boy, ran along the coast of New Holland and beyond the point where Governor Hunter's survey had stopped. They made several discoveries and encountered many dangers. Their heroism was appreciated but by few persons in the colony. The English had been ten years in possession of the coast, but from Bass's and Flinders' explorations, which took place between 1795 and 1802, there were 250 leagues (beginning in the vicinity of the colony) set down on the charts as 'unknown coast.' Flinders was anxious to remove this blot. The complete examination of Australia became what he called his 'darling object.' It was not yet known that Van Diemen's Land was a continent; the existence of a strait dividing it from Australia was first mentioned as a probable fact by Bass, who ran down the coast in a whale-boat, and who suggested that the heavy swell which rolled in from the westward could be produced only from the great Southern Ocean. But a French vessel, the Investigator, a bark of 334 tons, carrying 86 men, including an astronomer, a naturalist, two painters, a botanic gardener, and a miner. England and France were at war at the time, the preliminaries of the treaty of Amiens not being signed until the 20th of March, 1802. Bass and his crew were nothing more than a Don Quixote of the sea, a Frenchman by birth, and a Frenchman by education; but a French pass, conceived in feeling, and speaking of the sacred rights of science, was granted to Flinders, who, whether in war or peace, was to be respected by all armed ships of France, and to be entertained as a friend of the French people, an excellent introduction to future conditions, though not expressly laid down, had been acted upon by the French in the time of Louis XVI.; and about a year before Captain Flinders' departure the English Government had already established a precedent. M. Otto, in the name of Baudin, was to have a free pass in favour of Captain Baudin, who, it was said, was going with two ships on a voyage of discovery 'round the world;' and the Addington administration readily and gratuitously granted it, notwithstanding the fierce hostilities which were then going on between England and France.

In the month of December Captain Flinders made Cape Leuwen, on the south-east coast of Australia; and commencing operations, he gradually surveyed and examined the coast to the extremity of Bass's Straits, where, in 'Encounter Bay,' he met the French ship 'Dufresnes.' Instead of going round the world, had made straight for Australia, and devoted their whole care to the examination of Van Diemen's Land and New South Wales, evidently with a view to the formation of a French colony. Captain Baudin had had the best of Flinders; but he had been delayed in collecting shells and catching butterflies, and at the time of their meeting he had done little in the way of discovery or survey; and Flinders says that by asiduity and favourable circumstances he had placed himself in the most enviable parts of the southern coast. He says that he gave Baudin an account of his discoveries. Baudin afterwards said that he found Captain Flinders not very communicative, but that he obtained intelligence of all that had been done on the southern coast. From Bass's Straits Flinders sailed to Port Jackson, where he arrived on the 9th of May, 1802. Having refitted, he set off again on the 22nd of July. He then steered northerly along the east coast, exploring Northumberland and Lord Howe Islands; and surveying the Great Barrier Reef of coral rocks—a long and dangerous tract, most necessary to lay down. In fourteen

* It appears that Bass met with no reward whatever. In 1809 he left Port Jackson as a master, and in 1822 he was placed on the retired list. In 1808 there was a vague report that he was alive and settled somewhere in Peru; but the more probable story is that he was lost at sea.
days he conducted the Investigator through these perilous
mazes, where he had nothing to guide him but his own
vigilance and skill; then bearing still north, he made
Torres Straits and surveyed the vast gulf of Carpentaria,
which had been very imperfectly examined by General
Carpenter, its first discoverer. While engaged in this
duty the Investigator was reported to be 'quite rotten,' and in
such a state that she could not possibly last above six
months in fine weather. Three of these months Flinders
knew not how to pass, for he then stood off and on for the island
Timor, where he refreshed his sick and over-fatigued
crew. From Timor he made his way with the leaky bark to
Cape Leuven. Sailing again along the southern coast, he
anchored in the Archipelago of the Recherche; then pass-
ing along the coast of New South Wales for Port Jackson
where he arrived on the 9th of June, 1803, having lost many of
his best men, and among others Good, the botanical
gardener. The Investigator was immediately condemned:
her in such a state that people could scarcely conceive
her to be a ship. She had been reported that she had no coca-nuts
his valuable life. Flinders knew that Baudin was returning
to France, and he saw with a prophetic eye that the French
man would claim the merit of all his discoveries on the
southern coast of Australia. He thought the governor De
Neufville too illiterate to keep account of them, and much about
the matter otherwise, he says that he should have been induced
to suspect that he was detained a prisoner in order that
Baudin might have the start of him in publishing, and
make the world believe that it was to the French nation
alone that the discovery of Port Jackson was due. For
the investigation and examination of those parts. Some English writers did
hesitate to take this view of the case, and what followed in
France settled the question. A volume and an atlas were
published: the whole of the southern coast, including not
merely the coast of New South Wales, but the strait for Port Jackson,
was laid down as new land, and called Terre Napoleon. Every post
which had been named by Flinders and his precursor was
rechristened, and there were all sorts of significant names
given, from Cape Morepork and Cape Ripol to Tissandier
Bay. Baudin had made about 30 leagues of real discovery;
he claimed or seemed to claim nearly 900 leagues.

After pinning six years a prisoner in the Isle of France,
Flinders was liberated, and he reached England at the end
of the year 1810. His charts and plans were respected by him, but one of his log-books was kept or destroyed.
His health was completely broken, but as long as there was
work to do he kept up his energy, correcting his maps, and
writing his dissertation. After retiring last May for
peace he drooped; he died in the early hours of July, 1814.
On the very day his book was published. (A Voyage to
Terre Australia, &c., in the years 1801, 1802, and 1803, in
H.M. Ship Investigator, and subsequently in the Armed
Amble, Porpoise and Cumberland schooner, on the voyage to
South Genova, with Atlas, London, 1814; also Quart. Rev., vol. xii)

FLINT, a well-known silicious mineral, the true native
place of which is the upper bed of the chalk formation,
where it occurs in regular beds, consisting either of nodules
or of flat tabular masses, which may be extended for
two miles in length in the chalk east of Dover. It is often
found in the form of sponges, alyconia, echinata, &c.;
it occurs also plentifully in alluvial deposits in the
neighbourhood of chalk. Gravel consists principally of flints
in England, and often attains 300 feet in thickness, and by exposure
to air and moisture, have acquired a yellowish-red
colour, owing to peroxidization of the iron which they contain;
in this state they are termed ferruginous flints.

Flint is usually of a grey colour of various shades; some-
times it is flat and tabular, sometimes it is round, and
bitter cold, when it is brought to Port Jackson on the 5th September, and procured
a small schooner, the Cumberland, which was only twenty-nine
tons, and when she got to sea it was found that she was
very leaky. She was accompanied as far as the wrecks by
another, which was named the Amble, and this vessel was
for China. Flinders reached the reef on the 7th October,
and was received with three cheers. In the mean while the
poor sailors on Wreck Reef Bank had planted oats, maize,
and pumpkins, and the young plants were up and flourishing.

The substances with which it is mixed are to be
considered as mere accidental admixtures.

Flints are largely employed under the name of gun-flints,
and in the manufacture of china and porcelain, &c., and
also, as the name indicates, in making fire-flints; but for
this purpose fine silicious sand is now generally substituted.

FLINT, a town in North Wales. [FLINTSHIRE]

FLINT-Glass. [Glass.]

FLINT-BLACK. A solution of flint or silica in
the alkali potash; it is prepared by fusing together
a mixture of four parts of hydrate of potash and one part of
powdered flint or fine sand. When a part of the
fluid compound is poured out of the crucible, crystals are
formed in the residual portion, which, according to the
circumstances, are composed of one or more of the
following. This compound, sometimes called silicate of potash,
also being regarded as an acid, is soluble in water, and when
ultraphor, nitric, or other powerful acids are added to a
hydrated silicate of precipitated.
FLINTSHIRE, a county in North Wales, in the north-eastern part of the principality. The main portion of the county extends along the estuary of the Dee, and there are two outlying portions. 1. The main portion approximates in form to a parallelogram, having its greatest extent or length north and south by the county from the mouth of the Clwyd to the Point of Air (eight miles long) is washed by the Irish Sea; the north-east side from the Point of Air to Ddolleston Common (twenty-two miles) is for the most part washed by the estuary of the Dee, and partly bounded by the county of Chester; the south-east side (ten miles) is bounded by the county of Denbigh, from which it is partly separated by one of the branches of the Alen; the south-west side (twenty-three miles) is bounded by the county of Denbigh, the boundary line forming the south-west corner of the valley of the Upper Alen, partly along those which skirt on the north-east the vale of Clwyd, and partly along the Clwyd itself to its outlet. 2. The principal outlying portion is also a parallelogram, having its greatest length from west-north-west to east-south-east. It is bounded on the north-west side (seven miles long) by the county of Chester, from which it is separated by the tributary waters of the Dee; on the east-south-east and south-west sides (seven miles and nine miles respectively) by the county of Salop; and on the south side by the county of Denbighshire, from which it is separated by the Dee. 3. The smaller outlying portion is situated between the main portion of the county and the larger outlying portion: it is bounded on every side by Denbighshire, and is very small. The principal settlements in Flintshire are: Caergwrle or Caergwyly, with Hope, on the Alen (population 2747); Overton, in the large outlying portion of the county near the Dee (population 1746); Rhuddlan or Rhuddllan on the Clwyd (population 1506); and Caerwy, or Caerwys, about five miles from Hope and seven miles from Overton (population 935). Of St. Asaph and Holywell an account is given elsewhere [Asaph, St.; Holywell]. St. Asaph, Holywell, and Mold were added as contributory boroughs to Flint by the Reform Act; Caergwrly, Overton, Rhuddlan, and Caerwy were contributory boroughs before.

Flint, from which the county derives its name, is in Coleshill hundred, on the estuary of the Dee, 300 miles from London, through Coventry, Birmingham, Shrewsbury, Ellesmere, Wrexham, and Mold. Flint was probably a Roman vill, the ruins of which are still visible near the town. The position of Flint is remarkable, rising on a ridge of land surrounded by a vast ditch and two great ramparts, and having four gates, with streets regularly laid out and crossing each other at right angles: many antiquities apparently Roman have been dug up in the neighbourhood (Femont's Tour in Wales, 2 vols. 1774, vol. ii. p. 287, where these antiquities are figured and described); and there is a tradition that in very old times there was a large town on this spot. There are traces of Roman establishments for the smelting of the lead ore dug in the neighbourhood.

The Roman nation occupied the whole of the county, and many Roman coins have been found in the north-west, north-east, east, and south, and at the hill of a small number of streams flow, on one side into the Dee, and on the other into the Clwyd and Alen. These rivers, though they have part of their course on or within the border of Flintshire, rather belong to other counties. [Clwyd: Dee; Denbighshire.]

Geological Character. — The new red sandstone or red marl, the uppermost of the rocks of this county, occupies the two outlying portions; and is found on the north-west coast, in the lower part of the vale of Clwyd, and in that part of the county which is on the north-east side of the new channel of the Dee. The coal-measures occupy the coast of the estuary of the Dee, and the coal-field forms a belt extending from the Point of Air to the south-east side of the county, gradually increasing in width inland. The seams of coal are of different thickness, from three quarters of a foot to five feet thick, and vary in distance from four to two in three. Common, cannel, and peacock coal are found. Pits are worked in the neighbourhood of Holywell, and at Mostyn, which is on the estuary of the Dee, not far from that town; in the neighbourhood of Hawarden, and between that town and Flint; and also in the neighbourhood of Mold, and between Mold and Hawarden. Beds of shale and sandstone, answering in position and character to the shale and millstone grit of Derbyshire [Derbys].
tions meet in private houses. The county gaol was built in 1785. At the time of its erection it was considered a neat and commodious building; but it has not admitted a single prisoner. The appearance of the town of Flint is very unfavourable; the streets are so broken by dilapidated walls and the gaps caused by the removal of houses as to give the place an air of desolation and irregularity.

The borough and parochial chappel of the census of 1831 was 221.1, about one-eighth agricultural. The trade of the port of Flint is rapidly increasing. The estuary of the Dee is many miles wide, but the low water channel is narrow, and it was said some years ago to be of so little depth which the tide ran out that it might be crossed, by those well acquainted with it, on foot. (A Second Walk through Wales, by the Rev. Richard Warner, in 1794.) The obstructions caused by the shifting sands in the channel of the Dee above Flint have caused this place to become of considerable degree the port of Chester, and the approach to the quay had been so much improved that large vessels could come up to it at any time of the tide. The neighbouring lead and coal mines, and the works for smelting the lead, give employment to a great number of persons, and furnish, the principal articles for export. Of the miners, a portion drawn from the inland part of Wales speak Welsh only, but the great majority of the inhabitants speak English. The market has fallen into disuse, but there are three yearly fairs. Flint is a place of some resort and entertainment is here abundant.

The borough of Flint was established by charter of Edward I., and regulated by subsequent charters. The borough limits comprehend, besides the chappel of Flint, the township of Colehill Fawr, in the parish of Holywell. By the Flinton and St Asaph Act (1832) the whole town, including the parish of St Asaph, was disfranchised, and four aldermen and twelve councillors. The borough of Flint with its contributors was empowered to send one member to parliament in the reign of Henry VIII.; the right of voting was in the inhabitants paying seot and lot. The number of electors registered under the Reform Act (A.D. 1832) was 361 as seot and lot voters, and only 14 as ten-pound householders, but many who really belonged to the latter class were included in the seot and lot voters. The living of Flint is a perpetual curacy of the yearly value of 225l., and the living of St Asaph consists of one vicar, the provost of the great tithes. Northop is the mother church to Flint.

There were at Flint, in 1833, a national school for 140 children, of which 39 were partly supported by subscription; there was one day-schools with 38 children, and three Sunday-schools with 418 children. There were few children in the borough unable to read. (Parliamentary Returns, Reports of Corporation Commissioners, &c.)

Of the present county and borough of Flint is in the hundred of the parish of St Asaph, and the river Alyn; it is 194 miles from London, on the road to Flint, described above. Mold is called in Welsh, 'Yr Wyddgrug,' 'a lofty hill,' which designation it owes to 'the Bailey hill,' its situation partly natural and partly artificial, on which formerly stood an ancient castle. There is no certain mention of the place until the time of William Rufus, when the castle was in possession of the English. In A.D. 1144 this castle was burned by the Welsh, under their Prince Owen Glyndedd, and razed. It was afterwards rebuilt, and repaired before the coming of the English. And all was Welsh. Of the castle itself there is no part remaining; but the ditches which defended it, or separated its parts from each other, may still be traced. 'The Bailey hill,' so called from the Ballia or courts of the castle, is even now of difficult access; its summit, which was leveled by art in order to the construction of the ancient fortresses, commands a view of the country round of no great extent but of considerable beauty. The site of the castle is completely covered with a growing ground of larches and other trees. The town consists of one main street only, one street which intersects it at right angles; the houses are indifferent, nor are there any public buildings except the church, two or three dissenting meeting-houses, and a school-house. The church, a rich and beautiful specimen of the perpendicular style of architecture, consists of a square tower, a porch, and a nave with a chancel, and a square embattled tower enriched with sculpture and crowned with pinnacles; this tower, though of later date than the body of the church, is of similar architecture. The interior of the church is handsome; the piers and arches are very light and elegant; there are some portions of ancient stained glass and several monuments. There are also various tombs of the early convicts; the buildings are held in a private house hired for the occasion; but it is in contempt to erect a county hall and prison.

The population of the township of Mold was, in 1831, 3133, of which about one-fourth was agricultural. The entire parish, which contains ten townships, beside that of Mold and the parishes of Newchapel and St Asaph, has an aggregate population of 935 persons, of which more than a third was agricultural: the extensive coal-pits and lead and iron mines in the parish gave employment to 629 laborers. In the town of Mold 220 persons were engaged in the manufacture of Lead, in the building of the new flint foundry and fire-bricks are made in the parish. There are two weekly markets (held on Wednesday and Saturday), and four annual fairs.

The living of St Asaph is a vicarage, in the gift of the bishop of St Asaph, of the yearly value of 332l., the perpetual curacies of Neurquis, yearly value 92l., and Tredyn or Trydlyn, yearly value 78l., with a glebe-house, are in the gift, the first of the vicar of Mold, and the second of the bishop of St Asaph.

By the Reform Act, Mold was made a parliamentary borough contributory to Flint: the borough comprehends the township of Mold, which contained, according to the Report of the Boundary Commissioners, about one hundred and fifty houses, worth 10l. a year or upwards: of these 126 were houses and the rest were offices.

There were in the whole parish, in 1833, two national schools, with 122 children, partly supported by an endowment; two other partially endowed schools with 122 children; thirteen unendowed day-schools with 331 children; and ten Sunday-schools with 187 scholars, some of whom were probably adult and even aged persons.

Caerwgrl, or Caerwygrl, is also on the right or west bank of the Alyn, below Mold, 187 miles from London, about 7 from Mold, and 13 from Flint. It is in the parish of Hope, or Queen Hope, and in the hundred of Maylor, or Maenor. The name Caerwygrl has considerable probability derived from Caer Gawr Lle, 'the camp of the giant legion,' from the 29th Roman legion, which was named Vexrix, and had its head-quarters at Deva (Chester). In early times the name was Brych BWYGRU, 'the rock,' and the conjecture is confirmed by the circumstance of a Roman siodurary, or vapour bath, hollowed out in the rock, roofed with polished tiles, on some of which was an inscription 'Legio XX,' having been found here. Some fragments of Roman road and other works were formerly visible in the neighbourhood. The Roman outpost is supposed to have been on the spot now occupied by the ruins of the castle.

The oblong form of the castle, its comparative deficiency of towers, and its general arrangement in structure with other castles whose origin is known, lead to the conclusion that it was of Welsh rather than Saxon origin. Previous to the final subjugation of Wales, it changed masters more than once, and appears to have been known by the English under the name of Hope Castle, and gave name, to the district of Hopeendale, while, with the Welsh, it bore its native designation, Caerwygrl. Eleanor, queen of Edward I., lodged here on her way to Caernarvon, at which time, or soon after, the castle was burned. In Leland's time it was in a very small state, and had been down to the English. The site of this castle was derived from its strong position, and its command of the entrance into the vale of Alyn: the hill on which it stood is precipitous on one side and of steep ascent on the other; on the accessible parts it was protected by deep ditches cut in the rock. This rock, which is a brecia of small pebbles lodged in grit, was formerly quarried for millstones. The neighbouring hill, called 'Caerwygrl Hill,' affords limestone, of which a great quantity is burned in lime.

The population of the parishes is extensive, and in 1831 a population of 2747, more than half agricultural: it is divided into eight townships, of which the parliamentary borough of Caerwygrl, contributory to Flint, comprehends the township of Caerwygrl, in which is the village of the same name. The town is a very small one, consisting of only two streets, which is the village of Hope, with the church, a small edifice dedicated to St. Cynewarch, and containing some good monuments; and part of the township of Rhunafadd or Rhinanfaredd. The right of voting was, before the
Reform Act, in the inhabitants paying scot and lot; the constituency was left untouched by that Act. The number of voters is about 120; the number of houses worth 10l. a year or upwards is about 20. The living is a vicarage, in the gift of the bishop of St. Asaph. The borough had once a charter and a municipal government; but the privileges of the town and borough seem to have decayed, and it is now a mere village.

Overyton is near the right bank of the Dee, in that part of the hundred of Maylor which is detached from the rest of the county; 1744 miles from London on the road to Caergwrle, Mold, and Flint.

Overyton is mentioned in Domesday. There was anantia, a castle, here, said to have been the residence of a Welsh prince, Madoc, of Powys, lord of Overyton: of this castle there are no remains. Edward I. was a great benefactor to Overyton; he granted it a weekly market, and bestowed other privileges on the town; the steep shall (or stone) of Overyton, now a fishery, estimated to be worth 20l. a year. The market has been in some time discontinued. The village is pleasantly situated on a high bank overlooking a rich meadow flint watered by the Dee. The church is a handsome building; its chancel and tower are of stone, and are surmounted by a Gothic spire. There are yew-trees and elms.

The population of the parish in 1831 was 1746, nearly half agricultural. The parish is a large one, and is divisible into two distinct parts: one to the north of the river, and the other to the south. The north part is more populous, and contains the principal village of Overyton. The south part is more thinly inhabited, and contains the villages of Overyton and Caergwrle.

Rhuddlan or Rhuddlan is partly in Rhuddlan hundred, partly in that of Prestatyn, and on the east bank of the Clwyd, rather more than two miles above its mouth. Rhuddlan appears as a place of importance in the early part of the eleventh century when Llewelyn ap Sitivyk, prince of Wales, built a castle here in which he resided. In the time of Gryffydd ap Llewelyn, A.D. 1063, this castle or palace was surprised and burnt by the Saxons under Harold. It was soon restored, but shortly afterwards reconquered by Robert, nephew of Hugh Lacy, who became the Chester Robert fort, which was the castle in the middle ages; at subsequent periods it was repeatedly attacked and taken by the Welsh and restored by the English. Baldwin, archbishop of Canterbury, in his progress through Wales, was nobly entertained here. In the indentures of the sale of the castle to the Earl of Chester, Robert fort appears as the castle which this work is repeatedly attacked and taken by the Welsh and restored by the English. Baldwin, archbishop of Canterbury, in his progress through Wales, was nobly entertained here. In the indentures of the sale of the castle to the Earl of Chester, Robert fort appears as the castle which this work is repeatedly attacked and taken by the Welsh and restored by the English. Baldwin, archbishop of Canterbury, in his progress through Wales, was nobly entertained here. In the indentures of the sale of the castle to the Earl of Chester, Robert fort appears as the castle which this work is repeatedly attacked and taken by the Welsh and restored by the English.

In 1281 it was attacked by Llewelyn, the last prince of Wales, and his brother David, but without success. David was confined here previous to his removal to Shrewsbury, where he was esteemed a great prison. Several attempts were made to free himself, but all were unsuccessful. The castle was in ruins, and was never inhabited. The site was used as a prison until the eighteenth century, when it was used as a barracks.

The town of Rhuddlan is about 3 miles from the sea, and is accessible by a good road. The soil is chiefly agricultural, and the chief occupation is farming. There are several large estates in the vicinity, the most important being the estate of the Earl of Chester. The town is supplied with water from a spring in the vicinity, and has a good road to the sea.

The town has a market on Tuesdays and Fridays, and a fair on St. Mary's Day. The church is a large and handsome building, with a tower and spire. The school is well attended, and there are several parochial schools.

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The town has a market on Tuesdays and Fridays, and a fair on St. Mary's Day.

The population of the parish in 1831 was 1506, nearly half agricultural. The river Clwyd is navigable up to the bridge at spring tides for vessels of 70 or 80 tons. From seven to nine vessels ordinarily come in at spring tides. The lead mines to the east of the town are still worked, and give employment to about 300 men. There is a large export of copper; formerly considerable trade was carried on in timber and bark, but this has recently declined. A steamboat regularly plies between the town and the sea. There is a market fair on St. Mary's Day. The parish is a large one, and contains several important places, including the ancient borough of Rhuddlan.

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This place, now a mere village, is seated on a wild and naked hill, surrounded by a bleak and barren district. It is very ill supplied with water, which is brought from a well a quarter of a mile distant from the village. The conveyance of water from this well forms a regular branch of traffic. Caerwys has, like many other English places, a church and several dissenting places for the worship of the Independents, Unitarians, and Calvinistic Methodists, and a national school-house. The former town-hall is now used as a barn, and the former county gaol is now occupied as a dwelling-house: the judges' lodgings are now a mean hotel. The population of the parish, which is large, and comprehends the townships of Caerwys, Tregwynt, and Trév-Edyw. The right of suffrage, which the Reform Act has not altered, is in the inhabitants paying church and poor-rates and not receiving parish relief. The number of voters is about 130. There are some of the forms of a municipal corporation. There are two bailiffs, a recorder, a crier, and two constables. The recorder and crier are appointed by the lord of the manor; the crier annually nominates the bailiffs, and the constables are appointed by the jury at the court-bast. The functions of these officers are business.

The living is a rectory and vicarage of the yearly value of 25£, with a glebe-house, in the gift of the bishop of St. Asaph.

There were in the parish in 1831 one national school with 134 scholars, and five Sunday-schools with 435 scholars. Caerwys is in the hundred of Mold, a mile and a half or two miles from the south bank of the Dee, on the road from Chester to Holywell, seven miles from Chester, and 153 from London. The name Caerwys is Saxony, and the town was probably, at the time of the residences of Edwin, earl of Mercia. There was a castle here at a very early date: it was the residence of the kings of Mont-Alto or Mold, towards the powerful earls of Chester. This castle was destroyed, probably by Llewellyn, in the 13th century, but still remains, but 120 feet above the night of Palm Sunday, 1262, during a tempest which favoured the design, it was stormed by David, brother of Llewellyn, in their last struggle with the English. In the civil war of Charles I. it changed masters more than once, and was at the close of that contest dismantled. The remains of it are a fine circular tower or keep on the summit of a mound: this is the only part that is tolerably entire: there are no other remains except a few walls and the foundations of some rooms. The different parts of the fortress are such that at different times it is large and well built, and consists principally of one street nearly a mile long. The church is a plain but handsome building. The population of the whole parish in 1831 was 5414, of which less than one-half was agricultural: but the population of the second census was 5955, of which less than one-half was agricultural. The townships of Ewloe (Eulo) and Ewloe Wood are more populous than that of Caerwys. There are several coal-pits, brick and tile works, and potteries in the parish, and there are two lines of road for conveying the produce of these to the river. Upwards of 220 men are employed in the collieries. There are iron works and a laboratory for making Glauber's salts in the town. The market is on Sunday, and there are two yearly fairs.

The vestry, for the purpose of making the ecclesiastical jurisdiction, of the yearly value of 25£, with a glebe-house. There are places of worship for Wesleyan and Calvinistic Methodists.

There were in the parish in 1833 an infant or dame school with 72 children; an endowed grammar-school, and five other day schools with 783 scholars; and five Sunday-schools with 518 scholars.

**Divisions for Ecclesiastical and other purposes.**--The county of Flint is in the diocese and archdeaconry of St. Asaph, and in the ecclesiastical province of Canterbury, with the exception of the places mentioned below. It contains, as nearly as we can gather from a comparison of our authorities, thirty-three parishes or parochial chapels, of which six, viz. St. Asaph, Bangor, Bodfari, Erbipio, Isca, and Caerwys, extend into Denbighshire, Wrexham and Wrexford parishes, although extending into Flintshire, are not taken into the account, as they belong almost entirely to Denbighshire. Iscoyd (or Iscoy) chapelry is a dependency of the rectory of Malpas in Cheshire, in the diocese and archdeaconry of Chester, county of York, with which it is, as to the benefice, united. Penley chapelry is a dependency of the vicarage of Ellesmere in Shropshire, in the diocese, archdeaconry, and deanery of Salop; and Flint chapelry is a dependency of the vicarage of Northop; but these two (Penley and Flint) form distinct benefices. The chapelry of Overton is united with the rectory of Bangor; and the chapelyes of Buckley and Broughton with that of Hawarden; these are all in the diocese and archdeaconry of Chester; as are Doddleston, Whitchurch, and Worthenbury.

The number of benefices, deducting from the thirty-three parishes the chapelyes of Iscoyd, Overton, Buckley, and Broughton, and the fourteen country parishes of Cae-eyw, Cnill, and Whiteford, is thirty-two. Of these, one, Caerwys, is a rectory and vicarage united; twelve are rectories (including the three sinecures); twelve vicarages; and seven are perpetual curacies. The richest benefice is the rectory of Hawarden, the annual value of which is 294£, with a glebe-house; the next, the rectory of Bangor, the yearly value of which is 120£, also with a glebe-house; there are no other livings of so much as 100£ a year; there are one between 700£ and 800£; one between 600£ and 700£; one between 500£ and 600£; one between 400£ and 500£; four between 300£ and 400£; eleven between 200£ and 300£; four between 100£ and 200£; and four under 100£. Of one living (Hope) we have no return. The bishop of St. Asaph has twenty of the livings in his gift.

The county is included in the Chester court; the assizes and quarter sessions are held at Mold; but the county prison is still at Flint, the former county town.

Two members are returned from Flintshire, one for the county, and one for the boroughs. For the county boroughs, the principal place of county election is Flint; and the polling stations are Flint, Ruthenden, and Overton. The election of the members for the boroughs is held also at Flint.

**History and Antiquities.**--Flintshire, with the rest of North Wales, was conquered in the territory of the Ordovices, except those parts eastward of the Dee, which may be considered as having belonged to the Cornovii, who occupied the present county of Chester and much of the midland part of England. Pennant supposes that the county west of the Dee was occupied in the summer by the Cangi, Cenangi, or hordesmen of the Cornovii, who passed the winter in the peninsula of Wiral in Cheshire, between the estuaries of the Dee and the Mersey. From these Cangi, or Cornovii, the name of the county is derived. The town of Flint, which comprehended the three modern hundreds of Coleslill, Prestanyn, and Ruthenden, took its name; being derived from Teg, fair, Cang, the name of the people, and Lie, a place. In the Roman division of Britain the Ordovices were called Flitres, and in the modern division of the country, in that of Flanae Cenaridure. Two Roman stations are by antiquaries fixed in or closely upon the borders of this county, a Varis or Varis, at or near Bodfari (in the latter part of which name the Roman designation may be traced), and Bovis, or Bovius, near Bangor on the Dee. There seems reason to suppose that the Romans had posts at or near Flint, Mold, Caergwrle and Caerwys. It is probable that they worked the lead mines of the neighbourhood, and that the posts were established with the view of protecting the route to the lead-mines.

In the Saxon invasion Flintshire suffered. At Bancor or Bangor (the Roman Bovium) was a vast monastery.

**Bangor.**

The great dyke which Offa, king of Mercia, carried along the frontier of his own dominion and that of the Welsh, may yet be traced to the hills which skirt the valley of the Cwyd, running across the south-western part of Flintshire. The greater part of the county was on the Mercian side of the dyke. Wat's dyke, another antient rampart, is also well traced, and adduces strong correspondences of the Roman territory between the two sides is said to have been neutral.

About a year after Offa's death (a.d. 795) a fierce battle was fought within the border of the county in the marshes between Rhuddlan and the sea, between the Britons of Welsh and the Saxons: the former were defeated with dreadful slaughter and lost their king Caradoc: a plaintive
Welsh sir, Morth Rhuddlan, preserves the memory of this disastrous day. Immediately after the capture of Chester by Egbert of Wessex, Flintshire, destitute of the mountains and fastnesses which protected the other parts of North Wales, was easily overrun by the Saxons, who gave new names to the towns, villages, and hamlets, and many Saxons settled in the county in which they held lands under the governors or earls of Mercia. It appears however to have come again under the power of the Welsh princes, and was cruelly ravaged in the reign of Edward the Confessor by the Saxons under Earl Hold: it was recovered from the Welsh by Robert de Rotheland, (Rhuddlan) nephew of Hugh Lupus, earl of Chester, who refortified Rhuddlan Castle. In Domesday Book a great part of the county of Flint appears as a part of that of Chester, under the name of Ato cross hundred. A strong wall had been built with the help of the Saxons, under Englefield. In the time of the Domesday Survey there were only seven churches in the hundred, and the division into parishes had not yet been made. Ats Cross, from which the hundred took its name, was near the town of Flint. The pedestal was remaining in the earlier days of Mr. Pennant.

In the time of Henry II. the county appears to have fallen again into the hands of the Welsh, and was the scene of fierce contest when the English monarch attacked the principality of North Wales. He advanced from Cheshire into Flintshire. In the woody district of Coed Euol, near Hawarden, a detachment of his forces fell into an ambush formed by the sons of Owen Glyndedd, prince of North Wales, who encamped with his principal force near Basingwerk. The English were defeated with great slaughter, and pursued even to Henry's camp. The king himself was afterwards surprised in the defile of Colessell (Coleshill, near Flint), and with difficulty saved himself from defeat. He succeeded however in repelling the Welsh, and afterwards obliged Owain to retreat westward over the Clwyd into Denbighshire. In subsequent periods antecedent to the final reduction of the Welsh, Flintshire continued to be debatable ground, and was the frequent scene of petty hostilities. In 1252 the Welsh princes, Lleewyn and his brother David, rose in arms. David stormed Hawarden Castle, and in conjunction with his brother, invested Flint and Rhuddlan, the only places left to the English in the county: the former surrendered and the latter was hard pressed. The advance of the English under Edward the Younger, the face of affairs appeared favourable by them, and the siege of Rhuddlan raised, and the war carried westward into Caernarfonshire.

Flintshire appears to have been constituted a county in the time of Edward I.; it was part of the earldom of Chester, and long continued to be under the jurisdiction of the chief justice of Chester. The county and the borough of Flint, with its constitutions, received the privilege of sending representatives to parliament in the reign of Henry VIII.

In the civil war of Charles I. this county was the scene of contest. Hawarden Castle was held for the parliament, but was in 1643 taken by capitulation by the royalists. In the same year Flint Castle, which had been garrisoned for the king, was obliged to surrender to a parliamentary force under Sir William Bretenon and Sir Thomas Middelton. It fell however again into the hands of the royalists. In 1645 Hawarden was retaken by the parliamentarians; and in the following year both Flint and Bishop Castle fell into their hands. All these castles were ordered by the parliament to be dismantled.

Among the remains of past ages the castles are the principal: those of Flint, Mold, Caergwrle, Rhuddlan, and Hawarden have been already noticed; the others are Ewloe and Basingwerk. The ruins of Ewloe are on the edge of a wooded dingle. It consists of two parts, an oblong tower, rounded at the side and guarded on the accessible places by a strong wall at some distance from it; and an oblong gateway, with remains of a circular bastion on each side of it. The towers are overgrown with ivy, and command a view of three deep and gloomy wooded glens. The only vestiges of Basingwerk castle appear to be the foundation of a wall on the verge of Offa's Dyke, in the parish of Holywell.

Of the ancient religious edifices the principal are the cathedral of St. Asaph [St. Asaph]; the churches of Mold (described above), and Northop, near Flint; the abbey of Basingwerk, and the chapel over the celebrated spring at Holywell. [HOLYWELL] Northop church is in the perpendicular English style, and has a lofty, handsome, and well-proportioned tower. Basingwerk Abbey is of ancient but uncertain foundation. Bishop Tanner ascribes it to the Conchfad, second bishop of Llandaff, to Henry II.; Mr. Pennant thinks that its foundation was yet older date, and probably due to one of the Welsh princes. The monks were of the Cistercian order, and their yearly revenues at the dissolution were 1571. 15s. 2d. gross, or 1587. 7s. 3d. clear. Henry II. established here a house of Knights Templars. The remains consist of the refectory, the chapel of the Knights Templars, and some remains of offices. The refectory is pretty entirely; the Templars' chapel is spacious, with long narrow and pointed windows, and slender and elegant pilasters between them on the inside. The architecture is generally in the early English style, but some part of the remains have the short columns and round arches of the Norman style. (Arrowmith's Map of England and Wales; Walker's Map of Wales; Conybeare and Phillips, Outlines of the Cest. of England and Wales; Pennant's Tour in Wales; Beauties of England and Wales; Parliamentary Papers.)

**STATISTICS.**

**Population.**—Flintshire is, except in one or two localities, principally an agricultural county. Of 14,234 males twenty years of age and upwards, inhabitants of Flintshire in 1831, there were 6649 engaged in agricultural pursuits; 630 in manufacturing, 330 in mining, and 3597 labourers employed in labour not agricultural. Of the 930 employed in manufactures, 256 were inhabitants of the town of Holywell, and were engaged there in the manufacture of silk and cotton goods, in making paper and manufacturing iron, copper, brass, and lead; about 230 were employed principally in the cotton manufacture; and about 40 weavers were scattered throughout the county.

<table>
<thead>
<tr>
<th>HUNDREDS, &amp;c.</th>
<th>HOUSES.</th>
<th>OCCUPATIONS.</th>
<th>PERSONS.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coleshill</td>
<td>2,239</td>
<td>2,313</td>
<td>6</td>
</tr>
<tr>
<td>Mold</td>
<td>2,007</td>
<td>2,126</td>
<td>9</td>
</tr>
<tr>
<td>Prestatyn</td>
<td>2,849</td>
<td>2,896</td>
<td>22</td>
</tr>
<tr>
<td>Rhuddlan</td>
<td>1,863</td>
<td>1,899</td>
<td>9</td>
</tr>
<tr>
<td>Holywell (town)</td>
<td>1,790</td>
<td>1,875</td>
<td>5</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>11,716</td>
<td>12,135</td>
<td>64</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year of Age</th>
<th>Male.</th>
<th>Female.</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-30 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31-40 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41-50 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>51-60 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>61-70 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>71-80 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>81-90 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>91 years and over</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The population of Flintshire each time the census was taken in the present century was—

<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></td>
<td></td>
<td>39,622</td>
<td></td>
</tr>
<tr>
<td>1811</td>
<td></td>
<td></td>
<td>46,514</td>
<td>17.40</td>
</tr>
<tr>
<td>1821</td>
<td>26,733</td>
<td>27,051</td>
<td>53,784</td>
<td>16.62</td>
</tr>
<tr>
<td>1831</td>
<td>29,924</td>
<td>30,083</td>
<td>60,007</td>
<td>11.58</td>
</tr>
</tbody>
</table>

Showing an increase between the first and last periods of 28,300, or nearly 51% per cent., which is 4% per cent. below the general rate of increase throughout England.

County Dangers, Crime, &c.—The sums expended for the relief of the poor were—

<table>
<thead>
<tr>
<th>Year</th>
<th>£</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1811</td>
<td>19,144</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>1821</td>
<td>19,170</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>1831</td>
<td>26,329</td>
<td>6</td>
<td>10</td>
</tr>
</tbody>
</table>

The sum expended for the same purpose in the year ending March 1816, was 16,050l. 3s.; and assuming the same rate of increase in the population since 1831 as in the ten years preceding that period, the above sum gives an average of rather more than 3s. for each inhabitant. All these averages are below those for the whole of England and Wales.

The sum raised in Flintshire for poor-rate, county-rate, and other local purposes, in the year ending the 29th of March 1833, was 29,191l. 1s., and was levied upon the various descriptions of property as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>£</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>On land</td>
<td>24,250</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Dwelling-houses</td>
<td>2,176</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Mills, factories, &amp;c.</td>
<td>941</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Manorial profits, navigation, &amp;c.</td>
<td>823</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

The amount expended was—

<table>
<thead>
<tr>
<th>£</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>22,337</td>
<td>19</td>
<td></td>
</tr>
</tbody>
</table>

In suits of law, removals of paupers, &c. 1,159 19

For other purposes— 4,978 15

28,487 13

In the returns made up for subsequent years, the descriptions of property assessed for local purposes are not distinguished. The sums raised in the years 1834, 1835, and 1836 were 26,962l. 1s. 4d., 24,215l. 12s., and 21,032l. 13s., respectively, and the expenditure was as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>£</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1834</td>
<td>18,352</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>1835</td>
<td>19,229</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>1836</td>
<td>23,153</td>
<td>6</td>
<td>15</td>
</tr>
</tbody>
</table>

For the relief of the poor— 13,950 16

In suits of law, removals of paupers, &c. 1,055 19

Payment towards the county rate 3,026 2

2,441 12

Total money expended 36,838 16

The whole saving effected in 1836 as compared with 1834 was therefor 4,312l. 16s., or not quite 16% per cent.; and the saving in the expenses for the relief of the poor was 3,485l. 13s., or rather more than 17% per cent.

The county expenditure in 1834, exclusive of the relief for the poor, was 31,290l. 14s. 9d., disbursed as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>£</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridges, building, and repairs</td>
<td>694</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>Gaols, houses of correction, &amp;c., and maintaining prisoners, &amp;c.</td>
<td>731</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Shire-halls and courts of justice, building, repairing, &amp;c.</td>
<td>709</td>
<td>17</td>
<td>2</td>
</tr>
<tr>
<td>Prosecutions</td>
<td>525</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>Clerk of the peace</td>
<td>141</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Conveyance of prisoners before trial of transports</td>
<td>32</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Vagrants—apprehending and conveying</td>
<td>34</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Coroners</td>
<td>130</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>291</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

The number of persons charged with criminal offences, in the three septennial periods ending with 1820, 1827, and 1834, were 84, 57, and 171 respectively; making an average of 12 annually in the first period, of 13 in the second period, and of 24 in the third period. The number of persons tried at quarter-sessions, in respect to which any costs were paid out of the county-rate in the years 1831, 1832, and 1833, were 14, 6, and 13 respectively.

Of this number there were committed for—

<table>
<thead>
<tr>
<th>Type</th>
<th>1831</th>
<th>1832</th>
<th>1833</th>
</tr>
</thead>
<tbody>
<tr>
<td>Felonies</td>
<td>13</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Misdemeanors</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

The total number of committals in each of the same years were 14, 6, and 13 respectively; of whom 1831. 1832. 1833.

The number convicted was 14 5 12

Discharged by proclamation 1 1

At the assizes and sessions in 1836 there were 31 persons charged with crimes in this county. Of this number 10 were charged with offences against the person, 4 of which were for common assaults; 1 for an offence against property, committed with violence; 15 with offences against property committed without violence; and 5 for poaching. Of the whole number of offenders 21 were convicted and 1 acquitted, or no bill found against them. Of the number convicted 1 was transported for life and 3 for 14 years; 6 were imprisoned for one year and 10 for six months and under.

Of the total number of offenders, 28 were males and 3 females. Among the whole number one had received superior instruction; 2 could read and write well; 18 could read and write imperfectly; and 10 could neither read nor write. The proportion of the offenders to the population was, in 1836, as in 1824, assuming that the population has increased since 1831 in the same proportion as it had done during the ten preceding years.

The number of persons in confinement in the county gaol at Michaelmas, 1836, exclusive of 2 debtors, was 9, viz.:

<table>
<thead>
<tr>
<th>Type</th>
<th>1836</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>8</td>
</tr>
<tr>
<td>Females</td>
<td>1</td>
</tr>
</tbody>
</table>

The whole of whom were above 17 years of age; 2 of them were awaiting their trials. The total number of persons committed to the gaol in the course of the year from Michaelmas, 1835, to Michaelmas, 1836, and the greatest number in custody at any one time was 18. Of the 9 prisoners above mentioned 2 had been committed once and 1 twice before; and 3 persons, probably three former offenders, were set to bad labour, "wheeling and bruising copper dross for road materials." The average cost per week of each prisoner for food and fuel was 2s. 2d.

The number of turnpike trusts in Flintshire, as ascertainment in 1834, was 14; the number of miles of road under their charge was 53; the annual income arising from the tolls and parish composition was 13,918l. 13s. 3d., and the annual expenditure 16,217l. 10s.

The number of persons qualified to vote for the county members of Flintshire was 2151, being 1 in 29 of the whole population, and 1 in 7 of the male population above twenty years of age. The expenses of the last election of county members to parliament were to the inhabitants of the county 74l. 9s. 8d., and were paid out of the county-rate.

There are four savings' banks in this county. The number of depositors and deposits in each of the following years ending 29th of November were:

<table>
<thead>
<tr>
<th>Year</th>
<th>Depositors</th>
<th>Deposits, £</th>
</tr>
</thead>
<tbody>
<tr>
<td>1833</td>
<td>1941</td>
<td>2116</td>
</tr>
<tr>
<td>1834</td>
<td>2116</td>
<td>2226</td>
</tr>
<tr>
<td>1835</td>
<td>2226</td>
<td>2445</td>
</tr>
</tbody>
</table>

The various sums placed in the savings' banks in 1835 and 1836 were distributed as under:

<table>
<thead>
<tr>
<th>Type</th>
<th>1835</th>
<th>1836</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depositors</td>
<td>60,943</td>
<td>65,067</td>
</tr>
<tr>
<td>Deposits, £</td>
<td>67,751</td>
<td>72,188</td>
</tr>
</tbody>
</table>

Education.—The following summary is taken from the parliamentary inquiry on education, made in 1845:

Schools. Scholars. Total.

<table>
<thead>
<tr>
<th>Type</th>
<th>1835</th>
<th>1836</th>
<th>1837</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants</td>
<td>62</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>Number of infants at such schools; ages from 2 to 7 years:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>62</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex not specified</td>
<td>55</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Assuming that the population between the ages 2 and 15 has increased in the same proportion as the whole population since 1821, we may by approximation suppose that the number of children between those ages in Flintshire, in 1834, was 21,162. A large number of scholars attend both daily and Sunday-schools, but how far duplicate entry has been thus made is uncertain. Eight schools, containing 169 children, are both daily and Sunday-schools, therefore so duplicate entry is known to have been created. Most of the schools are full of adult and aged persons as well as children; some are said to remain in them up to the time of their death. Making allowances therefore for these two causes of uncertainty, we may conclude that perhaps not more than three-quarters of the children between 2 and 13 years of age were receiving instruction in 1834.

Maintenance of Schools.

<table>
<thead>
<tr>
<th>Description of Schools</th>
<th>By endowment</th>
<th>By subscription</th>
<th>By parishes &amp;</th>
<th>By other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant Schools</td>
<td>18</td>
<td>78</td>
<td>7</td>
<td>179</td>
<td>270</td>
</tr>
<tr>
<td>Daily Schools</td>
<td>19</td>
<td>79</td>
<td>14</td>
<td>1,043</td>
<td>1,143</td>
</tr>
<tr>
<td>Sunday Schools</td>
<td>88</td>
<td>104</td>
<td>11</td>
<td>1,613</td>
<td>1,832</td>
</tr>
<tr>
<td>Total</td>
<td>175</td>
<td>262</td>
<td>22</td>
<td>4,499</td>
<td>5,215</td>
</tr>
</tbody>
</table>

The schools established by Dissenters included in the above statement are:

**Schools.**

- Infant schools
- Daily schools
- Sunday schools

The schools established since 1818 are:

**Schools.**

- Infant and other daily schools
- Sunday-schools

Two boarding-schools are included in the number of daily schools as given above. No school in the county appears to be confined to the members of the Established Church, or of any other religious denomination, such exclusion being disclaimed in almost every instance, especially in schools established by Dissenters, with whom are here included Wesleyan Methodists.

A leading library of books is attached to one school in Flintshire.

**FLINT-SLATE, or SILICIOUS SCHISTUS.** is a substance which is found chiefly in beds in transition mountains, and it occurs in Saxony, the Harz, Bohemia, &c. It occurs also in Scotland, in the Pentland and Muirfoot Hills, and in the Isle of Skye, &c. This substance is of various colours, grey, bluish-grey, and red; its structure is rather slaty; on the edges it is translucent; it is dull, or only glittering; hard, and broken with difficulty.

It contains about 75 per cent. of silica, the remainder being lime, magnesia, and oxide of iron. The flint-slate or Lyonsian stone, is considered to be a variety of flint-slate; it has not however a slaty structure, and is not so hard as flint-slate. It occurs in Bohemia and Hungary, but was first brought from Lydia in Asia Minor, whence its name.

It is employed, when polished, for trying gold by a comparison of colours, and has thence obtained the name of touchstone.

**FLOOD FIELD.** [James IV.]

**FLOK.** [Anchor.] FLOKRA, in the Roman mythology, was the goddess of spring and of flowers, and the wife of Zephyr. Flokra was also the assumed name of a Roman courtesan, who instituted certain games or festivals called Flokalia, which were celebrated at the time of the spring, and in which women and boys of character performed dances and mimic fights, throwing beans and chick-peas among the crowd. Instead of the fights of wild beasts, hares and rabbits were exhibited and chased about on those occasions. The Eddiles presided at these games. (Gislers lies at v. 14.) The ground on which the games were performed is still called Campo di Fria, and forms one of the squares of modern Rome, and serves as a market-place. Some pretend that the Flok who bequeathed this ground to the Roman people was a mistress of Pompeii, and remains of whose tombs are still preserved in the region. But the floral games were instituted long before Pompey, at the beginning of the sixth century of Rome.

Flokra's games, 'jeux floraux,' was the name given to the poetical assemblies and competition for prizes held at Touls, [Clémence Isaure].

**FLORENCE.** Province of (Compartimento di Firenze), one of the five provinces into which Tuscany is divided, is bounded on the north by the province of Bologna in the Papal State, on the north-east by the province of Arezzo, on the south by the Tuscan province of Siena, and on the west by that of Pisa and by the duchy of Lucca, and north-west by the duchy of Modena. Its greatest length from east to west is about 70 miles, and its breadth about 60: its area is reckoned at 3,600 square miles, of which 600 are forests, and its population is 651,000. (Reperti, Dizionario geografi della Toscani, 1837.) The surface of the country is in great measure mountainous, being intersected from north-west to south-east by the central Apennine range. That part of the province which lies on the north slope of the Apennines is named Romagna Granducia, and consists of high lands and narrow valleys, which form the beds of numerous rivers that flow towards the Adriatic. The greater and by far the finest part of the province of Florence lies south or rather south-west of the Apennine chain, and consists of the terraced valley of the Arno, which crosses it from east to west, and of numerous lateral valleys which follow the course of the rivers that flow into the Arno. The principal of these valleys on the left bank of the Arno are: 1, the Val di Grove, below Florence; 2, Val d'Elsa; 4, Val d'Era, on the borders of the province of Pisa; on the right bank of the Arno are: 5, the Val di Sieve, called also Mugello, north of Florence; 6, Val di Bisenzio or of Prato; 7, Val d'Ombrone or of Pistoia; 9, Val di Nievole, near the borders of the province of Lucca, the Florentine territory includes part of the Val di Lima, which is a tributary of the Serchio, and at its southern extremity it extends over part of the valley of the Ceccina, a river that flows into the Mediterranean through the valley of Pisa, and forms a great bend with a width of 120 feet, and abundant pasture. The farms are generally very small, and are mostly planted with chestnut and timber trees, and afford abundant pasture. The farms are generally very small, and are mostly planted with chestnut and timber trees, and afford abundant pasture. The farms are generally very small, and are mostly planted with chestnut and timber trees, and afford abundant pasture. The farms are generally very small, and are mostly planted with chestnut and timber trees, and afford abundant pasture. The farms are generally very small, and are mostly planted with chestnut and timber trees, and afford abundant pasture.
towns, kept by the Scolti, the Brothers of S. Filippo Neri, and other religious congregations. Lancasterian schools, holiday schools, and infant schools have been established of late years, through the exertions of benevolent individuals, among whom the Abate Lambroscotio, a valiant former of Lancaster schools. Upon the whole, although there are still many illiterate persons in the country, a general refinement of manners and address, and a quickness of perception and justness of reasoning, are prevalent, to which the kind and friendly intercourse which exists between landlords and tenants, as well as the universally established use of the same oral and written language which is spoken with nearly equal purity by all classes of persons.

For administrative purposes the province of Florence is divided into 25 districts called comuni, which contain almost all the cities, towns, and village communes, having each a gonfalone and a communal council. The districts have each a political governor, called cencielliere, and they are named from their chief towns as follows:—1. Bagno in the valley of the Sasso, near the baths of Papal Romagna, contains two communes and 7515 inhabitants; 2. Galeata in the valley of the Bidente or Rome, two communes and 4333 inhabitants; 3. Rocca S. Cassiano in the valley of the Ravelli and Montone, five communes and 11,528 inhabitants; 4. Terra del Sole in the valley of the Montone, one commune and 3905 inhabitants; 5. Molignana in the valley of the Marzana near the borders of Faenza, one commune and 4810 inhabitants; 6. Marradi in the valley of the Lamone, two communes and 1650 inhabitants; 7. Firenzuola in the valley of the Lari, one commune and 1116 inhabitants; 8. Montignano, the old road from Florence to Bologna passed through it. All the above districts are north of the Apennine chain. On the south side of the mountains are:—8. Scarperia in the valley of the Upper Sieve or Mugello, containing five communes and 4960 inhabitants; 9. Popolano, the Middle Sieve, with four communes and 26,344 inhabitants; 10. Pontassieve at the confluence of the Sieve with the Arno, three communes and 18,575 inhabitants; 11. Ficline in the Valdarno above Florence, three communes and 9824 inhabitants; 12. Faenza with 95,927 inhabitants; 13. Fiesole eight communes and 52,282 inhabitants. The town of Fiesole is much decayed, and hardly contains 3000 inhabitants. It is a bishop's see, and has a remarkable cathedral and several other churches, notably the church of St. Galgano. The south of Florence contains six communes and 52,177 inhabitants; 15. San Cassiano in the Val di Greve, three communes and 25,900 inhabitants; 16. Castelfiorentino in the Val di Elsa, three communes and 20,114 inhabitants; 17. Empoli in the valley of the Lince, with 29,064 inhabitants. Empoli is a thriving well-built town on the left bank of the Arno, in a very fertile country; it has several manufactories of cotton, leather, glass, and 5500 inhabitants. 18. San Miniato, below Empoli, one commune and 11,076 inhabitants; 19. Gaiole in the middle valley of the Arno, with 11,233 inhabitants; 20. Volterra, between the Era and the Cecina, two communes and 43,409 inhabitants [VOLTERRA]; 21. Fucecchio on the north bank of the Lower Arno, with two communes and 16,790 inhabitants; and Pescia in the Val di Nievole, four communes and 18,173 inhabitants; 23. Monte Catuni in the same valley, two communes and 10,549 inhabitants; 24. Buggiano also in the Val di Nievole, two communes and 11,904 inhabitants; 25. San Gimignano in the valley of the Lima, among the towers and ramparts of which are contained the communes and 10,140 inhabitants; 26. Pistoja has five communes and 43,333 inhabitants; 27. Potestiere di Pistoja, which include seven communes formerly subject to that town; 28. Empoli, the ancient city of Empoli, which was once a commercial centre of the cathedral and baptism is given by Grigil, Descrizione dell'evigine Fabbrica di S. Maria del Fiore, Firentana Fiorentina, 2nd edition, 1758; and there are splendid engravings of it in the work recently published in Florence, Illustrazione Storica del Palazzo della Signoria detta Palazzo Vecchio, or town-house, which was the seat of the government of the Florentine republic, a square massive-looking structure surrounded by a tower 260 feet high, from which the great bell used to toll to assemble the citizens or call them to arms. The square in front is adorned with a noble fountain and with marble and bronze statues. A description of this palace is given by Rastrelli, Illustrazione Storica del Palazzo della Signoria detta Palazzo Vecchio, Florence, 1792. 2. Between the Palazzo Vecchio and the Arno is the Ponte Vecchio, with arcades forming three sides of an oblong court 100 feet in length, raised by the Grand Duke Cosimo I. The first story is occupied by the archives, the treasury and the capable Museum, which contains 150,000 printed volumes and 12,000 MS. The second story contains the celebrated gallery, or museum, formed by the Medici, which is one of the richest existing collections of sculptures, medals, cameos, bronzes, paintings, and pictures, printed books, coins, and MSS., most of which with plates have been repeatedly published. 4. The Church of San Lorenzo, built by Brunelleschi, the numerous altars of which are adorned with paintings of Florentine masters. In the body of the church is the modest tomb of the elder Lorenzo de' Medici, son of Cosimo, master painter. Lorenzo married his father, Giovanni, the princely merchant, the head of his family and the founder of this church; and in the new sacristy are the celebrated monuments of Giuliano de' Medici and of Lorenzo Duke of Urbino, by Michel Angelo. Behind the choir of the church is the sepulchral chapel of
the grand dukes of the house of Medici, rich in marble,asper, agate, lapis lazuli, and other valuable stones, on which account it has received the name of 'Cappella delle Pietre dure,' but it is much inferior in the taste and work- 
ma nship of its paintings, which are inferior to the marble monuments of Michel Angelo in the neighbouring sacresty. Annexed to the church is the building begun by Michel Angelo and finished by Vasari, containing the valuable library of MSS. called Laurentiana, collected in great part by Cosmo, Lodovico and Lorenzo de' Medici and brought to Rome after the sack but considerably increased since. Bandini has published the catalogue of the Greek, Latin, and Italian MSS.; and Beschi and Asseremi those of the Hebrew and Oriental ones. 5. The Church of Santa Croce is remarkable chiefly for being the place of the burial of St. Francis and St. Dominick. It is occupied by a Jesuit college, and contains a museum of the old masters and stern Florentine architecture; the modern palaces Corsini, Bor 
che, and many others; the churches of San Marco, Santa Maria Novella, l'Annunziata, Ognissanti, etc.; the two principal theatres; the Academy of the Fine Arts; the hospitals; and the public walks outside the gates, all of which have been described in separate publications. For a gene 
ral description of the remarkable objects in Florence, see Guida della Città di Firenze, 1822; and Scelta di 24 l'edila dalla storia del Contado Fiorentino, Città, Chiese e Palazzi di Firenze, desiguate da Zocchi, in fol.

Florence contains many charitable and other useful institu 
tions. There are nine elementary schools for boys, besides the schools kept by several religious congregations; four seminaries, and besides these the institutions which 800 girls are boarded and instructed, and provided for when they leave the house; besides orphanages for the orphans, the blind, the deaf and dumb, and other unfortunate persons; and 'confraternities,' or associations of chari 
tables, for the poor, and others. When the government has provided for the medical and surgical treatment at the hospital of Santa Maria Nuova is one of the best medical schools in Italy. The principal academies are that of La Crusce, that of the fine arts, which reckons several distin 
guished members, and the Academy for the wool trade, the sculptors, and the engraver Monghè, and the Academy dei Georgodì, which encourages agriculture, and publishes a quarterly journal, called 'Giornale Agrario Toscano.'

The state of education among the Florentines is no 
t forwards. Teachers are among the best in Italy. The popu 
lar may also consult on this subject a very full article, State of Education in Tuscany in the year 1836, in No. III. of the Journal of Education. The people of Florence are civil, industrious, sober, steady, economical even to parsi 
mony; the capital city of Tuscany, and among the Tuscan nobility are many individualists distinguished for their learning, and for the liberal with which they exert themselves in promoting useful and charitable institutions, such as schools, savings' banks, and works of public utility.

Florence is the most pleasant place of residence in all Italy. Strangers have also the advantage of the best reading-rooms in the whole peninsula, which are supplied with foreign journals and literary novels.
having broken his faith to her and married another of the family of Donati. The Uberti and their relatives stabbed the promise-breaker in the street. The citizens took part, some with the Uberti, and others with the Buonincontri. As the Uberti were partisans of the emperor Frederick II, the two parties assumed the respective names of Guelfs and Guidelins, and the private feud was mixed up with the great quarrel which then divided all Italy. In the course of this struggle, some parties, sometimes one, sometimes the other, the leaders of the losing faction generally left the town to return at the first opportunity. The majority of the citizens however were Guelfs, and their party predominated in the town when the emperor Frederick II died in 1250. Emboldened by this event, the Guelfs of Florence, not content with ruling over their community, sent forces against Pistoia, Pis, and Sienna, which belonged to the Guidelins party. The Guidelins, defeated the Pisans, made an incursion into the valley of Mugello against the Ubaldini, who, as well as the Guidelins, were great Guelfish feudatories in the Apennines, and sent another force into the Valdarno against the Florentine enmigrants who had gathered there. All this occurred in 1252, which was thenceforth remembered by the Florentines as 'the year of victory.' In 1254 they took Volterra, this was to Florence a period of great success, and it was then that they first coined their golden florins, of twenty-four carats, and of the weight of a drachm, bearing the impress of John the Baptist, the patron of Florence, and a lily, the device of Ubaldini. These moneyers were considered the first mint. It was about this time that the government was re-formed. Instead of the consuls of the trade, a council of twelve anziani, or elders, was appointed, one for each district of the town, who were all citizens, and in some other towns whose decisions were without appeal. Another stranger was chosen as captain of the people, or commander of the militia, composed of the citizens formed into companies under their respective gonfalonieri, or standard-bearers. These last offices were renewed every two years, and sometimes yearly. It was at that time a prevailing custom of the Italian cities to choose their podesta from among strangers, to avoid the risk of partiality arising from connexion and friendship; but the temptation of bribery or office was too strong.

Meantime the Guidelins emigrants had gathered at Sienna, and being supported by Manfred, king of Naples, they took the field under Farinata degli Uberti, an able leader, who surprised the Florentines and other Guelfs of Tuscany, at Montepulciano, on the boundaries of Sienna, on the 4th September, 1256, and completely defeated them, with the loss of 10,000 killed and a number of prisoners. The Guelfins entered Florence in triumph. The principal Guelfs who survived fled to Lucera, where they were received by the pope. The Guelfs were outraged by this new magistracy formed among the Guelfins party, who took the oath of allegiance to Manfred. At a general diet of the Guelfin cities, held soon after at Em- piry, it was proposed to make Florence the capital, and distribute the inhabitants among other towns, as the bulk of the population was too much Guelf to be trusted; but Farinata indignantly resisted the proposal, saying he would sooner join the Guelfs than see his native town destroyed; this threat had its effect, and Florence was saved. Dante has praised Farinata for this patriotic act, in which the feelings of the citizen rose above the passions of the partisan.

In 1253 the defeat and death of Manfred, at Benevento, turned the scale against the Guelfins. The Florentines in the following year drove away the garrison left by Man- fred, and offered their allegiance for ten years to Charles of Anjou, king of Naples, who sent them 800 French horsemen under Gai de Montfort as his vicar. A new organization of the government took place, which was divided among several councils. There were the Buo- nomini, who were to give their opinion first on every new measure, law, or tax proposed, after which the measure, if approved by them, was laid before the council of 300, or the 'trust,' a sort of senate composed of the gonfalonieri of the different trades, and the council of 200, to which deliberated the secret, and from them the motion came before the council of 300, consisting of deputys from all classes of citizens, presided over by the podesta, which gave its final sanction. The mode of electing these various councils is not very clearly ascertained. There was also much confusion between the legislative and judicial powers in all the Italian cities, and the laws and customs were generally so barbarous and cruel to the poorer classes that the councils, at least, and the city doctors, were constantly striving to make new laws. (Sismondi's Italian Republics; Hallyan's Middle Ages; also an article in the Foreign Quarterly Review, xxiv, October, 1833, on the History of Modern Italian Freedom.)

In the expedition of Conradin gave a momentary preponderance to the Guelfins, but they were soon repelled again from Florence. In 1273, by the mediation of the pope, peace was made between the two parties, and the Guelfins were recalled, but this harmony did not last long. In 1290 the Guidelins were in power in Florence, and Nicholas III made a new peace; the more violent Guelfins were banished for a time, but their property was restored to them, and the rest of their party were allowed to return, and to participate in the offices of the state. But the Guelfs being stronger, did not let up their promises towards Conradin. From this epoch and for the next thirty years we have a faithful guide among the intricacies of the internal feuds of Florence in the chronicler Dino Compagni, from whose brief account of those transactions in which both himself and the poet Dante acted a part, is given under the head Dante. The institution of the Priori, or supreme executive magistrates, who were chosen from among the higher trades, one for each district or ward of the city, and served every two months, dates from this epoch, and lasted till the end of the 14th century. In all these changes of office no title of nobility conferred upon them, whether Guelf or Guidelin, were declared to be excluded for ever from the higher offices of state. They formed the class called De Grandi, and were 33 families, mostly Guelfs, as the Guelfins were the nobles of the Florentine state, and administered justice, and were free from the, by this occasion that the plebeians of Rome aimed at shaming the offices and honours of the state in common with the patricians, an aim just and reasonable, and in which they succeeded, while those of Florence fought in order to monopolize the government, to the exclusion of the nobles, which made the latter more desperate, and led to a perpetual recurrence of slaughter, banishment, and confiscation. (Istorie Florentine, proemio, lib. iii.) But Machiavel seems to have overlooked the difference in the constitution of two cities: at Florence the original inhabitants, while at Florence the nobles were met of them originally strangers who had asked for and obtained the freedom of the city, or citizen families who had obtained titles of nobility from the emperors or other foreign rulers. After the death of the Arno, which separated Florence from the Medici, the rich cloth-manufacture was no longer carried on, the wealth of the city was divided between the rich and poor. The ruin of the city, the banishment of the former, the Florentins besieged Tuscany, by famine in the year 1366. The siege was attended with circumstances of the greatest atrocity, like most of the wars of the Italian cities in the middle ages, and lasted till the late of August, 1369, and ended with the death of Ugolino della Faggiolina, at the head of the Guelfins, completely defeated the Florentins. Joining the other Guelfins of Tuscab, at Monte Catini, in the Vale of Niccolle. But Ugolino himself being driven from Florence had to travel to Rome to escape from its loss. Ugolino was succeeded in the command of the Florentines of Tuscany by Castruccio Casta- tracani, lord of Lucera, who took Pistoia, and defeated the Florentins in a pitched battle at Altapasa, near Faenza, on the 2nd of July, 1354. Castruccio ad- vanced to within mile of Florence, and had the bishop of Arezzo join him with his forces, he would have taken the town. But the Florentins received timely assistance from the Arno, by whose intervention they were saved. In 1365 broke the love of the Florentins, who came to Italy to support Castruccio and were divided among conflicting parties, in which the Arno carried away three bridges, part of the wall, most of the streets of Florence under water, and caused heavy damage. Some years afterwards two more commercial
companies, Peruzzi and Bardi, failed in consequence of the loss of 1,365,000 golden florins, being capital and interest of sums which they had advanced to Edward III. of England, and which he was unable to repay.

The Florentine state, however, was the source of the extraordinary wealth and resources of the Florentines. These sources were twofold, the numerous manufactories at home and the trade and banking speculations carried on by Florentine merchants abroad. Among the manufactures the most important were those of woolens, silk, and jewelry. The citizens of Florence were classed from 1266 into 12 arti, or companies of trades or professions, seven of which were called arti maggiori, namely—1. lawyers and attorneys; 2. dealers in foreign stuffs; 3. bankers and money-changers; 4. woolen manufacturers and drapers; 5. silvers and apothecaries; 6. silk manufacturers and mercers; 7. furriers. The arti minori, or other trades, were originally five—retailers of cloth, smiths, shoemakers, butchers, carpenters, and masons; but they were afterwards increased to 14. Every citizen who wished to be eligible for office was required to inscribe his name on the rolls of one of the trades. Dante had inscribed on the roll of the apothecaries, although he never exercised that profession.

Of the importance of their foreign trade, and the influence which the Florentine merchants or bankers had attained in foreign countries, we have a proof in the fact, that when Pope Boniface VIII. after his election, received the congratulatory addresses of foreign states, it was observed that no less than 12 envoys accredited to him on that occasion were citizens of Florence, on which Bankers, Merchants, and Apothecaries. The Florentines constituted the fifth element of the conversation.'

Their armies, especially when upon a long expedition, were chiefly composed of mercenaries and auxiliaries, and mostly commanded by a foreign captain, or condottiere, by whom the men and taxes of these towns and districts subject to Florence retained their local statutes, and elected their own magistrates, like the municipia subject to ancient Rome, but they had no share in the central government of the republic.

Companies of tile condottieri and an unfortunate campaign against Pisa made the Florentines look out again for a foreign protector. King Robert of Naples sent them one of his officers, Gaultier de Brienne, of French extraction, but born in Greece, who bore the title of Duke of Athens, and who had already some years before come to the assistance of Florence against Castruccio. Many of the citizens, weary of civil feuds, contrived to have him elected by acclamation lord of Florence for life, in 1342, thus superseding the ordinary government of the Priories and Consilioria. It has been alleged that they elected a foreigner, in order to procure a check to the ambitions of the wealthier popular families who had till now kept the government in their own hands, and who were envious both to the nobles who were excluded from office and to the inferior orders who attributed to them all their troubles. The rule of the condottiere was for a few years glorious, but in his reign, his sentences were rarely executed. In the course of ten months he contrived to draw 90,000 golden florins, which he transmitted to Naples. He soon incurred the hatred of all parties, and having conked for the 26th July, a number of distinguished citizens consulted with them on the affairs of state, but really for the purpose of putting them to death, the people, who were already prepared, rushed to the palace at the cry of 'popolo, popolo,' dispersed the duke's cavalry, and obliged him to fly. When the bishop of Florence had him conveyed safely with his men outside of the territory of the republic. Thus Florence recovered its independence, and the memory of that deliverance, called 'la Caccia del Duca d'Atene,' is still solemnized at Florence by the display of the flags of the various trades on the 26th of July.

It was now agreed that the grand, or antient nobles, should have a share of the offices of the state, but as they soon assumed too much, they were driven away again from the state. This state of things continued in the streets of Florence, in which the grandi were defeated and their houses plundered and burnt. This was the last struggle of the nobles at Florence. (Machiavelli, lib. 11.) But a few years after a new quarrel broke out between the houses of Pazzi and Strozzi. On the night of 6th February, 1436, the Pazzi, with the aid of the Ricci, who divided the city into two parties again. The Albizzi at length preponderated, and after exiling a number of citizens of the opposite party, they formed a government composed entirely of popolani grasi, or weathy citizens. The way in which the Albizzi, an the Medici after them, contrived to monopolize the power of the state, was by calling together the general assembly of the people in the great hall, being this a delibera of the people, by acclamation a Balla, or dictatorial commission. This commission appointed a permanent council, a sort of senate which chose the citizens whom it thought qualified to fill the principal offices of state. These general assemblies, called 'parliamenti,' were restricted to be in factus taxes and were exercised by the strongest or boldest faction. (Machiavelli, Istoria Fiorentina.) The lower trades, instigated by the Ricci and the Medici, who began at that time to court notice and popularity, broke out into insurrection in 1378, forced the republicans, burnt the archives, and after three days of anarchy, elected a woolcomber, Michele Landi, as chief magistrate. Landi, who was a man of natural good sense, succeeded in re-establishing order and checking the riots. After several years of troubles, the popolani grasi, with the Albizzi at their head resumed the power in 1382, and formed a new aristocracy, which succeeded in retaining the reins of the government for 52 years, not without occasional tumults, conspiracies, and insurrections, until the year 1400. From that year, Machiavelli says, the city remained internally quiet till 1435, the longest period of tranquillity which Florence had ever known. The state was fortunate in its external politics; its two most formidable enemies Gian Galeazzo Visconti, duke of Milan, and Ladislaus, king of Naples, being carried off, the former by the plague and the latter by a fall from a horse. That this was the way they were threatening Florence with destruction. The Florentines acquired possession, partly by force and partly by purchase, of Cortona, Arezzo, Livorno (Leghorn), part of the Romagna, and lastly of Pisa, which they took through fraud and force, in the month of September. Florence was now at peace, and the Florentines behaved with great humanity and even generosity in order to reconcile the Pisani to their yoke; but all the antient and most opulent families of that city emigrated to Lucca, Sardinia, and Sicily, the young men engaged in the free companies and condottieri, and Pisa, losing its independence, lost its commerce, its population, and its prosperity.

The administration of the Albizzi was overthrown by Cosimo de' Medici, a popular citizen and a princely merchant, in 1434. From that moment the history of Florence became closely connected with that of his house, and the sequel is given under the head Marsci.

The first house of Medici respected the republican forms, and were contented with exercising the chief influence in appointing from those forms. But the foreign wars which desolated Italy in the 16th century affected the fall of that republic, when a member of a lateral branch of the Medici, the line of Cosmo having become extinct, was placed by Charles V. as duke of Florence. (Pezzo l.) This new dynasty of Medici, who did not have a rule till the year 1737, when, becoming extinct, they were succeeded by Francis of Lorraine, afterwards emperor of Germany, and husband of Maria Theresa of Austria. (Tuscany.)

FLORES, an island 30 miles long, with a mean breadth of 9 miles, is one of the Azores, and situated in 39° 34' N. lat., and 31° W. long. It derived its name from the multitude of flowers with which it abounds. There are two small towns on the east coast, called Santa Cruz and Lagoa. There is little trade, but there is a great abundance of wheat and pulse; and a great number of horned cattle of small size are bred. The number of inhabitants is said to be about 1400.

FLORES, sometimes called Endé, is an island in the Indian archipelago lying between 9° S. lat. and 120° E. long., and between 123° W. long., is in the possession of the Portuguese, who have succeeded in bringing under the control of the many of the natives of the Catholic faith. This is the only part of the island in possession of Europeans. Endé was formerly subordinate to the Dutch residency at Coopang in the island of Timor;
but in 1812 the Bugis inhabitants succeeded in expelling all Europeans, and have since refused to hold any intercourse with them. The coast is mostly colonized by Bugis and Malays, but the interior is inhabited by aborigines, about whom and about their customs and institutions little is known. They more resemble in their persons the Papuans of New Guinea than any other inhabitants of the Eastern Archipelago.

FLORIAN, JEAN PIERRE CLARIS DE, was born of a noble family in the Château-Florian, in the Cevennes, in 1755. His early education was supervised by his grandfather; but, on his dying deeply in debt, Florian was obliged to look around him for some means of support. The Marquis de Florian, his uncle, who had married a niece of Voltaire's, took young Florian to Fontainebleau, where the philosopher soon recognized of his talents. He became in 1768 page of the Duc de Penthièvre, and finding that he had a passion for the army, that nobleman gave him a company of the dragons de Penthièvre. He shortly afterwards retired from military life, and, in order to the duke, who treated him as a friend. Having now an opportunity to devote himself to literature, he produced in 1783 the romance of 'Galatea,' in imitation of the novels of Cervantes. His mother being a Castilian, he was perfectly familiar with the Spanish language. 'Galatea' was followed by the well-known 'Numa Pompius,' published in 1786. The pastoral romance of 'Estelle,' which was produced two years afterwards, and was reckoned by critics his best production, caused but small sensation at the time. He also brought out a collection of little comedies, in the Italian style, with Arlechino for their hero, which were very successful. In 1791 he published his romance 'Gonzalez de Cordoue,' which was preceded by an historical notice of the Moors, which has always been well received. In 1795 he was sent from Paris by the decree published against the nobility, and retired to Sceaux, the inhabitants of which received him with cordiality, as he had always been, in conjunction with the Duc de Penthièvre, their benefactor. He was then almost 50 years of age, as the Port Libre, but he was soon liberated. His health was so affected by anxiety, that he died in 1794, having, during his incarceration, written the romance of 'Guillaume Tell.'

Florian seems to have been a writer who did little else than imitate, in an inferior manner, the authors who had preceded him. 'Galatea' is an imitation of Cervantes; 'Numa' of Fenelon's 'Telemaque,' and the fables, of those of La Fontaine. His fables, which are very neat and accurate descriptions; indeed, as a fabulist, La Fontaine is alone his superior. 'Numa' retains its place as a school-book. The translation of 'Don Quixote,' which is a posthumous work, is censured for its want of correctness. An honest man of talent and of devotion to be recorded—he devoted much of the profits of his works to paying the debts of his family.

FLORIDA was the name given by Juan Ponce de Leon to the continent of North America, from having discovered it on Palm Sunday (called in Spanish, Pasqua Florida) in 1512. During a great part of the sixteenth century the southern part of the eastern coast of North America continued to bear this name, which was gradually restricted to that portion of this coast now called Florida. This country is a territory forming a part of the United States and comprehends a peninsula, lying between 25° and 30° 45' N. lat. and 80° and 83° W. long., besides a tract of land extending along the northern shores of the Gulf of Mexico, between 29° 40' and 31° N. lat. and 83° and 87° W. long. The peninsula and adjacent country are called East Florida, and the remainder West Florida; the river Appalachicola being considered as the boundary between them. The length of the peninsula from Cape Sable, its most southern point, to the mouth of St. Mary's River, which is on the east side of Georgia, is about 80 miles, and the breadth is about the same towards its southern extremity; but the central part between Amaura River and Cape Romano is 129 miles wide. The tract along the Gulf of Mexico is 142 miles long by 80, and its width varies between 30 and 70 miles. The whole territory is calculated to be about 55,000 square miles, or somewhat more than that of England.

Opposite the southern extremity of the peninsula there is a series of keys (as they are called, a corruption of eagea) and islands, mostly covered with wood. They begin on the west with the Tortugas, and continue for some distance eastward, but afterwards turn to the north-east and north, and terminate in several small keys which are called the Florida Keys, are skirted towards the south and east by narrow reefs, called the Florida Reefs, and both the Florida Keys and the Florida Reefs may be considered as constituting in this place the left bank of the Gulf Stream, the beginning of which may be fixed between the Tortugas and the coast of Cuba, near the Havana. The Gulf Stream rapidly increases in velocity, and between Cape Florida and the Bimini Islands sometimes runs five miles per hour. It continues with nearly the same velocity along the eastern shores of Florida and towards the mouth of St. Mary's River. The whole of this coast is flat, and skirted by low narrow islands of sand, which lie parallel to the main land, and are separated from it by narrow and shallow lagoons, which cannot be navigated even by vessels of small burden. This coast is called the northern coast of the peninsula. The southern coast, or that of St. Augustine, has very little of this character, its extreme length, where that of St. Augustine has 10 feet, St. John 15 feet, and St. Mary's 20 feet water at high tides. The western coast of the peninsula and that of West Florida are also enclosed by elongated narrow sandy islands, though they do not form such a continuous barrier as along the eastern coast, some parts of the west coast being free from them. But this coast also has few harbours. Charlotte Harbour (between 26° and 27° N. lat.) has no great depth of water. Tampa Bay is spacious, and, it is said, admits vessels of the largest class. Pensacola, on the western coast, has 21 feet water on the bar, and from 23 to 36 feet in the interior, which is spacious and convenient. It admits vessels drawing 20 feet, and is the deepest port on the northern coast of the Gulf of Mexico.

The climate of Florida is very mild, and in the southern districts hot. South of 28° N. lat. snow is unknown, and frost, though occasional, is rare. The temperature of this region is such as to consist of a firm and constant thermometer generally rises to between 84° and 88°, and in July and August even to 94°. The climate of Florida, the proportion of good soil to bad is very small, and cultivation is confined to a few spots of moderate extent. In the northern part limestone is the prevailing rock, and some of the rivers run in different places for some distance under ground.

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The rivers which fall into the Gulf of Mexico rise either in Georgia or in Alabama. The most eastern is the Suwanee River, which rises in Georgia with two branches, the Alapaha and Suwanee, which unite in Florida and fall into the Gulf of Mexico at the northern extremity of the peninsula of Florida, after a course of upwards of 200 miles. Farther west is the Ocklawacknee, which also rises in Georgia: it runs about 135 miles. The next is the Apalachee, which, after a course of 210 miles before it joins the Chattahoochee, rises near 35° N lat., on the southern division of the high table-land of the Apalachian system, and runs first south-west and then south, in which direction it enters Florida, receiving on its boundary the Flint River, which great part of the State called the Perdido, is 350 miles long, and is navigable for vessels of considerable burden in all its extent. The united courses of the Chattahoochee and Apalachee is more than 350 miles. The Perdido is a small river, and only remarkable as a political boundary between Florida and Alabama.

Florida has a considerable number of lakes, the largest of which are in the swampy districts of the peninsula. The Lake of Masago (between 26° and 27° N lat.) seems to be the most extensive; but its dimensions have not been ascertained. Lake George, which is an expansion of the St. John's River, is 16 miles long and 12 wide; the depth of the basin is 140 feet. The closing of the lakes on the coast, where the limestone formation prevails there are also numerous lakes; but they are generally of small extent.

The climate of Florida is favourable to the cultivation of most of the productions of the West Indies, where the soil is more arid. Tobacco must be obtained in the case of many fruits, piled up in all the maritime parts, where the orange also, the lime, and the shaddock succeed. Cotton, rice, indigo, tobacco, Indian corn, and a great variety of fruits compose the most important cultivated vegetables of Florida. The forests are divided into the national districts, but the forests contain many other valuable trees.

Wild quadrupeds of the larger description are not numerous, except deer. Alligators, turtles, and snakes are very common. Fish is extremely abundant, and of great variety.

According to the census of 1830, the population of Florida consisted of 19,210 free people and 15,510 slaves. This scanty population of so extensive a country is explained by the circumstance of the inferior quality of its soil. But it must also be observed, that a large portion of the peninsula, along its western coast, is still in possession of an Indian tribe, the Seminoles, a branch of the once great and numerous nation of the Creeks. The number of individuals composing this tribe is said to be about 2,000. Two years ago they destroyed several plantations of the whites; and when an armed force was sent against them it was impossible to discover their lurking-places. This war is still going on, but is not maintained with vigour, but the Seminoles will probably keep possession of their territory, as it does not contain any extensive tract fit for cultivation.

Florida not having been received into the Union as a state, is only a territory, and in that capacity sends a delegate to Congress. Its capital, Tallahassee, a few miles from the river Ocklawacknee, contains about 1200 inhabitants.

The most important town is Pensacola, built on the bay of the same name: yet its population does not much exceed 2000 souls. St. Augustine, on the shores of the Atlantic, has a population of 2000. On the banks of the St. Johns, settlements of Greek emigrants were established by the English, called Anastasia and New Smyrna; but they no longer exist.

Further north is the fertile island of Amelia, on which is a small town called Fernandina.

Florida has had several revolutions. The first revolution was in 1512; the first Spanish settlement was formed in 1565 at St. Augustine, which town, therefore, may be considered as the oldest European settlement on the North American continent, except those on the Mexican isthmus. The Spaniards kept possession of Florida till 1763, when it was ceded to England. It was retaken by the Spaniards in 1781, and remained in their hands at the peace of 1783. In 1819, the United States, being desirous of possessing a country which, by its proximity to the Mississippi, was to command over the navigation over the navigation between Europe and the countries lying about the Gulf of Mexico, entered into a negotiation with Spain for the cession of Florida; and a treaty to that effect was ratified by Spain in 1821. The Spanish government, however, was not inclined to cede the country; but the feebleness to which it was then reduced rendered it incapable of any resistance, and in 1821 it was taken possession of by General Jackson, by order of the government of the United States. During the administration of Mr. Jefferson two millions of dollars were appropriated for the government of Florida, but the negotiation at that time was not completed.

Florin. [Money.] Florus, LUCIUS ANNUS, a native of Spain, or, according to others, of Gaul, lived under Trajan and his successor. The same Lucius Julius Florus, who lived under Augustus, and to whom Horace has addressed two of his Epistles; but as, in the proemium to his history, Florus speaks of Trajan, he cannot be the same person as Lucius Julius, unless we suppose the passage to be in the sea, but and is of such has been discussed by Titus, De Epitome Rerum Romanorum, 1804. Others have supposed Florus the historian to be the same as Julius Florus or Floridus, who lived under Herennia, and wrote the "Pergulum Veneris," a pretty poem in imitation of Horace's "Carmen Saeculare." But the identity of the two writers is very doubtful. Lucius Anneus Florus wrote a small work entitled 'Epitome de Gestis Romanorum,' in 4 books, from the foundation of the city to the death of Julius Cesar, 47 B.C. It is said the author compiled his epitome from Livy and from other historians whose works are lost. It is meagre and declamatory, and is less a history than a panegyric of the Roman people. Florus is also incorrect in his chronology and geography. He is a florid writer, the work is corrupt and interpolated. The work is of some use as a kind of substitute, however poor, for those books of Livy which are lost. Some MSS. attribute to Florus also the Epitome, or heads of contents, of the books of Livy.

Flos P Ded. Flotsam, or FLOTSAM, is such portion of the wreck of a ship and the cargo as continues floating on the surface of the water. Jettison is where goods are cast into the sea, and there sink and remain under water; and ligan is where they are thrown into the sea, but are used to a cork or buoy, in order that they may be found again.

These barbarous and uncouth appellations are used to distinguish goods in these circumstances from legal wreck, in order to constitute the persons thereby lost.

Flotsam, jetsam, and ligan belong to the king, or his grantees, if no owner appears to claim within a year after they are taken possession of by the persons otherwise entitled. They are accounted so far distinct from legal wreck, as the king's grant of wreck, flotsam, jetsam and ligan will not pass.

Wreck is frequently granted by the king to lords of manors as a royal franchise; but if the king's goods are wreck, he can claim them at any time even after a year and a day. (B.) When the same relation, it must be presumed, would prevail with respect to flotsam, jetsam, and ligan.

Flounder. [Pleuronectidae.] Flour. St., a town in France, in the department of Cantal, the capital of an arrondissement and the seat of a bishopric. It is on the right bank of the river Lende, a feeder of the Trueyre, which falls into the Lot, one of the principal streams of the system of the Garonne, 298 miles from the mouth of the Tarn. It is situated on the banks of the Garonne and Perigogn. This town is said to derive its name and its origin from a bishop of Lodeve, who came into Auvergne to preach, and died there near the end of the fourteenth century, and whose sanctity attracted so great a crowd as to form a town. It has a cathedral, and is a seat of learning, possessing an eminence of basilict about 300 feet high, and enjoys, from its elevated situation, a pure though keen air. The streets are narrow and sombre in their appearance; the houses, which are built of stone and covered with tile, have a black, and dismal look. The cathedral is small, and surrounded by the houses, and they manufacture linen cloth, ordinary woollens, and glue. In the neighbourhood, but not in the town, metal pots and
pans are made. Many of the tinkers, hawkers, and other
industrious sinners who traverse France, come from the
districts of St. Flour. They are noted for their accuracy
in making, that is, for being able to make a model of
two of which a number of mules are sold. The town has
a seminary for the priesthood, a high school, and an agricul-
tural society, a small public library, and a philosophical
apparatus. The assize court of the department is held here;
and the pest house is near the town, for the quarter of
the justice. There are near St. Flour about two hundred
apart, in large pots or boxes, and the pots placed in a
moderately warm hot-bed, shaded from the sun.
In about a fortnight they will strike root, and begin to
grow. They should then be gradually hardened, be put as
far as possible into the cold frames, and finally into the
hot-bed, where plenty of air must be given them in the
day-time to prevent their damping off, and a fire be lit before frosty
nights; the additional security of mats thrown over the frames, is
not usually required. The time of removing the plants from
their winter quarters depends upon their nature and the climate in
which they are to grow. The last week in May or the first in June
is the earliest time at which the tenderest will bear
a thorough exposure: for one or two previous weeks they
should be hardened by gradual exposure to the wind and
cold nights, care being taken to protect them with mats of
either should be in excess. The cultivation of dahlias
is commenced in the second or third week in February, when
the plants are in the flower-pin; the flower-pin, when
true, is put into a hot-bed, kept, as far as practicable, at
a uniform heat of 62° to 65°; a little of the earth in the bed
should be spread over them, and water liberally given
once a day. The roots will then push out suckers, one
to each stem; and if the plants are then raised, the
few fibres of the old root being torn off with them, and being
treated after the manner of cuttings, will strike and be ready
to plant out at the end of May. It is a fault with gar-
deners generally that their dahlias flower too late. The first
flowers are not very perfect, and it often happens that the
plants have not long reached their prime before they are
either pinched by cold nights or perhaps altogether de-
sstroyed by frost. It is therefore desirable that the plants
should never be checked in the early stages by want of heat
or in consequence of low weather. The best way to
be multiply them by dividing the roots either in the autumn
or in spring. Annuals are principally raised from seed sown
in April and May, either upon a hot-bed, from which they
must be transplanted, or in the situation in which they are
to grow. Sweet peas, honeysuckle, poppy, &c., are very afs of being transplanted unless from
pots. Mallow, chorispora, China and German asters,
French and African marguerites, eutoca viscida, nolana pro-
trata, &c., will be better raised on a hot-bed. New annuals
are generally raised in the same way, and generally considered as a desirable class of flowers.
There are two methods of arranging flowers with a view
to their display—1st, putting each species in a separate
bed, and, mixing two or more species in one bed. Each
each has its advantages, and it must be decided which
is preferable. When flower-beds situated close to each other are to be filled with one species only, it will be requisite to
consider the height and colour of the flowers to be planted,
that both symmetry and harmony may be preserved. Yel-
lo\textsuperscript{lo}w flowers, especially among those that grow from six
inches to two feet in height, are more numerous than
flowers of any other colour, and care must be taken not
to plant them in undue proportion. When several species
are to be planted in the same bed, the largest bed must
be given to those which are most in demand, and those
in the middle, various colours mixed together; sufficient space
should be left for each plant to grow freely without interfering with or confusing its branches with those that are next to it.
Flowers for the most part like a rich, light, new soil.
The spot chosen for a flower-garden should be dry, open to
the sun, and sheltered from wind and cold.
Beckman (Hist. Intentions) says that it may be asserted
great probability, that the modern taste for flowers
came from Persia to Constantinople, and thence was
introduced into Western Europe, particularly the fil-
tury. At any rate we find that the greater part of the
productions of our flower-gardens were conveyed to us by
that channel. The first public botanical garden in Europe
was established at Pisa by Cosmo de Medici in 1577. The
example of Pisa was soon imitated at Padua, Bologna,
Florence, Rome, and other cities and universities of
Italy and Germany. The Dutch at this time began to exchange the bulbs for which their gardens were celebrated for the orange-trees of Genoa and Leghorn; Spanish flowering-aloe, then new to Italy, and among them the double night-smelling jasmine, which was so highly prized by the governor of Pisa that he placed a sentinel to keep guard over the plant.

The Kobedofled to the French was likewise derived from the Italians. Thus far the taste for flower-gardening had not passed the limits of favourable climates, but it continued to spread into colder countries. Germany and England followed the example of their neighbours. Dante, in his Divine Comedy, wrote of a garden at Windsor Castle where he was a prisoner in the beginning of the fifteenth century; but gardens at that time were certainly very rare, and seem to have been rather formal shrubberies with clipped yew and other hedges, arbours, and avenues, than gardens containing flowers and other flowering plants. The gardens at Nonsuch and Hampton Court were planted in Henry VIII.'s reign; at Hatfield, in Queen Elizabeth's time. Evelyn mentions in his Diary the most celebrated gardens of his day: from his account of them it will be seen that flowers were then generally cultivated, and that gardens had become a luxury on which large sums of money were expended. The prices which have been given for flowers at certain periods form a very curious portion of their history. The most curious instance of a mania (it can scarce be called a craze) is mentioned by the Rev. J. Tourtelot in his Hist. Sieur., vol. i.) In the middle of the seventeenth century tulip roots of particular kinds were greatly sought after, and as their value consequently greatly increased, they became matter of speculation; roots were sold by doctors, druggists, and chemists; they were sold for marriage portions; a thousand florins were given for some species; and when once it happened that there were only two roots of a kind called Semper Augustus to be had, the one at Amsterdam, the other at Haarlem, 4000 florins (about 40£. 10s.), together with the privilege of the first-fruits of all others, was given for one root. Twelve acres of land were offered for a single root, and those who had not ready money promised their movable and immovable goods, lands, cattle, and clothes. The purchaser perhaps did not even receive the bulb when bought from the bottom of the contract to avoid evading it, and the transactions were purely speculative. This extraordinary system of gambling can only be accounted for by the want of employment for capital. At the present time (1837), though gardens are maintained at a great cost, there is no longer a premium offered for the discovery of specimens of whatever species; 60l. or 70l. is considered a great price for any plant, and is very rarely given. The principal nursery-gardeners, and we believe one nobleman distinguished for his love of flowers, employ botanical artists to investigate this precious subject. bulbs imported from the Cape of Good Hope and South America, and the East and West Indies, have been extremely numerous. (London's Cyclop. of Gardening.)

FLUCHERINE, the name given to the native flute-flower of China which occurs at Finno and Brodick, near Falun, in Sweden. It occurs both massive and crystallized. The crystals are either six-sided plates or prisms: they have a yellow or reddish colour; fracture uneven; dull; transparent, in very thin fragments, when heated by the flame of a spirit-lamp, the transmitted globules are formed, but does not fuse; in the reducing flame it becomes colourless, and in the oxidizing flame, with borax and a phosphate, it yields an orang-coloured globule: when heated in a tube with an acid, the glass is corroded.

FLUELL, a compound of fluoric acid and alumina, which occurs at Stenna-gwyn, in Cornwall, in octahedral crystals, the primary form being a rhombic prism; the crystals are colourless and transparent, with a vitreous lustre; it is odorous and flammable.

FLUENTS. [Fluxions.]

FLUID. This term is applied to substances of which the parts possess perfect mobility amongst themselves, but more rigorously it depends on the relative inertness of the forces which do not fuse; in the reducing flame it becomes colourless, and in the oxidizing flame, with borax and a phosphate, it yields an orang-coloured globule: when heated in a tube with an acid, the glass is corroded.

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investigated, and therefore the law of the square of the velocity is adopted generally as a first approximation, but the discovery of the true law would appear to be within the limits of calculation without aid from experiment, and is a subject worthy the attention of physical mathematicians. The resistance of bodies only partly immersed in fluids, and having a depth bearing a sensible ratio to that of the fluids, as in barges towed along canals, is subject to laws far different from those which we have considered, for the quantity immersed is a function of the velocity, diminishing considerably with greater velocities; thus, notwithstanding the increase of resistance due to velocity, this diminution due to less immersion permits the possibility of a minimum resistance. This important subject will be further considered in the article HYDRAULICS.

The term fluid has been extended to the supposed media through which the forces of electricity, galvanism, and magnetism act, but little that can be relied upon has been deduced from by their supposed analogy with material fluids. A surer source of calculation is found in detecting the laws of their elementary actions by experiment; and indeed this process seems to point out the most feasible methods for discovering the molecular laws even of material fluids, manifested both in their tenacity and their capillary phenomena. Fluidity may be here defined as the explicit term of its exact causes until more is known of the true laws of the forces which govern the internal arrangement of bodies; but taking the effect, we may with Laplace say, that 'mobility is the characteristic property of fluids.' Hence fluidity is termed imperfection by the admixture of solids with fluids, as in mud, &c. The effects of fluidity become still more concealed in masses consisting of heterogeneous solids holding fluids in their pores, as in moist clays, dough, &c.; nor are they fully developed in solids which, through the action of heat and cold, tend to become solid state, as in melting tallow, wax, glass, &c. In none of these cases can the laws of perfect fluids be applied; but as they belong only to states of transition, their peculiar laws do not deserve, or at least have not obtained, much consideration.

FLUIDITY. All ponderable matter exists either in the gaseous, fluid, or solid state; and most solids, when heat is applied to them, may be rendered fluid, or converted into liquids, under which circumstances mutual repulsion of particles takes the place of cohesion. The degree of heat required to produce this effect is different in different solids, but, ceteris paribus, it is always the same in the same solid: in many cases the transition from the solid to the fluid form is not abrupt; while in other instances solids pass through various degrees of fluidity, the substance tending to a fluid state, as in melting tallow, wax, glass, &c. Of the first mode of becoming fluid ice and the metals are examples, and wax or tallow of the second.

As most solid bodies may be rendered fluid by heat, so many gaseous and fluid bodies are converted into solids by diminishing their temperature. Solid bodies in becoming fluid render latent a large quantity of heat; and on the other hand, fluid bodies in becoming solid evolve much sensible heat. The heat which is requisite to the fluid existence of a body is termed the Heat of Fluidity. These facts are proved by two simple experiments. Mix a pound of water at 32° Fahr. with a pound of water at 172°, and the resulting temperature will be the mean, or 102°. If a pound of ice at 32° be dissolved in a pound of water at 172°, the solution will have the mean temperature of 102°, but only 32°. As, then, the pound of ice, by being rendered merely fluid, absorbs 140° of heat, so that the quantity of heat which becomes sensible when a pound of water at 32° is converted into ice at 32° amounts also to 140°. The actual quantity of heat rendered latent by the liquefaction depends upon the nature of the substance; thus, according to Dr. Irvine, the under-mentioned bodies contain the annexed quantities of heat when rendered fluid:—

<table>
<thead>
<tr>
<th>Substance</th>
<th>Heat of Fluidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulphur</td>
<td>142° 66° Fahr.</td>
</tr>
<tr>
<td>Spermaceti</td>
<td>145°</td>
</tr>
<tr>
<td>Lead</td>
<td>175</td>
</tr>
<tr>
<td>Bees' wax</td>
<td>175</td>
</tr>
<tr>
<td>Zinc</td>
<td>493</td>
</tr>
<tr>
<td>Tin</td>
<td>500</td>
</tr>
<tr>
<td>Bismuth</td>
<td>650</td>
</tr>
</tbody>
</table>

The nature of fluidity will be further considered when Heat is treated of.

FLUORIC ACID GAS, or FLUORIDE OF BORON, was obtained by Gay-Lussac and Thenard by heating a mixture of fluor-spur, or fluoride of calcium, and vitrified boracic acid. In this operation the oxygen of the boracic acid probably combines with the calcium of the fluoride of calcium and converts it into oxide of calcium or lime, and the fluorine adds itself to the boracic acid to form the gas in question. The properties of this gas are, that it is colourless, has a pungent odour, is deleterious to animals, and extinguishes flame. It reddens litmus paper strongly; and when bubbles escape into the air, they combine with moisture and produce a very white dense fume. The specific gravity of this gas is stated differently, from 2.31 to 2.371. It consists, according to Dr. Thomson, of—

One equivalent of fluorine 18

Two equivalents of boron 16

Equivalent 34

Water dissolves about 700 times its volume of this gas. The solution is caustic, and emits fumes, and was found by Berzelius to contain boracic and hydrofluoric acids, probably derived from the decomposition of water, which supplied oxygen to the boron and hydrogen to the fluorine. This solution does not act upon glass, nor does the gas itself; but they readily decompose animal and vegetable substances. Thus, when thrown into the jar of the gas over mercury is decomposed and charred as if burnt, by the abstraction of the elements of water from it, for which the gas has so powerful an affinity. When potassium is put into this gas it burns, and a brown compound of boron and fluoride of potassium is thus obtained.

This compound acid combines with certain bases, as ammonia, to form salts, which are termed fluoroborates; but they are quite unimportant.

FLUOR SPAR, FLUOR, Phosital of Lime, is a well-known mineral occurring in many parts of the earth, but especially and in great plenty in Cornwall, Derbyshire, and Durham. It occurs both crystallized and massive. The primary form of the crystal is a cube, the cleavage is parallel to the planes of the regular octahedron, distinct, but seldom with perfect surfaces; it assumes a great many crystalline forms, as the octahedron, rhombic dodecahedron. The late W. Phillips mentions his possessing at least 70 beautiful varieties of form, and he has figured a fragment of a crystal of fluor spar from Devonshire which, if it were perfect, would exhibit 322 planes. It occurs colourless, and of almost every colour: as grey, purple, black, brown, red, yellow, green, and blue: in Derbyshire the last is the prevailing tint, and the massive fluor spar of that county is termed by the miners Blue John. It is a very transparent, but more commonly only translucent; its lustre is vitreous; specific gravity 3.13; hardness 4°; streak white, or slightly coloured; fracture conchoidal; when powdered and thrown on a hot coal, fluor spar exhibits a phosphorescent light, which is blue, green, purple, or yellow; when thrown into mass into the fire, it decompounds. The massive varieties are nodular, and on the fracture of the former is large fibrous, or columnar, with divergent fibres: the structure of the amorphous variety is crystalline, granular, earthy, compact, and occasionally straight or curved lamellar: the crystalline varieties are more common in Cornwall and the west of England, the massive in Derbyshire and the north of England. It occurs in many places on the Continent also.

Flour spar is, strictly speaking, to be considered as a fluoride of calcium, composed of

| Equivalent of fluorine | 18 |
| Equivalent of calcium | 20 |

Equivalent 38

The blue and variegated fluor spar of Derbyshire is turned into various ornamental forms, candlesticks, &c.; that of Cornwall is used as a flux in the reduction of copper ore.

FLUORSIC ACID. [HYDROFLUORIC ACID.]

FLUORINE, a substance which, though long known in combination with other bodies, has been only lately procured in an insolated state, if indeed as much as this can be said, and its properties in a separate state are consequently very imperfectly known. It was first obtained, or at any rate supposed to be obtained, in a separate form of secondary by passing fluoric acid over deoxidated lead, heated to redness: the gas was received in a dry vessel.
He has since employed a mixture of sulphuric acid, peroxide of manganese, and fluoride of calcium; and although the product is mixed with hydrofluoric and fluosilicic acid gases, the precision of the present sort of fluoride of fluorine from being observed. The rationale of the operation is evidently similar to that of obtaining chlorine from chlorofluoric acid; the calcium of the fluoride takes oxygen from the peroxide of manganese, and the fluoride is set free in the elastic state. It appears to be a gas of a yellowish-brown color, similar to the mixture of chlorine and burnt sugar, and, like chlorine, it has the power of destroying colour: it does not act upon glass. These experiments have been confirmed by the more recent results of Messrs. Knox. Like chlorine and oxygen, it appears to have a power of affinity for metallic bodies and for hydrogen with this latter it forms hydrofluoric acid.

The compounds which contain fluoride, when they do not possess acid properties, are termed fluorides; thus, as already mentioned, the fluor spar, so well known in Derbyshire, is termed chemically fluoroferric oxide. The equivalent or combining weight of fluoride is a subject on which chemists differ. Dr. Thomson making it 18, while Berzelius considers it as only 9.37.

Fluosilicic Acid is prepared by mixing equal quantities of fluoric acid of calcium and silicic acid with three times their weight of sulphuric acid in a retort; on the application of a moderate degree of heat action takes place; and it appears that the oxygen of the silicic acid is transferred to the calcium of the fluoric acid and converts it into lime, which combining with water forms the hydrate of lime, while the fluoride and silicic acid set free combine to form fluosilicic acid, which rises in the gaseous state, and is to be received in very dry air-jars filled with and inverted in mercury.

The gas thus obtained is colourless, its odour is peculiar, similar, but weaker than that of hydrofluoric acid, with the moisture of the air, but much less so than fluoric acid gas. Its specific gravity, according to Dr. Davy, is 3.600, while Dumas makes 3.574. It suffers no change by exposure to a high temperature, and it has not been liquefied. Its density is absorbed and decomposed by water, of which it also decomposes a portion, and the results are hydrofluoric acid and silicic acid, from the union of fluoride with the hydrogen of the water, and the silicium with the oxygen.

When the sublimatum is put into this gas, it inflames and burns at a certain temperature. When the gas is passed over iron heated to whiteness, there is formed an extremely thin coating of fluoric acid and silicium, and the gas then passes without further alteration. It does not unite with carbonates when dry at common temperatures, nor is it absorbed by them, however long they may remain in contact; most hydrated oxides however absorb it without the assistance of heat.

Fluosilicic acid condenses double its volume of ammoniacal gas, and forms with it a variety of fluosilicates, which, on a salt of no importance; when it is acted upon metallic oxides both are decomposed, the results being silica and metallic fluorides.

It has been mentioned that this gas is decomposed by water; the hydrofluoric acid remains in solution with a portion of the silica, while another part of it is precipitated in the state of hydrate; the solution is very sour to the taste, and reddens litmus paper strongly, and decomposes alkaline carbonates with effervescence. This solution has been called hydrofluosilicic acid.

Fluosilicic acid is probably composed of:

- One equivalent of fluoride: 18
- One equivalent of silicium: 8
- Equivalent: 26

Flushing, or Vliissingen, a town and fortified port on the south coast of the Island of Walcheren, in the province of Zealand. It is situated at the north side of the Scheldt, the passage of which it defends, and lies in 51° 25' N. lat. and 3° 30' E. long., 8 miles south of Middelburg, and 17 miles north-east from Sluis. The port is formed by two mouths, which break the force of the sea, and beyond these are two canals which enter the town, in the interior of which they form two perfectly-secure basins; one of them is of considerable size, and has sufficient depth of water to receive the largest ships of war. Flushing came into possession of the French in 1795, and was much used by them as a place of rendezvous for their fleets. The batteries by which the port is defended command to a great extent the south entrance to the Scheldt. The town is well built, and the population is above 6000. It was besieged in 1699 by the English expedition under Lord Chatham, well known as the Walcheren expedition, and was taken, but evacuated very shortly after, the port and town having been much damaged by the English. Flushing has always had much notoriety as the place of resort of English smugglers.

Flustra. [Cellararia, vol. vi, p. 401.]

Flute, a well-known musical instrument, the use of which, under different forms and names, may be traced to the remotest periods of antiquity. Most of the ancient poets ascribe its invention to no lesser personages than gods and goddesses. Even the grave Plutarch, in his dialogue Ilios Musorouj, attributes it to Apollo. Lucertius, however, contented himself by deriving its origin from the breathing of western winds over certain reeds, and thus, he tells us, was suggested to man the rural pipe, a simple tube, which the ingenuity of later ages has improved into one of the most elegant and fascinating instruments that art can boast. The word is said to be derived from the Latin Fluta (luminary), a kind of eel which has seven holes lengthways in its side, and when extended resembles a very narrow flute. The ancient flute had some sort of mouth-piece; it was double as well as single—that is, was often composed of two tubes, both played together, and hence it has not unreasonably been inferred that the enlightened nations of antiquity possessed some knowledge of harmony. There is a figure of an ancient flute-player, or of Pan, in the Townley Gallery of the British Museum (Lib. of Entertaining Knowledge, Townley Gallery, vol. i., p. 189). The flute was almost universally employed by the Greeks, Romans, &c., not only in their religious, but also in their social entertainments, and armies, but also in their funeral ceremonies. It even may be said to have accompanied their public orations, having frequently been employed for the purpose of keeping the voice up to a proper pitch. From the custom of introducing it in the last offices for the dead arose the saying, Jam licit ad tibiaeas mittas (you may now send for the flute-players), when any one was in articulo mortis—in the last agonies.

Of the old English flute—for the invention whereof Mersema erroneously gives this country the credit, we will say a few words. It was not unfrequently called the Flute à bec, from the resemblance of the mouth-piece to the beak of a bird. This mouth-piece was at the upper and wider end, and the instrument was held in the manner of the oboe and clarinet. It had seven finger-holes, no keys, and was commonly adapted either to the scale of C or F. The Flute à bec was gradually superseded by that now in use, which long was known as the German Flute—the Flute Traversière, or horizontal. This, at first simple in construction, length about a foot and a half, and having only one key, has by degrees been extended to twenty-seven inches, occasionally more, and has sometimes as many as a dozen keys, seldom less than six; so that every kind of music, however chromatic, within its compass, and adapted to the nature of a tube, may now be executed on this instrument. It is formed of any kind of hard wood, of ivory, and even of glass, and is divided into four joints. The scale of the concert flute is from C below the treble staff to C in the altissimo:

Some flutes are made to go four notes lower; and an adroit player can reach the E♭ in altissimo:

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The high notes of the flute are very effective in the orchestra, but its best, its expressive tones, are those between the low C and G in all, comprising twelve diatonic degrees, and all the tetrachords on the flute, however, like those on most other instruments, now strive to astonish rather than please their auditors. Tasteless, senseless execution is all-prevailing, a fact which the great majority of players most willingly admit, and much depends on the virtuoses who are able to turn the abominations of one of the most delightful arts of patient but frequently listening to, and often applauding, that which at best only excites some little wonder, never affords heartfelt pleasure, and most commonly is the source of dissatisfaction, if not of a feeling unusually allied to disgust.

The Octave Flute (called also the Flauto Piccolo, Oktavaflute, and Oktavflute, in orchestral scores) is a small instrument an octave higher than the common flute; it is shrill and piercing, and only desirable in the fullest instrumentation and in military bands. The best of these are provided with four keys.

FLUTE STOP, on the organ, is a range of wooden pipes, tuned in unison with the dissonance, and generally proves a most successful imitation of the instrument whence its name is derived.

FLUTE, FLUITINGS. [COLUMN.]

FLUX, in chemistry and metallurgy, is any substance employed to assist the reduction of ores or metallic compounds to their metallic state. In smelting the agglomerate iron ore of this country, which is a mixture of carbonate of iron and silicious matter, the fluxes assist in breaking up such proportions as will form a slag that melts easily, so as to allow the fused iron to sink through it. When the proportion of limestone has been properly adjusted, the slag has the appearance of green bottle-glass; when, on the other hand, the slag is opaque and blue, it is a sign that a good mixture has not been made.

When copper ores are difficult to melt, fluor spar is added as a flux, which appears to promote the operation. The fluxes made use of in assaying and in chemical operations vary according to the nature of the metal to be reduced and that of the substances combined with it.

ASSAYING.

We shall mention a few of the more important fluxes employed.

Black flux is made by mixing one part of powdered nitre with two parts of powdered argol, which is the commercial name for impure earth of tartar, or bitartrate of potash; this mixture is to be gradually thrown into a red-hot carbon crucible so as to deplete it, taking care not to make it too hot to cause it to fuse.

In this case the nitric acid of the nitre is decomposed, its oxygen acts upon the carbon of the tartaric acid, carbonic acid is formed, and this uniting with the potash both of the nitre and bitartrate is converted into carbonate of potash; this carbonate of potash, which is not hardening, so acted upon, and the excess remains mixed with the carbonate of potash in the state of finely-divided charcoal. This flux should be immediately reduced to powder and kept in a well-stopped bottle, otherwise it will become damp by the absorption of moisture, to which the carbonate of potash is subject.

This flux is doubly useful; the carbonate of potash combines with the earthy parts of the ore, such as silica and alumina, while the carbonic units with the oxygen of the metal, and combines with the carbonate of potash, and in its place argol being formed and expelled, the metal is reduced and melts. This flux is especially useful in the process of detecting arsenious acid and reducing it to the metallic state.

White flux is a carbonate of pottash made by degrading equal weights of nitre and bitartrate of potash; the quantity of this last salt being smaller than that in black flux, there is no excess of charcoal furnished by tartaric acid. It appears to possess therefore no advantage over common carbonate of potash, and either of them may be employed in reducing metallic chlorides, such as that of silver, to the metallic state. White flux, or carbonate of potash, disintegrates stony matter, as alumina and silica, separates acids and sulphur from metals, and dissolves many metallic oxides; having however no charcoal in its composition, it does not turn the oxides as the black flux does.

Argol, already described as an impure bitartrate of potash, powdered and mixed with the pulverized substance to be reduced, is sometimes advantageously used as a flux; owing to the intimate mixture of the charcoal and potash in this flux a good deal of potassium is evolved, and upon the reducing property of this metal the reduction of the oxides of other metals frequently depends to a considerable extent.

Charcoal alone is, in the case of pure oxides, sometimes employed as a flux; thus a crude line with charcoal is useful for the reduction of oxide of iron, or the oxide may be mixed with charcoal.

There are some bodies which are even more efficient than charcoal in certain cases, such as wax, fat, oil, tar, and pitch, and gum, sugar, or starch; these may be intimately mixed with the substance to be reduced, and they not only contain carbon in a form which is readily developed, but the hydrogen, which is likely to assist in the separation of the oxygen from metallic oxides.

Flint glass is sometimes, but improperly, used as a flux, for it contains much lead that may greatly interfere with the result desired.

Green bottle-glass has also been used for this purpose, but it is objectionable on account of its containing iron, and it even yields traces of silicium and aluminium to iron which was pure before being heated with it.

FLUXIONS, FLUENTES, METHOD, NOTATION, AND EARLY HISTORY. The method of fluxions assumes a distinct conception of velocity, both in the case of a uniform and variable motion. It further extends this notion of velocity or rate of increase, derived from the consideration of a moving point, to all species of magnitudes, and even to periodic movements, as well as to the formulæ of algebra. If one magnitude depend on another for its value, so that a change in the first produces a change in the second, and if the first be imagined to increase at a uniform and given rate, then the second will also increase at the same rate, unless the rate is univocal, as the formulæ of algebra. One magnitude depend on another for its value, so that a change in the first produces a change in the second, and if the first be imagined to increase at a uniform and given rate, then the second will also increase at the same rate, unless the rate is univocal, as the formulæ of algebra. One magnitude depend on another for its value, so that a change in the first produces a change in the second, and if the first be imagined to increase at a uniform and given rate, then the second will also increase at the same rate, unless the rate is univocal, as the formulæ of algebra. If one magnitude depend on another for its value, so that a change in the first produces a change in the second, and if the first be imagined to increase at a uniform and given rate, then the second will also increase at the same rate, unless the rate is univocal, as the formulæ of algebra. If one magnitude depend on another for its value, so that a change in the first produces a change in the second, and if the first be imagined to increase at a uniform and given rate, then the second will also increase at the same rate, unless the rate is univocal, as the formulæ of algebra. If one magnitude depend on another for its value, so that a change in the first produces a change in the second, and if the first be imagined to increase at a uniform and given rate, then the second will also increase at the same rate, unless the rate is univocal, as the formulæ of algebra.

The velocity of y being variable, may itself be considered as having a rate of change. Thus, if the velocity of a body increase uniformly, the whole velocity gained in a second may be called the velocity of the velocity, or the flux of the fluxion. Thus if x increase uniformly, the velocity of x is nothing, or (dx) = 0, but if y=x then (dy) = 6z.x.

Newton denoted these second fluxions by y and x. In a similar way might be determined the velocity of y, denoted by y, and so on. We cannot find that Newton proposed any symbol for the fluent of a fluxion except the envelope of its expression; thus, the fluent of 3z 2, is 3z 2.

He also, in his treatise 'De Quadratura Curvarum', used x 2 to stand for the fluent of x.

We now come to the history of this discovery, and of the dispute relative to the right of invention. We have already given a brief outline of the circumstances which led to the publication of the Commercium Epistolicum, and we shall now add the previous and subsequent occurrences, with some quotations from authorities.

The biographers of Newton, state that about the year 1665, he began to turn his attention to the writings of Descartes and Wallis, and Newton himself testifies that he invented the method of series and fluxions in the year 1665; and that in a tract written in 1666 he had begun
to use the notation of fluxions. In 1669 Barrow communicated to Collins the tract of Newton, afterwards published under the title of De Analysi per Equations numero terminorum infinitas; of which he afterwards says, 'I am glad my friend's paper gives you so much satisfaction: his name is Mr. Newton, a fellow of our college, and very youngising but a second member (Arts), but of an extraordinary genius and proficiency in these things.' This tract contains a method of series, and many problems solved by application of limits to differences obtained by expansion; but no direct method of fluxions. It was first published in the Geornat. Epistolica. Various letters of Newton, Collins, and others, up to the beginning of 1676, state that the first-named had invented a method by which tangents could be drawn, &c., without the necessity of freeing their equations from irrational terms. Among the 'method and method and series together,' before the writing of these letters; that is, in thus far 1671. And these hints were as much as was proper in that short paragraph, it being besides the design of that book to enter into disputes about these matters.

Nothing material passed till 1664, in which year Leibnitz gave his first paper on the Differential Calculus in the Leipag Acta. In 1667 the Principia was published by Newton; and Leibnitz continued to give papers on the subject of his new Calculus. The Bernoullis began to cultivate the subject, and about the year 1680, and as a term of correspondence with Leibnitz, he was the source from which they drew, and to which they returned, additional ideas on the subject. The Marquis de l'Hospital was employed in writing his elementary treatise (the first written), which was published in 1696. All this considered, and on the first view of the subject, one of the most curious and the consequence was that Dr. Wallis informs us, by letter of April 10, 1695, that 'he had heard that his notions of fluxions passed in Holland with great applause by the name of Leibnitz's Calculus Differentials.' Accordingly Wallis went on to just mention the first volume of his works (the third, which contained Newton's letters to Oldenburg, having been previously printed) inserted in the preface, as a reason for not mentioning the Differential Calculus, that it was Newton's method of fluxions which had been communicated to Leibnitz in the Oldenburg Letters. Part of Wallis's work was called the ' Acta Eruditorum, or Leipag Acta,' for 1696, reminds the reader of Newton's own admission above cited. On this (Raphson, supplement above cited) remarks, 'Whether Mr. Leibnitz invented it after me, or had it from me, is a question of no consequence, for second inventors have no right.'

In 1699 Portia de Duillier, a Genevess, settled in England, stated in a mathematical work his conviction that Newton was the first inventor, adding that he left it to others who had developed it previously. This letter, of October 24, 1676, had not been sent to Leibnitz, March 5, 1677, as Collins informs Newton by letter of that date. So early as June 21, of the same year, however, Leibnitz had received that letter and written an answer to Collins, in which, without any desire of concealing, he explains the principle, notion, and use of his differential calculus: this letter was published in the 'Commercium Epistolonicum.' It is of the correspondence that Newton wrote the celebrated scholium; of which as we shall see, he was not well disposed with the removal of irrational terms: and that, though on the publication of the Principia he became aware how much further its author had pushed his discoveries, he did not know that Newton possessed a Calculus (or organized method) like the Differential, till the appearance of the scholium.

The 'Quadrature of Curves' was published by Newton in 1704 at the end of his Optica. It contains a formal exposition (the first published) of the method and notation of fluxions. Since so great a stress was laid by the parties to the quarrel upon the priority of Newton, and the last sentence of the letter in which Newton himself did not very soon adopt such a course. He says that in 1666 he 'sometimes used a letter with one prick for quantities involving first fluxions; and the same quantity with two pricks for quantities involving second fluxions.' Even as late as 1671 (in the Galilesia) give any notation for the momenta to which he had given a name, and (though not laying any stress on it) we doubt whether Newton would ever have systematized his

* In the article Commercium Epistolonicum we have supposed that the committee took notice of this correspondence. The truth is, that from Newton'sCommunications to Leibnitz, ten years ago when I signified that I was in the knowledge of a method of determining maxima and minima, of drawing tangents, and the like, and when I concealed it in transposed letters involving this sentence (Data equations, &c., above cited), the introduction of the method have been upon a method of the same kind, and communicated his method, which hardly differed from mine, except in his forms of words and symbols.

It will be convenient here to give Newton's subsequent explanations. In 1665, he took it into marks on Leibnitz's letter to Conti of April 5, 1716, pub-lished in 1716 in the appendix to Raphson's 'History of Fluxions.'

'He pretends that in my book of principles I allowed him the invention of the calculus differentialis, independently of my own; and that to attribute this invention to myself is contrary to my knowledge thereon. But in my paper (third paragraph in Arts), he does not find one word to this purpose. On the contrary, I there represent that I sent notice of my method to Mr. Leibnitz before he sent notice of his method to me; and left him to make it appear that he had found his method before the date of my letter; that is, eight months* at the least before the date of his own. And, by referring to the letters which passed between Mr. Leibnitz and me ten years before, I left the reader to consult those letters & interpret the paragraph thereby. For by those letters he would see that I wrote a tract on that subject in the year 1671, and as a term of correspondence with Leibnitz, he was the source from which they drew, and to which they returned, additional ideas on the subject. The Marquis de l'Hospital was employed in writing his elementary treatise (the first written), which was published in 1696. All this considered, and on the first view of the subject, one of the most curious and the consequence was that Dr. Wallis informs us, by letter of April 10, 1695, that 'he had heard that his notions of fluxions passed in Holland with great applause by the name of Leibnitz's Calculus Differentials.' Accordingly Wallis went on to just mention the first volume of his works (the third, which contained Newton's letters to Oldenburg, having been previously printed) inserted in the preface, as a reason for not mentioning the Differential Calculus, that it was Newton's method of fluxions which had been communicated to Leibnitz in the Oldenburg Letters. Part of Wallis's work was called the 'Acta Eruditorum, or Leipag Acta,' for 1696, reminds the reader of Newton's own admission above cited. On this (Raphson, supplement above cited) remarks, 'Whether Mr. Leibnitz invented it after me, or had it from me, is a question of no consequence, for second inventors have no right.'

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FLY-WHEEL. [WHEELS.]

FLYING-FISH. Under the head DACTYLOPTERUS there is an account of certain flying fishes belonging to the order Aulodipterogyni; there are however others, of a different family, which answer to the description of flying fishes, with the power of sustaining themselves in the air for a certain length of time—we allude to the species of the genus Exocoetus.

The genus Exocoetus belongs to the Abdominal Malaegopterigii, and is a part of the family Esocidae. The distinguishing characters are:—pectoral fins nearly equal to the body in length; head flattened above and on the sides; the lower part of the body furnished with a longitudinal series of ciliated scales on each side; dorsal fin placed above the anal; eyes large; jaws furnished with small pointed teeth.

The flying fishes when in their own element are constantly harassed by various fishes of prey, and it is supposed that their flights are performed for the purpose of escaping such enemies. But when they are near the land, or near other places they are subject to the attacks of various species of gulls.

Whether these fishes possess the power of flying, in the true sense of the term—that is, by beating the air with their members, or whether their large fins merely serve as paddles to the propulsion by which they move the water, is not yet fully ascertained; observers having given different accounts. The latter is perhaps the prevailing opinion of naturalists, and is that of the more recent observers. I have never,' observes Mr. George Bennett, the author of 'Wonderings in New South Wales,' been able to see any percution of the pectoral fins during flight, and the greatest length of time that I have seen this volant fish on the fin has been thirty seconds by the watch, and their longest flight mentioned by Captain Hall has been about one hundred and thirty yards. The action of the fins is to extend the space. The most usual height of flight, as seen above the surface of the water, is from two to three feet; but I have known them come on board at a height of 14 feet and upwards; and they have been well ascertained to come into channels with a height of 20 feet. But it must not be supposed they have the power of elevating themselves in the air after having left their native element; for, on watching them, I have often seen them fall much below the elevation at which they appeared to be; and were it not for some one instance I could observe them rise from the height at which they first sprang; for I regard the elevation they take to depend on the power of the first spring or leap they make on leaving their native element.

Judging from the foregoing, the Royal Society, and several other accounts which we have perused, it would appear that something beyond the mere leap of the fish would be required to account for the great heights (of 14 or 20 feet) at which letters published by Dr. Wallis: upon which Mr. Keill was desired to draw up an account of the matter in dispute, and set it in a just light. The letter in question was the consequence, which was read at the meeting of the 24th of May this year.

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There was throughout the whole dispute a confusion between the knowledge of fluxions; mixtures and differentials are, in a investigated method with general rules. If the dispute could be revived at the present time, it would be on entirely different grounds: but of course, in describing the controversy as it existed, we need only consider those points which were put in issue by the parties themselves.

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these fishes have been seen. If they cannot fly (which one would judge to be the case upon examining the structure and position of the fins) it seems probable that they take advantage of the wind at times, and so adjust their fins that they are carried upwards.

Several instances are on record of the appearance of flying fishes off the British coast, but we are not aware what particular species they were. It is probable that both the Exocetus exilis and the E. vulpinus may have made their appearance in our seas; these two species being very abundant, the former in the Mediterranean sea (where many fishes similar to those of our own coast occur) and the latter in the Atlantic ocean.

The Exocetus exilis has the ventral fins placed behind the middle of the body, and the E. vulpinus has the ventral (which are much smaller than in E. exilis) placed anterior to the middle part of the body: these two species therefore are easily distinguished; of the latter there is a figure in Yarrell's British Fishes.

The American seas afford us examples of other species of this genus.

FO, pronounced by the Chinese Füh, is the name by which Buddha is worshipped in China. According to the Chinese authorities quoted in Dr. Morrison's Chinese Dictionary (vol. ii. p. 9, 93), the religion of FO was introduced into China in the seventh year of the reign of the Emperor Ming, about A.D. 50. Though the Chinese government has usually discouraged and, at some periods persecuted, the followers of FO, they have always been very numerous; yet Mr. Davis remarks, in his work on the Chinese (vol. ii. p. 94), that 'the present condition in China of the religion of FO is very far from flourishing; and the extensive and magnificent establishments which have been founded in former times are evidently in a state of dilapidation and decay.' It is rarely that one meets with any of their nine or seven-storied pagodas in tolerable repair, though one or two of these striking and elegant objects occur in almost every landscape. Between Macao and Canton there are no less than four or five nine-storied pagodas on elevated points of land, and every one of them is in a state of ruin. Many interesting particulars respecting the Buddhist religion in China are contained in The Catalogue of the Shambas; or, The Laws and Regulations of the Priesthood of Buddha in China. Translated from the Chinese Original, with Notes and Illustrations, by Charles Fried. Neumann, London, 1860, 1831. [Buddha.]

FO-HI, the name of the first emperor of China, is said to have been born in the province of Shensi, and to have reigned B.C. 2992. According to the Chinese historians, FO-HI reigned for 13 years. He was a thickset, heavy-featured man, established social order, instituted marriage, and taught them the use of writing. FO-hi and his two successors Shun-nong and Hsung-ti, who are usually termed the 'Three Emperors,' must be considered as belonging to the fabulous part of Chinese history. They are said to have been the author of one of the canonical books of the Chinese, called 'Yâ-king.' (Du Hâlde's Description de l'Empire de la Chine, vol. I. p. 266-269; vol. ii. p. 344-353.)

FOCKSHAN or FOCCANY. [Moldavia.]

FOCUS (Geometry). [Ellipse, Hyperbola, Parabola.]

FOCUS (Optics), the point at or near which rays are collected by a lens or mirror. Its distance from the lens or mirror is called the focal length. [Lens, Mirror.]

FOCUSTA, a genus of mammals of the order of carnivora, and generally arranged by zoologists at the end of the Subfamily Acanthidea, and next to Ripipartilia; nor is it better known than the last-named genus.

tremity by an orifice, the upper one being a little sunk, and irregularly dentated, and the lower edge by a circular border forming a kind of sucker (ventouse), and serving to fix the animal.

Bose founded the genus from a mollusk found on the coasts of North America.

FOEBIR or FORHIRE, a Danish island on the northern coast of the western part of Schleswig, about 25 miles in area and 98 miles in circuit, has 5 parishes and about 5000 inhabitants. It is divided into Ostlerlandföhr, which forms part of Schleswig, and Westerlandföhr, which forms part of North Jütland. The fishermen are engaged in navigation, fishery, and woolen stock manufacturing.

FOELDVA[R. [Tolna.]

FOGICULUM, the genus to which the common pot-herb called fennel belongs. It was formerly considered a species of Anethum, but, since the remodelling of the natural order Apiaceae by K tough, it has been raised upon as a distinct genus. Anethum in fact belongs to the sub-family Pimpinelleseae, with thin flat fruit, while Funiculum forms part of the family Umbelliferae, the fruit of which is tapering or very, little compressed, and by no means flat.

In this country we are acquainted with but one sort of fennel, the Funiculum vulgar, a biennial plant with leaves cut into hair-like segments, yellow flowers, and glaucous stems, common on chalky cliffs in the southern parts of England. It is highly rated for the sake of the agreeable aromatic quality of its leaves. There are several others that deserve to be noticed.

Funiculum dulce, the Funiciochio dolce, the Italian form. It is an annual sort which is cultivated in Italy as celery with its leaves and its black seeds. It is said to be an excellent vegetable, resembling celery, but more tender and delicate, with a slight flavour of common fennel. The summers of England are not warm enough to render it possible to cultivate this successfully.

Funiculum paniculatum is a wild fennel, occurring on dry elevated hills in Sicily, where it is called Funiciochio d'asinino: it is known from common fennel by its long slender stem, short rigid leaves, and very hot biting fruit.

Funiculum Pammorium is cultivated in various parts of Bengal, under the name of Pammorium, or Mudderstock. Its scent is a warm, very sweet taste, and aromatic smell, and is much used by the natives with their betel and in their curries.

Finally, the Funiculum capense is a species little known, but it is said to be found on the western coast of the Cape of Good Hope, but about which little is known.

FOETUS, a Latin word applied to the immature young of any animals. This term is used in physiology to designate the embryo of mammiferous animals, and particularly the human embryo. They are said to have been the subject of the names foetus and embryo: the newly-developed germ has been called the embryo during the first six weeks of utero-gestation, or pregnancy, and then during the rest of its uterine life has been denominated the fetus: this distinction is entirely arbitrary. The word foetus is applied to the immature being, developed in the ovum of any animal after impregnation, and before it is capable of supporting an independent existence, and therefore is equally applicable to oviparous and viviparous animals. This has a much wider signification than the ovum, which is restricted to the embryo of viviparous animals only, in which the ovum after impregnation descends from the ovary into a peculiar cavity denominated the uterus, where it becomes attached to the mother, and derives its nourishment from her till it is sufficiently perfect to exist separately. In oviparous animals, on the contrary, the germ when detached from the ovary is conveyed through a tube called the oviduct, and excluded from the body of the mother, without being again connected with her, or deriving any nourishment from her. The ovum is subjected to a certain degree of temperature without the body, for a certain time, before the embryo arrives at a sufficient degree of development to leave the case in which it has been enclosed: during this period, called incubation, by which is meant the action of an organized and nutritive substance to which the embryo is connected, and which constitutes the yolk of the egg.

The ovum of mammalia after impregnation bursts from
the ovary, and is conveyed through the Fallopian tube to the uterus, but it has not been exactly determined how soon the zygote enters, for many years ago Sir E. H. Head provided an account of the process within the uterus, when he supposed that only eight days had elapsed since impregnation; but other accurate investigations have failed in finding any ovum, though it was probable that nearly a month had intervened between impregnation and the laying of the eggs.

The embryo at first continues embryo visible to the naked eye; in fact it may be considered as now proved by the labour of Wolff and other physiologists, that the organs of the foetus are successively formed in the ovum, and not evolved, according to account of hyaline, from parts past existing in the ovum. The ovum grows rapidly after reaching the uterus; it at first consists of two sacs, one enclosing the other, and the inner containing a liquid. When it is about half a line in diameter, a new element becomes visible in it: a round, opaque, globular, dark spot, situated upon the surface of the internal globular or sac. This spot, which is seen either on or through the inner membrane of the ovum, corresponds with the chavirertura of the egg, and is the first rudiment of the fetus.

In birds the chavirertura or germ spot lies upon the surface of the whole ovum after the commencement of incubation; it expands and separates into two layers: the outer is called by Ponder the serous layer, and subsequently forms the serosa, nervous, muscular, and tunica vasculosa of the egg; the inner, which is in contact with the inner surface of the albumen, and forms the albumin, and together with a third developed between the two others, and named the vascular layer) applies to give rise, by the changes which it undergoes, to the intestinal, respiratory, vascular, and glandular systems. The membrane derived from the germ spot gradually adheres to the yolk, till it nearly encloses it in a sac, which begins towards the body of the chick contracts into an old bag, canal, which extends the whole length of the embryo, and becomes the future alimentary tube. The sac containing the yolk, and attached to it with two month of its existence, is called the vitelline sac or yolk-sac, and towards the close of incubation is drawn into the belly of the chick, and its contents are used as nourishment. The lower end of the alimentary canal (the cloaca of birds) opens into a sac which expands with the growth of the embryo, and is called the ventricle or yolk-sack, and towards the close of incubation is drawn into the belly of the chick, and its contents are used as nourishment. The lower end of the alimentary canal (the cloaca of birds) opens into a sac which expands with the growth of the embryo, and is called the ventricle or yolk-sack, and towards the close of incubation is drawn into the belly of the chick, and its contents are used as nourishment.

The natural structure of the ovum, and the early develop ment of the embryo, in mammals, appear to be much the same as in birds; the egg of a bird, and a mammal, having characteristic differences. When a human ovum of any magnitude is examined, the embryo is seen suspended in a loose bag filled with fluid, called the amnion, which is a thin sac; this sac is the outermost product of the serous layer of the germinal membrane; for its formation a membrane is reflected from the sides and extremities of the embryo, (the reflection, according to Velpeau, not commencing before the twelfth day,) so as to enclose a space behind it. As the walls of the trunk close in front, the circle at which the amnion is attached to the chorion, is gradually contracted, till at length it is limited to the edge of the umbilical opening; it then invades the umbilical cord, and spreads out from its placental extremity into an ample sac filled with fluid, in which the fetus floats. The mucous layer of the amnial membrane, in mammalia is supplied from analogy to form a sac, as in birds, containing a yolk, or substance subservient to the nourishment of the fetus in its early stage. Whether this view of its formation and use be correct or not only rests on analogy; but in the early stages of the development of the embryo in mammals, before the amnion is formed, the telencephalon is being filled with a whitish fluid called the vesicle alba, may be found on the placenta, at or near the extremity of the umbilical cord, and exterior to the amnion; from this fluid tube may be traced along the cord to the yolk sac, and in some mammals it is seen with the intestines in communication; this tube becomes obliterated so early (Velpeau says in the sixth week of gestation) that its communication with the intestines was long undetected, though the sac was known to the older anatomists. The intestinal vesicle finally differs in mammalia and birds in this circumstance, that in the former it is not drawn into the body of the fetus, but remains without a connexion with the intestines. Sir E. Head describes an amnion existing within the uterus, when he supposed that only eight days had elapsed since impregnation; but other accurate investigations have failed in finding any ovum, though it was probable that nearly a month had intervened between impregnation and the laying of the eggs.

In man, after impregnation has taken place, a spongy membrane is formed upon the inner surface of the uterus by an exudation of lymph. This membrane, called decidua, lines the whole of the uterus before the descent of the ovum; but when this process is continued through the Fallopian tube it gradually pushes the deciduous membrane before it, and forms a cavity, called the chorion, which is called the 'decidua vera.' This grows with the ovum till it fills the cavity of the uterus, and comes in contact with the other portion called the 'decidua vera,' lining the walls of the uterus. In man, the decidua decidua vera is where the placenta is fixed to the uterus. The ovum has two proper membranes, the amnion, which we have described, internally, and an outer membrane, which is called the chorion; this latter membrane in man, during the first month, adheres to the decidua vera, and is usually covered with vascular villi, which become united with the membrana decidua, which is also thick and vascular. The thickening and vascularity of both these membranes gradually diminishes, and becomes concentrated on one part, essentially, the decidua vera. This part is called the placenta. In ruminating animals the thickening and vascularity of the chorion is confined to a number of circular and spongy elevations varying in number from thirty to one hundred, which are called cotyledons. These vascular processes dip in between corresponding processes attached to the uterus of the mother, which are called maternal cotyledons, the surface of which is supplied with numerous vessels derived from the uterine arteries and veins. The result of this arrangement is that a large portion of the maternal blood circulates in these vessels, and is equally extensive of one of the fetus, and though there is no direct communication between the arteries and veins, we must suppose that nourishment is imbibed from the vessels of the mother by those of the fetus through the fine intercommunicating vessels by which they are separated. In man the relation between the maternal and fetal systems is not so clearly understood as in the preceding instance. In the human subject the placenta is a spongy vascular mass like a cake, from six to eight inches in diameter, about an inch thick, and consists of a large number of vessels, and presents the ramifications of the umbilical vessels, which consist of two arteries and a vein. The ramifications of these vessels communicate with each other, but no communication has ever been shown to exist between the umbilical and uterine vessels. The blood from the umbilical artery enters the chorion capillaries, which discharge that the placenta is rendered turgid, and that vessels are found filled in every part of it, but between their ramifications there will remain an un.injected substance, and the uterine surface will not be injected, for the fetal vessels will be collapsed or closed. If, on the contrary, we inject from the uterine vessels, the placenta will be rendered turgid, but nothing passes into the fetal vessels. From this circumstance it is concluded that the placenta consists uniformly of two portions: the one is furnished by the deciduous coat of the uterus, the other by the vessels of
the chorion, and these two portions may, during the first three months, be separated from each other by maceration. The structure of the fetal portion, so far as can be made out, appears to be similar to that of the pulmonary vessels, the artery terminating in the vein. But the maternal portion is different from the child as to its mode of nutrition, but the arteries, as Mr. Hunter thought, seem to terminate in irregular cells, and the veins appear to commence with open mouths from these cells, for by throwing wax into the uterine arteries we fill the cells, and frequently the veins also. It has always been considered doubtful whether the placental cells of Hunter were real or artificial, being, in the latter case, produced by extravasation of the injection; and the recent researches of Dr. Robert Lee have confirmed this opinion, and the recent work of the present writer on this very obscure subject. With regard to the use of the placenta we may infer that it is very similar in man to what it is in ruminating and other animals; it most probably serves to produce a change in the blood of the fetus analogous to that which the blood of the adult undergoes in the lungs; and, from considering that the fetus itself cannot create materials for its own growth and support, we may further infer that the placenta is the source of nutrition also.

The yolk-string, or umbilical cord, which connects the child to the mother, is composed of the umbilical vein and two umbilical arteries twisted together, and surrounded by a gelatinous substance and the reflections of the chorion and amnion: it also contains the urethra, and the remains of the yolk sac, which, through the umbilicus and mesenteric vessels. It is visible in the fetus at the umbilicus about six weeks as a short and straight cord; at birth the length of it is, on an average, about two feet. The outer tunic of the cord, the amnios, is continuous with the epidermis, or cutis, of the umbilicus; and in the same way the chorion, which is also reflected on the yolk-string, is continued into the dermis, or true skin of the fetus.

We have already described the early development of the embryo, and the first changes which take place in the ovum. When the human fetus is first distinctly visible through the microscope it is about the size of a pea; it pass out a distinct trunk, and tail, to go from the child to the adult. It is nourished through the umbilical cord, which is the connection between the infant and the mother, and is the only visible connection between them. The cord is the only visible connection between the infant and the mother, and is the only visible connection between them.

By the sora the blood is sent from the left side of the heart and ducuts arteriosus to the different parts of the body, from which it is returned by the veins, but a great part of it passes out of the body of the fetus by the umbilical arteries which are continuous from the internal iliacs, and are called the umbilical arteries. The blood of the fetus differs in its physical and chemical qualities from that of the adult. There is therefore no distinction between arterial and venous blood; it is of a dark colour in both systems of vessels. The purified blood is brought from the placenta by the umbilical vein, and is mixed before arriving at the heart with that which has been circulating through the fetus: the mixed blood is then transmitted by the sora to various parts of the body; some of it only going again to the placenta by the umbilical vein.

The position of the child in the uterus is that which takes up the least room; it lies with the head downwards, the chin being bent on the breast; the knees are doubled up close to the belly, and the arms are close to the space between the head and legs. This is the most general position, and the child thus forms an oval figure, of which the head forms one end and the breech the other. The long axis of this ellipse measures in the ninth month fully ten inches, and the short one five or six. The quantity of fluid in which the child is bathed during the first few weeks is, on an average, about two pints.

The ordinary period of utero-gestation in man is forty weeks, though labour often takes place before this period, or is delayed a little beyond it. The embryo having now acquired sufficient size and strength to exist separately, its umbilical connection, the parts of the membranes and umbilical vessels, the fibres of the umbilicus contract, accompanied by contraction of the abdominal muscles and diaphragm. In consequence of this pressure the membranes gradually dilate the mouth of the womb; they then burst and evacuate the liquor amnii, leaving the fetus to bear the sole support of its child itself, which is gradually forced into the world and commences a new existence. In man, and other mammals, the young being for a considerable time dependent upon its mother for the whole of its nourishment, and very generally required to remain at the breast and a degree of protection till it is able to provide for itself.

FETUS (in Botany). The fetus of plants is what botanists term the embryo; a firm, cellular, more or less cylindrical body, either divided into two or more lobes or cotyledons, or having but one cotyledon rolled upon itself, and usually with its margins so united that it appears extremely...
like a solid cylinder. The cotyledons are placed upon a small body, which may be compared to two cones with their bases applied to each other and concentrically with their apices pointed in opposite directions, and which separates them in a slight degree when there are two or more cotyledons. That cone which points towards the apex of the cotyledon is the filum, and the other the radicle. Of these parts the cotyledons are the nucellar body, and the double caryopsis a radicle of growth, the plumule giving birth to the stem and the radicle to the roots.

The embryo rarely, if ever, exhibits any distinct traces of either vascular or woody tissue until the commencement of germination, but in the Arabidopsis thaliana the phenomenon takes place both are rapidly developed in abundance.

The embryo of a plant is developed in the nucleus of the ovule [Ovule], and always first appears in that part of the nucleus which is next the foramen. It is first seen as a whitish semi-transparent globule, and after it has advanced its radicle at the foramen and its cotyledon or corymb downwards into the mucilage which, at that time, fills the cavity of the ovule; eventually absorbing all the mucilage, when it occupies the whole interior of the seed, or only a portion of it, in which case it is associated with albumen. When it first appears it does not lie loose in this mucilage or water of development, but it adheres to a cellular spher which is attached by one end to the chalaza, and by the other to the summit of the nucleus where the embryo begins, and which appears to be the particular cell which, by the time the embryo is matured, but in mature plants, Nymphaea and Civia for instance, it remains visible in the seed as a long twisted irregular thread, from which the embryo is bound to hang when it is taken out of the seed. (TRENDENS, Synoptico Phytologiae, fasc. i. and MIRIAM FOGGIA (?))

FOGGIA, the chief town of the province of Capitanata, in the kingdom of Naples, situated in the midst of a vast and perfectly level plain, which extends from the foot of the Apennines to the Adriatic, is on the one hand the terminus of the line and the seat of the criminal court of the province. For civil suits Capitanata is subject to the Gran Corte Civile of Naples. The Royal Lycseum of the province is at Lecce; but there is at Fogia a secondary or grammar-school as well as elementary schools, and also among the agrarians and rural society. The Tribunal of Commerce for the province of Apulia was established here in 1818. Fogia is a modern-looking, regularly built town with wide streets, some fine buildings, and 21,000 inhabitants. It carries on a great trade in corn, wool, and cattle, the staple produce of the country, and has large granaries for storing corn. A great fair is held here in the month of May. Fogia is a pleasant place of trade, being the great inland market for the agricultural produce of Apulia, and is also the residence of many noblemen and landlords, who are wealthy and hospitable. The climate is not wholesome in the summer months, and the air especially is considered unhealthy. Fogia is reckoned, for its importance and wealth, the second town in the kingdom of Naples. It stands on a high plain from the capital to the eastern provinces, 75 miles north-east of Naples, 25 south-west of Manfredonia, and 27 miles west-north of Bari. The neighbourhood of Fogia being planted with olive, mulberry, vine, and other fruit-trees, looks like an oasis in the vast naked country. (CAPITANATI.)

A branch of industry at Fogia is the picking of capers, which grow in great quantity in the neighbouring country.

FOIL, in Gilding. [GILDING.]

FOIX, the name of a town and former county of France, situated in the department of the Ariege, and is situated on the left bank of the river which gives name to the department. It is among the Pyrenees, but many miles from the line of the highest elevation, about 404 miles in a straight line south-west of Paris. It is in 42° 5' E. longitude.

An ancient tradition ascribes the foundation of this place to the Phœcians of Masilia (Marseille), and attributes to it the name of Phœcée; but this tradition does not seem to be supported by anything, unless it be the modern name of the town. Rather than an ancient castle, the residence in the middle ages of the counts of Foix, and to an ancient abbey, founded by the counts of Carcassonne, and embellished by the counts of Foix with additional possessions. The streets of the town are narrow; but there is a good though antique stone bridge over the Arriege; and the remains of the castle, consisting of three detached Gothic towers, on a height commanding the town, and forming a part of the ramparts, are of the thirteenth century. The population of the town in 1832 was 3225, that of the commune 4837.

The inhabitants are industrious, but the sedulous situation of the place restricts its commerce: coarse cloth, serge, hats, and hosierie are manufactured; and trade of provisions, wine, pulse, resin, tarpine, cork, iron, and woolen cloth. There are some coal-pits; and on the banks of the river are several forges. Foix has a subordinate court of justice and several government-offices, an exchange, a high-school, a library, a theatre, and a society of agriculture and the arts. The town has no communication by posting with the capital: the line of post coaches at Toulouse, about 60 miles from Foix; and, although there are in this part fourteen passes or defiles of the Pyrenees communicating with Spain, none of them are practicable for carriages.

The territory known as the county of Foix was formerly part of the territory of the Vélos Téte-sages, and perhaps of the Consoranni inhabitants of the Causersans. It was afterwards part of the territory of the counts of Carcassonne, who were in feudal submission to the counts of Toulouse; but upon the death of Roger I, count of Carcassonne, who divided his estates between his family, it became, about the beginning of the fourteenth century, a separate jurisdiction, which fell to Bernard, second surviving son of Roger. This Bernard was the first of the counts of Foix, who took the name of Count of Foix. The county made a conspicuous figure in the civil and religious discussions of the middle ages: Raymond Roger (A.D. 1188-1231) and Roger Bernard de Grand (A.D. 1225-1241) supported the counts of Toulouse against the Aragonese of the house of Aragon; Conrade Simon, supporter of the papal authority: the former distinguished himself by various exploits in the course of the crusade against the Albigensians and their protector the count of Toulouse. [MIRIAM FOGGIA (?)] He acknowledged himself the vaunt of his kindred of the Ariege, but it was the counts of Aragon pretended to the sovereignty of the county, till James of Aragon (A.D. 1250) renounced his claim in favour of St. Louis of France. Gaston IV, count of Foix came into possession by inheritance from his father-in-law of his kinsman, his cousin Gaspard who held a part of Auvergne united to the other possessions of the royal house of Navarre, fell to the crown of France upon the accession of Henri IV. A.D. 1589.

The county of Foix was small; its greatest extent was from north-west to south-east by about 50 miles; its greatest breadth about 35. It was bounded on the east, north, and north-west by Languedoc, on the west by the district of Causersans, and on the south by the coasts of the Pyrenees, by which it was separated from Cerdagne and the land of the Albigensians, who were well supplied with arms and had a powerful alliance with the Arriege, which runs through it in the direction of its greatest length. It was subdivided into La Haute Partie (the upper district), La Basse Partie (the lower district), and Le Dommezan. The chief towns were Foix, Pamiers (population in 1832, 15,500 for the town, 30,600 for the whole commune), La Bastide de Seron (pop. 1652 for the town, 2911 for the whole commune), Mazères (pop. 2327 for the town, 3170 for the commune), Saurat (pop. 2563 for the town, 3014 for the commune), Saverdon (pop. 1897 for the town, 1964 for the commune), Ax or Aigls, Tarascon, and Le-Cabanes.

The present arrangement of Foix comprehends eight cantons, and 140 communes; it had, in 1832, 89,892 inhabitants.

FOIX (GASTON III, COUNT DE), Viscount de Born, was born in 1311. He was the son of Gaston II by Eleanor, daughter of Bernard V, Count de Comminges. From his personal beauty, or his fondness for the chase, he was called Phebus, on which account, agreeably to the French custom, he took the sun for a device. His father died when he was twelve years of age, leaving the guardianship of his mother. In 1345 he made his first essay in arms against the English in Guienne, and served afterwards in Languedoc, where, and in Gascony, he subsequently rose to the king's confidence. In 1349 he married Agnes, daughter of Philip III, king of Spain. In 1356, being suspected of harbouring criminal intelligence with his brother-in-law Charles the Bad, he was arrested by order of King John, and sent to the prison of the Châtelet, at Paris; but, being released soon afterwards, he went
to Prussia to serve against the infidels. In 1358, during the revolt called the Jacquerie, he aided in the rescue of the Duke of Anjou, whom the rebels had put to death. In 1359, he was in the service of the Count of Armagnac, who had set up pretensions to the viscounty of Béarn, and whom he afterwards took prisoner, in 1372, at the battle of Launac. Gaston, who had long lived in his father's house, left about the same time the court of his father, who was afterwards married, during the latter years of his life, to a daughter of Charles, Duke of Orléans. In 1370, the government of Languedoc becoming vacant by the recall of the Duke of Anjou, it was bestowed by Charles V. on the Count de Foix. He held it however but a few months. Charles V. dying on Sep. 8, 1371, that year, Charles VI. revoked the appointment, and gave it to the Duke of Berri. The Count de Foix appealed to arms, and finally yielded up the government only on negotiation. By his marriage the Count de Foix had but one son. This youth, in 1392, paid a visit of his mother, who had resided to the court of her brother, Charles the Bad, received from that king (to whom ermine was familiar) what he pretended was a bag of love-powder, which that king told him to conceal, at the same time informing him that the sprinkling of a small quantity of it upon any food his father might eat, would have the effect of reconciling the count to his wife. The powder turned out to be a strong poison, and Gaston ordered his son to be arrested. The young prince, deceived but not guilty, refused all nourishment, and died in his prison; the ‘Phebus’ were publicized when going to remonstrate with him, by accidentally striking the point of a knife into his son’s throat as he pushed aside the tapestry which covered the entrance to his dungeon.

In 1390 Gaston received Charles VI. and his whole court at his castle of Rochechouart, and he not only entertained them with great magnificence, but made the king the heir to his domains. He died of apoplexy in the beginning of August, 1391, as his attendants were pouring water on his hands at his return from a bear-hunt.

Historians, especially Foissart, have painted Gaston as an accomplished, brave, affable, and magnificent prince; they cannot however deny that he was violent to excess. His conduct toward his son, and to De Berne, the governor of this son, show what was the state of the French, and whom, on his refusal, he struck several times with his poniard, are incontestable proofs. His favourite passion was hunting. He carried it to such extreme, that if we may believe Saint-Yon, he did not allow his eyes to see to what a degree of lamentable horror he posed a work on what constituted the object of his affection, entitled Phebus des deuiz de la Chasse des Bestes sauvages et des Oiseaux de proye, three or four editions of which are known; viz. fol. Par. by Vourard, without date; another in various times by Poisson, in 2 vols. fol. 1515 and 1520. The book of ‘Phebus’ is also included in several of the early editions of the Treatise on Hunting by Jacques de Forquillon. (L'Art de vicer les Dutes, fol. Par. 1784, tom. ii. pp. 312. 313. Biogr. Universelle, tom. xvi. p. 131; Goujet. Bibliotheque Franpaise, tom. ix. p. 114.) It was in the castle of Orthes, Gaston’s principal residence, that Foissart, who stayed there a considerable time, heard many of the best stories with which his history is embellished. The portrait which he has drawn of Gaston is one of the most lifelike ever executed, and what a chivalrous prince was in the time of our Edward the Third.

FOKIAN: [CHINA, p. 80.]

FOKSHAM. [WALLACIA.]

FOLIARD, JEAN CHARLES DE, was born at Avignon, in 1726. Entering early into the army, and distinguishing himself by the attention which he paid to the scientific part of his profession, to the movements and manoeuvres of an army in the field: he drew plans and maps, and became a pretty good engineer. Having been appointed in 1751 a major in the French-Jamaica regiment, he was ordered to resign his commission, and to go to his Italian campaigns, and was wounded at the battle of Cassano. He afterwards served in Flanders under the duke of Bourgogne, and was wounded again at the battle of Malpassiet. He then, at times indiscr,” his career was marked with success, and he was appointed in 1755 to a commission, the military advice, which, although at times valuable, was not acceptable to his superiors, made him many enemies. The peace of 1712 having placed him on the reduced list, he repaired to Malta to offer his services to the order of St. John, which was then threatened by the Turks; but being offended at some real or supposed slight, he returned to the continent, and visited Sweden, where he was well received by Charles XII., who employed him on some missions, and whom he accompanied two years on his expedition to Norway. After Charles’s death in the trenches of Frederichshall, Foland returned to France, and made one short campaign more in the war against Spain of 1719, after which he withdrew into private life, and occupied himself in writing on military matters.

Foland’s principal work is his ‘Commentaries on Polybius,’ in which he not only makes his observations on the events narrated by the Greek historian, but also draws a number of lessons between ancient and modern military practices, and reasons on the consequences of what he had witnessed, exposing with the greatest freedom the errors of the various commanders of his own age. His disquisitions, though often prolix, are valuable. He had some peculiar notions on tactics, which have been refuted as inapplicable to the modern system of warfare. The critical judge of these matters, says that ‘Foland had scattered diamonds amongst dung, that his system of columns in deep order was worthless, but that the movements which he describes so well, and certain instances of ingenious defence which he explains, may be useful to the French, as the examples on which he had witnessed the stratagems of the conduct of some French generals, and also certain projects of his which give rise to reflections more useful than the projects themselves.’ Foland’s ‘Commentaries’ were published in 1724, 4 to. and again at Amsterdam, in 7 vols. 4 to., the seventh volume containing some treatises and strictures on Foland’s system of tactics, with his own replies.

FOLKLAND. [BOLCLAND.]

FOLKIO, to the Latin forum, properly signifies a leaf; and in books of accounts means a leaf, or two pages, of a ledger-book. Foliu a. and b. or recto and versa, are antient and still continued distinctions for the first and second sides of the leaf or folio, in manuscripts and early printed books.

FOLKES, MARTIN, an eminent English antiquary, was born at Ipswich, in Suffolk, was educated at King’s, and at Trinity College, Cambridge, and was admitted a fellow of the Royal Society, and two years after had so distinguished himself as to be chosen one of its council. His first communication to the Society was on the aurora borealis of March 30, 1717. This was followed by some papers on peculiar numbers, for which it may be sufficient to refer to the ‘Philosophical Transactions.’ He was chosen a second time of the council of the Royal Society in 1718, and continued to be re-elected every year till 1727; Sir Isaac Newton, the president, having in 1733 appointed him a vice-president in his place. In February, 1720, he was elected a fellow of the Society of Antiquaries.

At the first anniversary election of the Royal Society after the death of Sir Isaac Newton, in 1727, Mr. Folkes was the competitor of Sir Hans Sloane as president, and his interest was supported by a great number of members, though the choice was determined in favour of Sir Hans. He was, however, again chosen of the council in 1729, and continued in it till he was advanced to the presidency of his left hand; and in 1733, appointed one of the vice-presidents by Sir Hans Sloane. In this year he set out with his whole family on a tour to Italy, and, after residing a considerable time both at Rome and Florence, returned to England in Sep- tember, 1735. He was one of those who, by the arts of an ingenuity and ingenuity, the best furnishings of Italy enabled him to compose there an excellent ‘Disertation on the Weights and Values of ancient Coins.’ This was read in the Society of Antiquaries, who, requested that a copy of this work may be registered in the society, which he promised to give after he had revised and enlarged it; but, for some reason, this never was done. In the same year however, 1736, he wrote the ‘Observations on the Trojan and Antonine Pillars at Rome’ were read in this society, and afterwards published. The first volume of their ‘Archaeologia,’ which contains another paper

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be him on the brass equestrian statue of Marcus Aurelius at Rome, occasioned by a small brass model of it being found near London. In April he also communicated to them "A Table of English Gold Coins from the 15th year of King Edward III., when Gold was first coined in England, to their present value, and some Remarks upon the several Prices." Mr. Folkes, in order to illustrate this work, had set about engraving, and actually did engrave 42 copper-plates of English silver coins, which were left at the time of his death in an incomplete state. These, together with the whole of their weights, intrinsic values, and some Remarks upon the several Prices, were purchased by the Society of Antiquaries, December 19th, 1734, for 120l., and the whole published, with great additions, both as to letter-press and plates, under the care of Dr. Andrew Gifford, in 1753.

Sir Hans Sloane having, on account of his advanced age, resigned the office of president of the Royal Society, at the annual election in 1741, Mr. Folkes was unanimously chosen to fill that honourable post; and, in the following year, was chosen to succeed Dr. Halley, as a member of the Royal Society. In May 1745 the University of Oxford conferred upon him the degree of L.L.D., and he was afterwards admitted to the same degree at Cambridge.

On the death of Algernon, duke of Somerset, president of the Society of Antiquaries, in February, 1759, Mr. Folkes, then one of the vice-presidents, was immediately chosen to succeed his grace in that office, in which he was continued by the charter of incorporation of that Society, November 2, 1751. But he was soon disabled from presiding in that or in the Royal Society, being seized on September 20th of the same year with a palsy, which deprived him of the use of his left side. In this unhappy situation he languished nearly three years, till a second stroke put an end to his life, June 29th, 1754. He was buried near his father and mother in the church of Hillington, near Lynn in Norfolk, under a black marble slab, with no inscription but his name and the date, pursuant to the express direction of his last will. By his wife, Lucretia Bradshaw, who had been an actress on the stage before he married her, he left two daughters. The sale of his library, prints, coins, &c., in 1756, lasted 56 days, and produced the sum of 3090l. 5s. A monument to his memory was erected in Westminster Abbey in 1792, on a window in the south side of the choir, opposite to the monument of Mr. Thynne. (Cotgrave's Anecdotes of Books, &c., London, 1742, 562-566, from a memoir prepared for publication by Dr. Birch; Chalmers's Biogr. Dict., vol. xiv. pp. 428-431.)

FOLKSTONE. [KENT.]

FOLKSTONE, or FOLK-GEMOTE, literally a meeting of the people; an assembly under the Anglo-Saxon government, respecting the nature of which some of our antiquaries have differed. Sommer, in his 'Anglo-Saxon Dictionary,' calls it a general assembly of the people for considering and ordering matters of the Commonwealth. So the laws of King Edward the Confessor, 'Folkmote, i.e. vocatio et congregatio populi et gentium omnium, qua ibi omnes convivium debent, et universi qui sub protectione et pace Domini Regis degunt.' The continuance of this statute of Edward the Confessor expressly directs that the meeting of the Folkmote shall be held once in the year upon the 1st of May. 'Statutum est enim quod ibi debent populonones, &c., semel in anno seelict convenire, seelict in capite Kal. Maii.' (Wilk. Leg. Anglo-Sax., p. 294.)

Brady, in his 'Introduction to Old English History,' Gloss. p. 47, is entirely mistaken when he speaks of it as an inferior ordinary court, held once a month. The Folk-mote and Shire-mote (or general meeting of a county) were synonymous. (Wilk. ut supra, Gloss. p. 404.)

In later times a Folk-mote, according to Stow, among the citizens of London, meant a meeting of themselves. Fabian, in his 'Chronicles' (ed. 1811, p. 344), mentions a court of folk-mote held at Paul's Cross in 1256; and another assembled by command of Henry III. (ibid. p. 345), where the king, according to the former ordinances made, axed seven of the commons of the city to pass the sea.

FOMHALT. [PISCIUS AUSTRALIS.]

FOMENATIONS are liquid applications, generally of a warm temperature, placed in contact with a limited portion of the body, to mitigate or remove disease of the part, or of the neighbouring organs. They differ from partial or local baths, chiefly in the greater length of time which they are kept applied. Flannel cloths, or other substances fit to retain heat and moisture, are commonly employed. To enable these substances to retain the heat still longer, they are often covered externally with oiled silk. It is proper to renew the application before the cloths begin to give a feeling of coldness. The liquids used are of various kinds, sometimes pure water; at other times, medicated; they are termed emollient when charged with medicinal principles, such as mallows, and sedative or anodyne when they contain a narcotic principle, such as poppy heads.

FONYI. [LABORO, TERRA DE.] FONYI, a vessel employed in Protestant churches to hold water for the purpose of baptism, and in Catholic churches used also for holy water. The form of the font is usually hexagonal, similar to the form of the baptistery, in which fonts were originally placed. There are a great many fonts in England curious both for their antiquity and their architectural design: they date from the Saxon period to the time when the florid style of Gothic architecture was in vogue, in the reign of Henry VII.

Although the hexagonal form is the most usual, yet fonts occur both of a circular and square form. They are usually shaped like a cup, with a solid stem, or supported on columns; the top is hollowed out for the water, and the sides and stem are often highly enriched with ornamental sculptured figures, and with colour and gilding. In many instances a flight of steps forms a base, and even the sides of these steps are carved with pannels, having quatrefoils and rosettes sunk within them. It was usual to cover the basin of the font with a wooden lid, and there are some of those remaining of a pyramidal or spirelike form, richly carved and decorated, with a profusion of shafts, buttresses, and traceried piers up to the apex. There is such a cover in Castleacre church, Norfolk. Percheron church has a very ancient font, of a circular form, like the ancient Roman pental or circular stone-mouth of the well in the atrium of a Roman house; it is decorated with intersecting arches and columns, with a frieze of foliage, and figures above. Lincoln cathedral, and the South Church in Havley Island, Hampshire, are examples of the square form of font on fire.
columns; one being placed in the centre, of much larger dimensions than the four columns which are at the angles. The font of Blythborough church in Suffolk still shows some traces of colouring and gilding; and that of Lowestoff church in Norfolk has some fine remains of sculptured figures. The font in St. James, Norwich, which is in the choir, in Norfolk is remarkable for its elegance and richness of decoration. In Winchester cathedral there is one of the most antient and curious fonts in the kingdom. In the elaborately designed porch of East Dereham church, Nor-
folk there are fonts which are usually design,
gated, originally intended for holy water.

The Gothic fonts in England exhibit every species of design and decoration belonging to the several periods or styles of Gothic architecture, and therefore merit the attention of the architect with a sense of taste. The following is a series of drawings of fonts in 'A Series of Antient Baptismal Fonts, chronologically arranged,' &c., published by Mr. Weale, Hugh Holborn, London.

FONTAINEBLEAU, a town in France, the capital of an arrondissement in the department of Seine et Marne. It is on the high road from Paris to Montargis, Nevers, Moulins, and Lyon; 33 miles from Paris in a straight line, or 35 by the road. It is in 48° 24' N. lat., and 2° 42' E. long. There has been much dispute respecting the etymi-
ology of the name of the town. Morris. Naufragus, a writer on Heraldry, which derives it from the name of a fountain, called, in an-
tient title-deeds, Fons Blauid or Blaudi, and said to have obtained that name from Blau, one of the hounds of Louis VII. le Jeune, or more probably from the name of the orig-
inal proprietors of the place. At any rate, we know that the town was held by the monks of Fontainebleau until the time of Louis VII, who built here (A.D. 1159) a chapel, which was consecrated by the cele-
brated Thomas-Becket, in the midst of the surrounding forest, then called the Forest of Bievre: a château, or royal residence, was constructed there at that time, but but little of those buildings is left uncertain. The spot was a favourite one both with Phi-
lippe II. (Auguste) and with Louis IX. (St. Louis), who founded here an hospital and two chapels. Francois I. caused a magnificent château to be erected here by the architect Vignon, and the château was afterwards turned to the attention of the works of Rabelais, Voiture, and Clement Marot. His father, delighted with his imitations of his favourite authors, thought him a pro-
digy of poetic genius, and a relation advised him to study the classics. The town of Fontainebleau, which had been completely destroyed by the Wars of Religion, was re-
ished by La Fontaine in 1654, was the fruit of this advice. He was much delighted with the Italian authors, especially Machiavelli, whom he chiefly admired for his little novels. On the death of his father, he succeeded to his office, which he had been accustomed to take, a writer, and spent his life, with whom he lived unhappily, and from whom he finally separated. In fact, he was of too indolent and improper disposition for any of the common avocations of life; he does not seem to have had any absolute vice, but to have gone on in his own lounging way without taking any interest in what was passing around him. In an epitaph on himself he describes his life as having been occupied with sleeping and doing nothing; in the latter category he evidently includes the writing of his poems, which he probably threw off with an unhappy vein of insensible writing. Some verses of La Fontaine happening to fall in the way of the exiled duchess de Bouillon, who was residing at Château-Thierry, she caused the author to be introduced to her, and took him with her to Paris when she returned. She found him the superior of all the other bachelors, and placed his name on a list of pensions which he was allowed to various persons of merit. On the exile of this minister La Fontaine wrote a pathetic elegy. Though many dis-
tinguished persons honoured him with their patronage, and his ignorance of the world and his habitual carelessness would have plunged him into difficulties had not a liberal lady, Madame Sibérie, taken him into her house, where he resided for twenty years in perfect tranquillity. A well-
known story gives a good idea of La Fontaine’s quiet lazy disposition. Madame Sibérie having one day occasion to marry all my animals but three—my dog, my cat, and Le Fontaine. In 1854 he was received into the Académie as successor to Colletot, not without opposition from the greater sort, on account of the licentiousness of some of his works. How-
ever he triumphed over Boisset, who was the rival candidate. The king, indignant at this, delayed giving assent to his admission, but on the death of M. Berdou, and the election of Boisset to fill his place, the king gave his approbation of the choice of La Fontaine. On the death of his benefactress, La Fontaine was again reduced to difficulties, and would have been forced to accept an offer of St. Evremont to take him to England, had not the duke of Burgundy assisted him. In 1692, when he became seriously ill, the Abbé Pouget paid him a visit to attend to his spir-
ual welfare. La Fontaine submitted to the dictates of
the abbé, though he was somewhat restive on two points. In the first place, the abbé demanded a public apology for his imputations against the see, and, secondly, an act of clemency on the part of the court to the letter to the actors a comedy which he had written. He made the required apology, but he applied to the Sorbonne before he yielded to the second demand; moreover, receiving an unfavourable answer, he committed the comedy to the press and published it on a small scale. He had only chance of accumulating a small sum, by an act which in itself involved no moral wrong, but merely happened to be at variance with the prejudice of the clergy, is a striking instance of the bigotry of the times. In 1655 La Fontaine became more serious, and wrote an epic poem about the church, and devoted himself to a translation of the hymns of the church and other religious works. He would now have been almost alone in the world, if his friend, M. d'Hervart, had not kindly offered him an asylum in his own house.

The works by which La Fontaine is known are his Tales and his Fables. The former have a very equivocal set of readers, and are seldom mentioned in society; the latter belong to that small class of works the reputation of which never fades, and which are just as well known at present as they were in the seventeenth century. Immerseable are the editions of these fables, and great the field they have offered for the ingenuity of artists in furnishing illustrations. To say nothing of the various unannotated editions, there are 2400 editions of them printed from an original type, with vignettes to a huge folio with large and elaborate plates; and even now an edition is publishing adorned with five wood-cuts, representing all the animal mentioned in the fables in human dress. It is remarkable that La Fontaine's fables have been translated into almost every language; his works are taken from French, Martinelli, Ariosto, and others: his fables are chiefly selected from Æsop. It is not the matter of his compositions, but the manner in which he tells a tale, that constitutes his merit. His manner is masterly; his phrasing grandly simple, La Fontaine says, "I have not to be perceived, not described; for after a profound philosophical investigation," he continues, "we arrived at the ultimate causes of excellence, and referred the point to La Fontaine himself, the "bon homme" (as he is called) with a certain thing about the body, I wrote them as my humour dictated, and that was all."

Curiosity will cause a reader to wade through a new story even when it is indifferently written; but a man who, by his mere manner of narrating, can make a vast number of readers pause a series of narratives, with every incident of which they are perfectly acquainted—must have talent great indeed.

FONTAINE-LE-VOYAGE. [BRAMANTE.]

FONTANA, DOMENICO. A distinguished Italian architect of the school of Bramante, was born at Mili, on the borders of the lake of Como, in 1543. Having a decided taste for mathematical studies, at the age of twenty he went to join his brother at Rome, nor was it long before he attracted the notice and obtained the favour of Cardinal Montalto, who confided to him the erection of the Cappella del Prisco or Sistina in Santa Maria Maggior, a work that stamped his reputation as a design of great boldness and grandeur, although, according to modern taste, it is too overcharged in its ornaments, and the best of its parts are too glistening and gilded and decorated with carvings. By the same ecclesiastic he was employed to build for him, in the vicinity of the abovementioned church, the palace now known by the name of the Villa Negrotti. This edifice which, partly on account of its size, and partly on account of the length of time occupied in its construction, and partly owing to the grandeur of its dimensions in Rome, is, like most of the architect's other designs of the same class, exceedingly simple in its composition, and has little decoration beyond what it derives from the dress of the interior of the church, which latter are alternately angular and curved. Yet favourable as these undertakings were in themselves, they were not productive of much immediate profit to the architect, and were even injurious to his patron, as they afforded the pope (Gregory XIII.) a pretext for suspending the works on the cardinal, since he was wealthy enough to indulge in the affairs of the cardinal, as he was wealthy enough to indulge in the new construction. On this, out of his attachment to the cardinal and his eagerness to complete the Cappella del Prisco, Fontana generally contributed a thousand scudi of his own, rather than to see the scheme abandoned. To his disinterestedness on this occasion he was, in all probability, not a little indebted for his subsequent good fortune, as the cardinal was shortly afterwards elected to the pontifical throne, under which he erected the altar in the chapel of the Lateran, with the means of indulging his taste for architecture and embellishment; and one of his projects was to re-erect the various Egyptian obelisks which lay scattered and neglected among the ruinous fabrics of the antient city. The first to be considered in his present condition, to the Eternal City, remained standing in the Vatican circus. This was he was anxious to have removed to the area in front of St. Peter's; but the practicality of transporting such an enormous mass (43 feet 2 inches high), and elevating it upon a pedestal, was so doubtful that the chief mathematicians and engineers were summoned to suggest the means. Upwards of five hundred different projects and models were submitted to him, nor did Fontana fail to come forward among the competitors, for he produced the model of a pedestal on which to be erected upon a cedar figure of the obelisk; besides which he gave satisfactory proof of his contrivance by applying it to a small obelisk in the Mausoleum of Augustus. Still, although his plan was approved and adopted, it was not until after urgent representations on his part that the carrying it into execution was intrusted to Fontana, it having been in the first instance determined that Giacomo della Porta and Ammannati should take charge of the operations. A circumstantial account of all the proceedings attending this very arduous enterprise was published under the name of "Il modo tenuto nel trasportare l'Obole del Vaticano." The operations commenced April 30th, 1586, and the obelisk was removed, and placed on the new pedestal prepared for it, on the 13th of the following June, when was successfully accomplished a work which had been thought impossible for two hundred years as it was transported from the quarries in Finland. The complete success of this task gained the architect not only honours and distinction, but a pension of two thousand scudi, and also gave him assurance of an equally favourable result in all similar undertakings. To the obelisk La Fontana afterwards erected in the Piazza del Popolo, before St. Giovanni Laterano, and in front of Santa Maria Maggior. The second of these is still larger than the first-mentioned, being 106 feet 7 inches high, independently of the pedestal, and its weight calculated at about 460 tons. (Egyptian Antiquities; Lib. Ent. Knowledge, vol. i., chap. 15.)

In addition to tasks of this nature Sixtus afforded the opportunity of displaying his talents as an architect, giving him charge of the various works at the Lateran, and especially the attachment of a portico consisting of an upper and lower gallery, in five open arcades, the piers of the former ornamented with a Doric and those of the other with a Corinthian order. Immediately adjoining this portico he also erected the palace of the Lateran, a uniform square pile of building, in a series of windows above the lower floor, all of which have pediments alternately angular and curved, and the whole is surmounted by a massive and rich cornice. By the same point he was likewise charged to construct the Vaticans and flanks of the church of St. Peter, which he executed with great success. (Bramante. [Bramante.]) Nor was this the only addition he made to that pile, for he also erected the lofty mass of building on the side towards the piazza of St. Peter's, which, impressive as it is in itself, does not bespeak much fertility of imagination; it being height, which had been a distinguishing characteristic of the palace of the Lateran. Another papal residence, which was partly erected by him, was that of the Quirinal, or Monte Cavo, so called from the two colossal figure before it, which he removed thither from the Baths of Constantine. These works were begun while the artistic hands of the columns of Trajan and Antoninus, and the fountain of Terminii. He was preparing to erect a vast edifice for cloth manufactory within the Coliseum, the plan of which was to have been elliptical, like that of the amphitheatre. These Sixtus, no fortune. He was only favourable was frustrated a scheme that would irreparably have injured the sublime and majestic character of that monument of antiquity.

The death of that pope brought a change of circumstances to Fontana, who was disinamed by Clement VIII.
from his situation as papal architect. Still his prosperous fortune did not desert him, for he was immediately invited to Naples, by the viceroy, the Count de Miranda. In that capricious court of Naples, it was 281 in its variety of works; and among others he executed the fountain of Medina; but the most important of them all was the royal palace, a grand and imposing, although not particularly elegant edifice. He died in that city in 1657, possessed of considerableness.

FONTANARIA, OR FUENTE RABIA. [GUIPUZCOA.]

FONTENAY, a town in France, capital of an arrondissement in the department of Vendée, and on the left or north-west bank of the river Vendée, which unites with the Sèvre at Niort. It was 281 noted in the religious doubts of the 16th century (A. D. 1568 and 1570). In the first siege, which was successful, the conquerors, in violation of the terms of the surrender, put the garrison to the sword, and afterwards slew the commandant, whom they had taken to Rochelle. In 1574 Fontenay was the scene of still greater atrocities perpetrated by the Catholics.

The town stands partly in a valley on the bank of the river, partly on a hill. The streets are narrow, crooked, and ill paved. The spire of the church of Notre Dame is remarkable. A masonic tribunal was held in that town, but the extraordinary height, which is above 300 feet. The covered market-places are of unusual size for a small provincial town. The population in 1832 was 6388 for the town, and 7004 for the whole commune. The chief manufactures are linen and coarse woollen goods. The quantity of consumption is large. In the neighbourhood there are several tan-yards and some breweries; trade is carried on in corn, cattle, horses, mules, wood, charcoal, and wine, of which last the neighbourhood produces some white of ordinary quality. There are four yearly fairs and a large corn market. Magnificent stones of coarse texture are quarried in the neighbourhood. There are subordinate courts of justice, a high-school, and an agricultural society.

The navigation of the river Vendée commences here. Fontenay is sometimes distinguished by the epithet 'Le Loup de la Vendée.' Points of Fontenay during the Revolution, when such advice prevailed to obliterate all names that could recall the feudal or monarchical period, the designation was changed for that of 'Le Peuple.'

The arrondissement of Fontenay comprehends 9 cantons and 136 commune. In 1832 a population of 15,964.

FONTENELLE, BERNARD LE BOVIER DE, born at Rouen 11th February, 1657, was, by his mother's side, nephew of the great Corneille, and, by a long life of nearly a century, contemporary with most of the greatest writers of the age. He held a conspicuous place, distinguished as well by the variety of his acquisitions as the brilliancy and versatility of his powers. Educated at the College of the Jesuits in his native city, he displayed, at a very early period, the quickness and aptitude of his talents, which he cultivated with the greatest diligence and application. At the age of thirteen Fontenelle successfully contended for the prize offered for the best composition in Latin verse; and in general literature had deserved honourable mention on the records of his college. From that time the theory of the law was his study, and his attention was nominally directed. But his heart was not with the science: poetry, philosophy, and history engrossed the time which should have been devoted to the Corpus Juris. During this period principally Fontenelle acquired those vast stores of varied and accurate knowledge which, giving an appearance of catholic learning to his works, are constantly recurring in the shape of apposite and almost unconscious allusions. Having completed the term of his legal studies, he lost the first cause in which he had been engaged for four years, the sole useful profession of the law, devoted himself to the more attractive and congenial pursuits of literature.

In his private fortunes there is little to interest the curiosity so commonly felt regarding the doing and spending of princes. But Fontenelle was subsequently too much attracted to do justice to his literary career, which was neither without honour nor profit. For the last years of his life he was in the enjoyment of a yearly income of nearly 900£, and left behind him at his death a very considerable sum. From 1699 to 1741 he held the distinguished and responsible office of secretary to the Academy of Sciences at Paris, and was an honorary member of that of Berlin and of the Royal Society of London. For repudiating in letters of 13 January, 1757, having completed his hundredth year within a few weeks, and expired exclaiming 'Je ne souffrirai pas, mes amis; mais je sens une certaine difficulté d'être.' The calmness with which he met his death was in keeping with the tranquillity of his mind.

In his personal character Fontenelle presents a rare instance of self-command and moderation, neither confounding virtue with austerity nor pleasure with excess. To the measured reserve of his character there is a somewhat exalted passion for the rejected deism, that in his whole life he had never laughed nor wept. As he held it to be the duty of the sage to cultivate all his senses, internal as well as external, and to combine with the enjoyment of all nature the exercise of all his faculties, the tone of his most extended conceptions of the past is that of the historian. The universality of his pursuits, which embraced nearly the whole domain of literature, offered on the one hand an insuperable obstacle to unrivaled excellence in any single department, but contributed on the other, by enlarging his view and augmenting his store of knowledge, to render respectable his attainments in all.

As a poet, in which character he made his first appearance in the world of letters, he composed several tragedies and odes, most of which were written before he was twenty, and if the 'Théâtre de Pompée' met with some success and the praises of Voltaire, it has since fallen with the rest into neglect and oblivion. His Pastoral, which were recommended solely by their novelty, are full of extravagant conceits. He is said to have written the first of the 'Arabesques'; and, with the 'Apologie de L'Amour,' is alone worthy of being preserved. His poetic pieces occasionally display much delicacy of sentiment, and extreme polish and elegance both in the thought and diction; but in all of them the poetic feeling is weak, and there is in all a kind of self-consciousness and manner, a decided want of originality and force.

The 'Dialogue des Morts,' published in 1683, first laid the foundation of his literary fame, which was firmly established by the appearance two years afterwards of the 'Éloge de la Science.' In 1683 he published 'Contes sur la Mort,' in which he violently avails himself of the language and the sentiments of the Middle Ages, which contains 'Le Combat des XV. contre les Romanes'; and, in the second part of that work, which contains 'Le Combat des XV. contre les Romanes,' which contains the 'Apologie des Tourbillons,' and similar works, although he displays a philosophical spirit, are neither vigorous nor profound.

Generally indeed we ought not perhaps to look to the works of Fontenelle to discover the secret of the great influence and reputation which he enjoyed in his lifetime. The solution lies rather in his possession of unequalled moral qualities, and of the most brilliant acquisitions, by which
he was able to erect at once the man of fashion and the man of letters. By his wonderful skill in adapting himself to the capacity of others, he was able to improve and embel-

lish the literature with wit and allusion; and by applying the language of ordinary life to the most abstruse topics and ideas, he contributed greatly to transfer the tribunal of letters from the scholarly few to a large and miscellaneous class of readers, and, by this revolu-
tion, to advance the study of science and learning in the seven-teenth century. Such services may be forgotten, for the names of those who have laboured not so much to dis-cover new truth, as to preserve and transmit the old, are too often left unrecorded; but they have not laboured in vain, for so diffuse truth is as useful as to discover it. If the illusion of the discoverer be more dazzling in its course, and its track more permanent, that of the dissemi-
nator is not less beneficial to mankind, and leaves, in a more extended civilization, a nameless but imperishable monu-
ment.

The works of Fontenelle were collected and published in 5 vols. 8vo, Paris, 1760.

FONTOY. [Hainault.]

FOOD. All organized bodies are nourished by the intro-
duction into their internal structures of materials from
without. Such materials are called indifferently aliment,

or food, and are fitted to supply and maintain the fluid and solid matter of the body. For this purpose they must either be soluble naturally, or capable of being dissolved by the digestive principle of the stomach. However diversified these materials may be in the point of chemical composition, they are reduced by the action of the organs of digestion into a fluid (chyle) [Digestion of homogeneous character, which is reassembled into solids and fluids of different natures by the influence of the power of assimilation. Before undergoing this second change, they must be brought into the state of arterial blood, and so form a part of the circulating fluids of the body. Substances which are incapable of undergoing these successive changes cannot be considered as articles of food, or are, at least, very imperfectly nourishing. Those which are without various articles which, although incapable by themselves of nourishing, appear, when taken in conjunction with other articles, to contribute essentially to nutrition, but even of a substance unquestionably nutritional, the whole mass is never completely nutritive, i.e. capable of being entirely assimilated; some portion of it merely giving it bulk, or being of a nature calculated to make certain impressions on the organs of digestion, and to stimulate them to those actions which conduce to the exercise of the power of assimilation.

These substances which have previously been endowed with life can alone be considered as affording nutri-
tment to animals of a high degree of organization, such as man, of

whose aliment we here mean to treat. For a practical view of the subject, we divide it into the following heads, viz., the sub-tantials and the accessories; the first comprising the real materials or sources of nourishment; the second con-
diments, &c., which either render the food more grateful to the palate, or by a vital or chemical action on the organs of taste and the stomach promote digestion.

It is customary to distinguish the articles of food into solid and fluid, or meats and drinks, and into animal and vegetable. But the former is merely a distinction of convenience, and does not extend to any ultimate difference in their nature, since they are made up of the same materials, and are respectively treated by the organs of digestion; while the latter is only important in a medical point of view, as relates to the amount of nutrient in a given quantity of food, and the impression which the two kinds of food make upon the system generally. Specific differences are distinguishable in the chyme at least, if not in the chyle, according as the food from which it is formed has consisted of vegetable or animal matter, and according as it has contained fatty or oily substances, or been destitute of them.

It is the advantage of substances to nourish the body by being assimilated by it which can be resolved into their organic molecules, and as these are only found in the proximate principles of animals and vegetables, of which principles none perhaps are exclusively similar. The advantages of the principle derived from the latter species, without reference to the source whence de-

pired, the molecules can only be liberated by being diffused through some fluid, and therefore it matters not whether}

they be brought into such a condition by external agency, or by the apparatus with which the higher animals are furnish-
viz., the teeth, stomach, &c. To a fluid state they can pass the more easily through the alimentary canal. The resolution of the materials of food into their organic molecules is the real office of the digestive organs, while exercising that function within healthy limits: the resolution of the proximate principles of vegetable or animal substances is elementary or ultimate principles, when various gases are evolved, is a morbid or diseased action of these organs.

The proximate principles of animal substances re-
sist sometimes of three, sometimes of four elementary or constant principles. Thus, carbon consists of three or of most frequent occurrence in the vegetable kingdom; these which consist of four are of most frequent occurrence in the animal kingdom. Where the elements are three only they are generally oxygen, hydrogen, and carbon; whereas, oxygen, hydrogen, carbon, and nitrogen, or azote. The predominance of carbon is the characteristic of the organic matter; the predominance of nitrogen the characteristic of animal matter. Wherever nitrogen is absent a mineral matter the substance approximates, or is analogous to, vegetable matter, such as animal fats, which closely resemble vegetable oils. Animals which are closely ruminant do not prosper if kept on long food destitute of azote, but man, whose dwelling-place is under different climates, can dispense with an azotized diet better in some parts of the world than in others, for instance, better in hot countries than in cold; and some of the attendants on the caravans in their journeys across the deserts of Africa can subsist for a length of time on gums, which do not contain azote. Majendie, who carefully investigated the subject, concludes from his experiments—that, That animals deprived of their nitrogenous food live some time on their flesh, and hence, that no animal can live for a considerable time on food entirely destitute of azote. 2d, That animals, even those naturally carnivorous, can live a certain time upon food entirely destitute of azote, in con-
currence with a certain quantity of nourishment of animal nature. 3d, That vegetable and animal substances destitute of azote are highly nutritious, provided at the same time azote can be supplied from some other aliment containing it, though in small proportion. It seems however that vegetable aliments acquire an accession of azote in the digestive organs, though probably at the ex-
cpense of some part of the nutritive principle contained in them. Admitting this the general correctness of Majendie's views, alimentary substances may be divided into three classes.

I. Those which contain azote, carbon, oxygen, and hydrogen.

2. Those which contain carbon, hydrogen, and oxygen.

III. Those which contain neither azote nor carbon.

The first class naturally demands the greatest share of attention, because the aliments which contain azote or respond with animal substances in general, and are calculated to repair the waste of the fluids and solids without great alteration or effort in the digesting organs. All the immediate principles of this class are not however equally digestible, or possessed of the same properties. It is necessary therefore to say a few words on the leading forms or species of azotized aliment.

1. Fibrin.—This is found in greatest abundance in the animal kingdom, constituting the principal part of the muscular fibres of animals, and no inconsiderable portion of the blood, when by rest that fluid is coagulated. It has been thought to exist in some of the vegetable kingdom, particularly in the juice of the cucumber, Papaya, or pawpaw-tree, and in certain other plants with a milky juice, such as the Palo de Vaca, Cow-tree (Galacto-
dendron utile) of South America, and in some fungi, or vegetable animals; but this principle found in these vegetables with animal fibrin has been questioned by some recent chemists. Dr. Thomson considers the principle of the cow-tree distinct, and terms it galactin, while Gmelin terms that of the others emulsion, which he con-
siders analogous to gluten.

Fibrin constitutes the chief part of the solid matter of the muscles of animals, particularly of those which are old and have dark-coloured dry flesh: it is that portion which re-
In the form of fibers after all the soluble matters have been removed from the flesh of animals by boiling. It is insoluble in cold water, is corrugated by long boiling in water, is insoluble in alcohol, but strong acetic acid causes it to swell considerably, rendering it transparent like cellulose. It is also insoluble, or, at least, diffused through water by long boiling.

The flesh of animals is divided into white and coloured, and indeed it differs in the same animal at different ages, having different accompanying constituent principles at different periods of life. Thus in the calf the muscles are white, or only pinkish; in the ox they are deep red; in the first state much gelatin and little of osmazome is present; hence the gravy of veal easily gelatinizes, while that of beef rarely does so.

Gluten is, of itself, a neutral, but a peculiarly milder, that is, more easily digested, because the force of aggregation is more easily overcome by the powers of the stomach in middle-aged than in old animals, and in the flesh of the female than that of the male, unless the males have been castrated when young.

Albumen is another important constituent of animal bodies, but of more sparing occurrence in vegetable substances. In animal substances it occurs in two states, fluid and coagulated. The most perfect examples of it in the former state are the white of eggs, which is an alkali form, and is, then, a true gluten, probably an alkaline solution of alburnum. Coagulated albumen constitutes cartilage, horn, hair, and the nails or hoofs of animals. It forms the chief constituent part of oysters, muscles, smails, &c. Milk is an albuminous fluid, and is more complex in its composition than albumen. It is partly coagulated by rennet, and it is likewise solidified by many acids, such as that of the gastric juice (in the form of rennet), and by some metallic salts. Milk, though coagulated by acids, is not so by boiling.

Gelatin is likewise found in the green fuculent of plants in general, and in some vegetables in very considerable quantity, such as the fruit of the Hibiscus esculentus, or Ochro, and the bark of the Ulmus campestris, or elm. The farmer is used in Sicily to thicken soups, and both are used in the same way as that of gluten and other native gums. It is soluble in water, and it is likewise the character of the seeds of peas, beans, and other edible pulse.

Fluids which contain at the same time any of the varieties of sugar and gluten, or gluten-like principles, are capable, under favourable circumstances, of undergoing the vinous fermentation. A kind of fermentation occurs, by the agency of the gluten, in the conversion of wheat-flour into bread.

Emulsion (vegetable albumen, vegetable rasein, or amygdalin) occurs occasionally in the skins of many plants, and in many dry parts of plants, viz. in all oily seeds which when triturated with water form an emulsion. The real nature of this principle is not clearly ascertained. Many chemists deem it identical with animal albumen; others associate it with the casein, to which others pronounce it to be gluten. To Gmelin it appears distinct; he has accordingly given it the above name.

II. Proximate principles which consist of oxygen, hydrogen, and carbon.

Gum is a principle of vegetables, in all of which, but mostly soft parts of them, it is found; in some, however, it abounds so much as to form their chief characteristic; they are thence called mucilaginous, or gummy, such as the carrot, parsnip, &c. Gum is colourless, but from admixture of tannin it is of a brown hue, transparent or translucent, of an insipid rather sweetish taste, and not crystallizable. When pure, it is entirely soluble in water, whether warm or cold, forming with it a tenacious fluid; it is insoluble in alcohol. In the state of solution in which it occurs in plants, of which it forms the chief material for their nutriment, it is termed mucilage. From some trees, either by spontaneous cracks or incisions, it exudes and concretes on the bark, as is seen in the various beaunas, which yield the gum arabic, the plum, and cherry. Different species of trees yield different varieties of gum, according to the various sorts of gum, according to the plant which yields it, but these scarcely affect its nutritive properties. The principle which is found in many fruits, such as the gooseberry, currant, orange, &c., which is vegetable jelly, is regarded as a kind of gum, though designated pectin. This is neither acid nor possessed of basic properties, and the reason why it so often seems sour is by being united
with vegetable acids (malic, citric, &c.), which communicate to the juices of the seeds their taste, and also enable them to redden litmus paper. The grateful and cooling properties of such fruits is therefore chiefly due to the vegetable acids, while their nutritious qualities depend upon the principal carbohydrate. 

Mucilaginous vegetables are rarely fit for use when growing wild; but they are much锄plified by the processes of horticulture, having their bulk increased and their qualities improved. Those which are bitter or narcotic, as salsify, lettuce, sea-kale, &c., betaken by blanching, rendered mild and safe, or be serving to table while young, as asparagus. The difference in flavour of such vegetables is due to the principles with which the gum is associated; but their nutritive properties are owing to the gum, which is not only a constituent of the fibre, and all the parts of the plant, but is also very susceptible to the influence of the sugar, from which again a proportion of carbon and of oxygen is taken, and alcohol produced, the hydrogen remaining undiminished in quantity: and as alcohol is merely an odous organism of a weak kind, the analogy is complete: as in the case of the urine, the solid saliva, and other secretions, the digestive organs before they can be assimilated in the system, similar to what occurs in fermentation, viz. being converted into oil. [Digestion] 

Oils are inosolable in water, and therefore, though highly nutritive, are of little service for the support of the body till their miscibility with water has been overcome. Hence they are apt to oppress the stomach during the early stages of digestion, if taken alone with substances which facilitate their union with water. 

Arctes are present in many vegetable substances which affect the digestive organs in various ways, though they may not be present in all substances. 

III. Alimentary principles which do not contain carbon. 

Water is the only one of these which is necessary to notice. This is essential to the existence of all organic beings in whatever way it is introduced into their tissues. The whole of the animal and vegetable kingdom are in common water, and many beverages of which the chief part is water, but our ordinary articles of animal food contain, on an average, seventy-five per cent. of water, and only twenty-five per cent. of nutritious matter; and many of our vegetables contain a still larger proportion. 

Such are the chief principles employed by man in a state of civilization for his subsistence. But it is not enough that a sufficient quantity of one or more of these be swallowed. The function of digestion must be called into action, and the food in consequence of this is partly excercised by the mere presence of a substance in the stomach, but more effectually when that substance is itself of a stimulating quality, or is accompanied by certain accessories either added during the preparation of the food or at meal-times. Such accessories are termed condiments, which either make the food more grateful, or exercise a beneficial influence over the stomach during the process of digestion. The desire to eat is rarely so great when insipid food is offered to an individual as when savoury viands are provided. The desire to eat is the result of a chemical change in the salivary glands to more abundant secretion of saliva, which is a preparation for the digestion of the food about to be taken. Though the mere application of heat in the process of cooking develops an aroma from many substances which were previously devoid of it, either by altering the chemical composition of the material, or by volatilizing a principle latent in the substance, yet many
adventurous articles are used to assist in increasing or modifying this odour, or to correct certain qualities in particular subjects. Some like the latter, or other violent excitation, in good bodily health: 24 to 30 ounces of food; equal to 22 ounces of nutritive matter. The foregoing calculations have been taken indiscriminately, and I have reason to believe that they will bear the test of examination. By a comestible, and that the price of provisions at such markets as the owners of a very small capital are enable to purchase at, a judgment may be formed of the condition of a labourer. So far regarding the quantity of food requisite; the quality varies according to the local position of the labourer. Mr. Senior, in his Statement of the Provision for the Poor, and of the Condition of the Labouring Classes in a considerable portion of America and Europe (Folows, 1835), gives the result of his inquiries into the food of foreign labourers. We extract the following information from his pages:—

Quality of food used by an agricultural labourer having a wife and four children.

**AMERICA. New York.**—Ten, coffee, meat twice a-day.

**Massachusetts.**—Poultry, meat, or fish, twice or thrice a-day.

**México.**—Maize prepared either in pozole or thin cakes, and beans, with chile, a hot pepper, of which they eat large quantities as seasoning.

**Carthagena, Colombia.**—Chiefly animal food.

**Venezuela.**—Maize, vegetables, and fruit.

**Uruguay.**—Animal food.

**Hayti.**—Plantains, sweet potatoes, and other vegetables.

**Európas. Norway.**—Herrings, oatmeal, potato, potatoes, coarse onions, and beef, in the towns; in the country twice a-week. Fish on the lakes and rivers. Brandy in general use.

**Sweden.**—In the south potatoes and salt fish; in the north porridge and rye bread.

**Russis (general rural).**—Rye bread, buckwheat, and sour cabbage, soup seasoned with salt and lard.

**Denmark. Copenhagen.**—Rye bread, inferior coffee, cheese, and butter.

**Elsinore.**—Rye bread, groats, potatoes, coffee, butter, cheese, and milk.

**Hansaric Towns.**—Buckwheat bread, potato, bacon seldom, peas-porridge, groats, cheap fish.

**Bremen.**—Potatoes, beans, buckwheat, groats, rye bread, meat about twice a-week.

**Meklenburg.**—Good sour food, occasionally meat.

**Danzig.**—Chiefly rye bread and soup, meat once or twice weekly.

**Württemberg.**—Soup, potatoes, bread, meat once or twice a-week.

**Frankfort.**—Soup, potatoes, vegetables, bread, coffee, and beer daily, on meat one or two days.

**Holland (general return).**—Rye, cheese, potatoes, vegetables, beans and pork, buttermilk, buckwheat, meal, &c.

**Belgium. Boom.**—Bread, potatoes, and milk.

**Ostend.**—Potatoes and bread in the towns; in the country a little butter, vegetables, and sometimes a piece of pork.

**Goesbek.**—Rye bread, cheese, butter or fat, bacon, vegetables, coffee, and weak beer.

**France. Hêtre.**—Bread, vegetables, cider, very rarely animal food; potato groats are also used.

**Brittany.**—Buckwheat, barley bread, potatoes, cabbages, and about 6 lbs. of pork weekly.

**La Loire Inferieure.**—Bread and vegetables, bacon or other meat now and then.

**Bordeaux.**—Rye bread, millet soup, Indian corn, sometimes salt provisions, butchers' meat very rarely.

**Marseille.**—Vegetables, bread, farinaceous substances made into soup, meat soup or bouilli probably once a-week.

**Piedmont.**—No meat, little wine, twice as much maize as wheat flour.

**Portugal.**—Salt fish, vegetable soup, with oil or lard, maize bread.

**The Azores.**—Maize bread, vegetables, potatoes, and fruit, meat seldom, fish when abundant.

**Greece.**—Rye bread or wheat bread, olives, pulses, vegetables, salt fish, meat occasionally.

**European Turkey.**—Bread, rice, greens, dried beans and peas, olives and onions, meat once about once a-week.

**Malta (from a communication).**—Barley bread, cheese, carob, or other beans, and soup of maize or millet with

**FOO 345 FOO**

**FOO 2 Y**
hebs, when in employ: when out of employ, a little bread and soup only.

Although these returns are general, and each statement supposes a roundable surface, the information that they give is sufficient to enable the reader to form an idea of the condition of labourers in the different countries referred to. The food of English labourers consists principally of wheat bread, which was usual before the beginning of the eighteenth century, and potatoes, with bacon or butchers’ meat once at least in the week. Cider or beer is frequently provided, according to agreement; and an increased quantity both of meat and drink is given during harvest. The following account was stated by Mr. Wallace in evidence before the Irish poor law commissioners to be the weekly expenditure of a labourer whose wages were 9s. 6d. a-week, and whose family consisted of himself, his wife, and two children. The information had been derived from a labourer in that condition:—

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 do. of oatmeal</td>
<td>1 s. 6d.</td>
</tr>
<tr>
<td>5 doz. of potatoes</td>
<td>2 s. 1d.</td>
</tr>
<tr>
<td>Milk</td>
<td>1 s.</td>
</tr>
<tr>
<td>Loaf of bread</td>
<td>6d.</td>
</tr>
<tr>
<td>4 oz. of tea, and sugar ½ lb.</td>
<td>5 s. 7½ d.</td>
</tr>
<tr>
<td>1 lb. of sugar</td>
<td>6 s.</td>
</tr>
<tr>
<td>Herrings or other fish</td>
<td>6d.</td>
</tr>
<tr>
<td>Coal, and oil</td>
<td>1 s. 3d.</td>
</tr>
<tr>
<td>Tobacco</td>
<td>1 s.</td>
</tr>
<tr>
<td>Rent</td>
<td>1 s. 10d.</td>
</tr>
</tbody>
</table>

8s. 4d.

Oatmeal and eaten barley bread are in common use among the Scotch, and salt-fish and salted meat are occasionally obtained. The food of the Irish labourers consists almost uniformly of potatoes, with which they are frequently unable to afford salt. A herring or a small portion of salt meat, milk, or butter, are less common and less well known; but, on the other hand, families are sometimes compelled to subsist upon the poorest potatoes alone; and we have heard it stated, upon authority which cannot be doubted, that rents have been raised because the tenant has been unable to buy all the provisions of which the best sort—the landlord considering that their quality was too good for the consumer, who should have sold them for his benefit and substituted coarser in their place. The introduction of the potato as the general food of labourers only works a great change in the country, where it is adopted. As long as it is only an auxiliary to food it will not be mischievous; but when it becomes the staple evil will arise in the following manner.—The produce of an acre of potatoes will maintain at least twice as many persons as the same area of wheat. The population consequently will be increased; but neither will potatoes keep for a year to year, nor can they be carried great distances. They therefore vary greatly in price; for the surplus crop of one year or one place cannot supply the deficiency of another. It has been stated in evidence before the House of Commons that the price at some periods has been sixfold what it has been at others. Let a famine arise, and there is no cheaper food at resource whatever to be resorted to. (See M'Culloch, Notes to Adam Smith, p. 163.) The British and Irish labourers certainly prefer a large quantity to an improved quality of food, and will make no alteration in its quality until they have a large superfluity in quantity. Their chief meal is a supper after the day’s work is over. The indulgences that are offered to the labourer by the law price of spirits and the increased number of cider and beer-houses to spend the small surplus of his income in drinking are proved to be successful by the large amount of spurious and fermented liquors now consumed. The miseries of this indulgence on the part of the head of the family are transferred to the heads and wives of the lowest labourers, but the families of artisans are often equal sufferers. An examination of the causes of distress in the parish of Spilsfields, where the number of general charities is unusually large, elicited the following fact. While weavers earning wages of 20s., and more than 20s. a-week were consuming their wages in intoxication, their wives and families could only afford themselves the following subsistence. An itinerant dealer was their commissary. This man, called by the appropriate name of 'Jacky All

Sor, received into his wash-tub the refuse meat and fat with the scrapings of dishes and plates from neighbouring cook-shops, and afterwards found customers for this filth among the families of the sick.

In the 'Report of the Commissioners for Inquiring into the Administration and Operation of the Poor Laws' (1834), Mr. Chadwick states that an independent labourer was then unable to get in the shape of solid food more than an average allowance of 1¼ oz. per week.

A soldier 169s. 6d. per week.

An able-bodied pauper, together with other luxuries, about 151s.

The suspected thief (see Gad Returns from Lancaster) 181s.

The convicted thief 379s.

The executed thief

It is obvious that it was desirable that this table should be reversed. The independent should be better off than the dependent labourer, the dependent labourer than the suspected thief, the suspected than the convicted thief. With a view to this result, the dictaries of many gales have been amended, and the poor law commissioners have provided that a sufficient but not an excessive quantity of food should be distributed in the union workhouses. In their Report for 1836 six dictaries have been printed (p. 64). The quantities contained in the first are as follows:—

<table>
<thead>
<tr>
<th>Food</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef, Grate</td>
<td>2 oz.</td>
</tr>
<tr>
<td>Cutlery, Meat</td>
<td>4 oz.</td>
</tr>
<tr>
<td>Potatoes</td>
<td>4 oz.</td>
</tr>
<tr>
<td>Fruit, Wine</td>
<td>½ lb.</td>
</tr>
<tr>
<td>Cheese, Eggs</td>
<td>3 oz.</td>
</tr>
</tbody>
</table>

When bread is used in all workhouses. It would be difficult, for want of accurate, precise data, to estimate the comparative welfare of labourers now and at earlier periods; but, however, inclined to think that the condition of agricultural labourers has seldom been better than in the years 1834-5-6.

(Reports of the Poor Law Commissioners: Semi-Annual Reports for 1835-6.) Sir F. Eden's State of the Poor, &c.

This was a festival annually celebrated in different churches and monasteries of France upon New-Year's day, from a very early period, when every kind of absurdity, and even indecency, was committed. It is supposed to have had its origin in the saturnalia of the Romans. The council of Hildesfield in 1215, under the direction of Henry II. Poyin, in his 'Memoires,' vol. i. p. 324, A.D. 1654-5, says: "January 2, to my Lord Bromarch's by appointment in the Piazza, Covent Garden: the street full of ball-balls, it being a great feast." Brand (Popular Antiquity, vol. ii. p. 110) says, in the month of October, among the colliers, it is customary to watch the battle-ground coming out of church after the ceremoy, in order to demand money for a football.

FOOTE, SAMUEL, was born at Truro, in the county of Cornwall, but the date of his birth is not exactly known. His father was a member for Tiverton, and he was educated at Worcester College, Oxford. On quitting the university, he commenced the study of the law, which his volatile disposition prevented him from pursuing. About the same time he was married, but the marriage turned out unhappily, and he plunged into all the vices of the town, particularly gaming. His fortune being speedily exhausted, he turned player from necessity, and made his first appearance in the character of Othello, in which he
produced no great sensation. Though he was more successful in comedy, he did not much distinguish himself as an actor till he began to perform parts of his own writing. His difficulties increasing, he was only extricated from them by Sir Francis Delaval, who allowed him an annuity for a not very honourable piece of service. Sir Francis was himself, and the Colonel to a marriage, with a rich lady as the means of repairing it. Foote, discovering a wealthy dame who was possessed with fortune-tellers, got a friend to personate a conjurer and recommend Sir Francis as a husband. The scheme succeeded, and Foote was rewarded all he mentioned.

In 1747 he opened the little theatre in the Haymarket, and here commenced his career as an author, by writing for his own house the succession of short pieces by which he is so well known. He did not, however, obtain a patent till 1756; and, as the year 1757 broke, his leg by a fall from his horse, and was forced to have it amputated; the patent was procured by the duke as a sort of compensation for this accident. Foote did not retire from the stage on account of the loss of his limb, but acted with a cork leg. His death is said to have been accelerated by the shock he received on a servant preferring against him a charge of the worst nature; he was tried and honourably acquitted, but seems never to have recovered his spirits. Feeling his health decline, he let his house to Mr. Colman, still a favourite and an active performer; and one of his characters he was seized with paralysis on the stage. He went to Brighton for his health; and on his return to London he set out for Paris, but died on his way, at Dover, in 1777.

Complete editions of Foote's works are easily procured; but scarcely a single piece is now produced on the stage. In fact, notwithstanding their great merit, they refer so much to the humours and often the persons of his own times, that they now possess rather an historical than a dramatic interest, as will be read by except those who are desirous of having a view of the striking characters in the latter part of the last century. The Methodists are lashed in 'The Minor;' the passion for travelling in 'The Englishman returned from Paris;' the news of 'The Orator;' the bar in 'The Lame Lover;' and in general every piece has its peculiar object of satire. In making his characters stand prominently forth, Foote is not excelled; but, like most depictors of humours, he occasionally falls into the error of giving abstractions rather than probable persons. The pieces which kept the stage longest are 'The Mayor of Garratt' and 'The Liar,' the humour of which is not so exclusively adapted to a particular time.

FORAMINIFERA. An order established by M. D'Orbigny for the foraminifera, or shell-like animals, which have no chamber beyond their last partition. They have no siphuncle; but their chambers are supposed to communicate with each other by means of many small foraminifers. This order is placed by M. D'Orbigny as the third of the Cephalopoda; but M. Dajardin has made observations on the living animals of some of the species, which induce him to assign these testaceous forms to a new class of animals inferior in their organization to the Radiata, and endowed with locomotive power by the instrumentality of peculiar filaments. In this class he proposes the name Radiozoopla, and under that title it is intended to give the reader the results of his researches when fully carried out. At present we shall merely draw the reader's attention to M. D'Orbigny's arrangement of these curious minute animals which exist in myriads on the coasts of the species found in the European ocean are comparatively few, and their size is very small; but the Adriatic abounds both in genera and species which are larger. The greater number are microscopic. The fossil species are most abundant in the tertiary formations, especially in Italy. The chalk of Meudon, in the Jurassic limestone of the Charente Infererieur, and of Calne, contain them. Count Munster reckons forty species from the cretaceous freestone of Meastricht. Mr. Lonsdale enumerates seven species from the chalk of England, and the many thousands on the beach of Northampton found them in chalk flints from the neighbourhood of Brighton. Some idea of the myriads which now occur together in particular localities in a fossil state, and once swarmed in life throughout the ancient seas, may be gained from the following passage in Dr. Buckland's Bridges-water Treatise, descriptive of one genus only.—"Numerous species are so called from their resemblance to a piece of money which vary in size from that of a crown-piece to microscopic lilliness, and occupy an important place in the history of fossil shells, on account of the prodigious extent to which they are accumulated in the later members of the secondary, and in many of the tertiary strata. They are often piled on each other in heaps as compact as the grains in a heap of corn. In this state they form a considerable portion of the entire bulk of many extensive mountains, e.g. in the tertiary limestone of Verona and Monte Bolca, and in the secondary strata of the cretaceous formation in the Alps, Carpathians, and Pyrennees. Some of the pyramids and the sphinx of Egypt are composed of limestone loaded with nummulites. It is impossible to see such mountain masses of the remains of a single family of shells thus added to the solid materials of the globe without recollecting that each individual shell once held an important place within the body of a living animal; and thus recalling our imagination to those distant epochs when the waters of the ocean which then covered Europe were filled with floating swarms of these extinct mollusks, thick as the countless myriads of Beroe and Chaetorella that now crowd the waters of the polar seas. Lamark, in his observations on Mollusca, remarks that these very minute animals have had much more influence on the masses which compose the surface or exter- rior crust of our globe than the remains of elephants, hippopotami, and other terrestrial mammals.

M. D'Orbigny has divided his Foraminifera into five families and has prepared magnified models, which are to be found in most collections, illustrating 100 species and all the 52 genera. Our limits will only allow us to give a mere sketch of his arrangement, as adopted by M. Rang.

**FORAMINIFERA. (Asiphonoids of De Haan.)**

* **Family I.** Les Stichostégues.

Genus Nodosaria (Lamarck); Orthoecora, Lamarck; Reepbach; De Montfort.

This genus is sub-divided into many sub-genera.

1. Giundiulia.
2. Nodosaria (properly so called).

Nodosaria contains numerous species both living and fossil, and is separated into two groups.

a Shell not striated longitudinally.

Example, *Nodosaria radula*.

β Shell striated longitudinally.

Example, *Nodosaria equisulus*.

3. Dentalina.

This sub-genus is also numerous and comprehends two groups.

a Shell without longitudinal striae.

Example, *Nodosaria communis*.

β Shell longitudinally striated.

Example, *Nodosaria depressa*.

4. Orthoecora.
5. Mucronina.

Genus Frondicularia (Defrance) Renuilina De Blainville.

Genus Lingulina.

* Aperture Marginal.

Genus Renuilina.

Genus Vaginulina.

Genus Marginulina (Orthoecora, Lamarck).

Genus Planularia (Defrance) Astacola? (De Montfort).

Genus Pavnia.

**Family II.** Les Eulamellostégues.

Shell always composed of a porous tissue. Exterior rugose and covered with asperities.

* Alternation of the chambers total or partial, regular.

Genus Begenersina.

This genus is divided into two sub-genera.
Cristellaria is divided into two sub-genera.
1. Cristellaria (properly so called). Shell depressed.
Genus Nonioniana. (Macrotites? Melonis, Cau-
cris, Florilus, and Chrysolus; De Montfort.)
Genus Nummulina (Nummulites and Lenticu-
lina; Lamarck. Helicites; De Blainville.
Nummulites, Lycophires, Rotalites, Egeon; De
Montfort).
Nummulina is separated into two sub-genera.
1. Nummulina (properly so called).
2. Assilina.
Genus Siderolina (Lamarck). Siderolites (De
Montfort).

Family IV. Les Agathistèges (Les Milioles; 
De Ferussac).
Genus Biloculina.
Genus Spiroloculina.
Genus Triloculina.
Genus Articulina.
Genus Quinquiloculina (Pollontes; De Mont-
fort).
Genus Adelosina.

Family V. Les Entostégides.

Sides unequal.
Genus Amphistegina.
Genus Holothecostegina.

Sides equal.
Genus Orbiculina (Lamarck); Helenis, Ar-
chaia, and Ilia, (De Montfort).
Genus Alveolina (Alveolite); Bosc. Orixaríe.
Defrance. Borelia, Claususul, and Millilotis;
De Montfort. Fasciolite; Parkinson.
Genus Fabularia (Defrance).

The following example will serve as a general illustration of the family.

FORBS, DUNCAN, was the second son of Duncan
Forbes of Cullochen, near Inverness, where, or at another
seat of the family, called Bunchrew, in the same neighbour-
hood, he was born 10th November, 1685. After studying
law for some years at Leyden, he returned to Scotland in
1707, and was admitted an advocate, 29th July, 1709.
At the bar he rapidly gained employment and distinction.
For his first public appointment, however, that of attorney of Mid-
lothian, he was chiefly indebted to the friendship of the
Argyll family. The rebellion of 1715 gave him an opportu-
nity of displaying his zeal and activity in support of
the government; and to his influence and exertions, and those
of his elder brother, who had now succeeded to the family
estate, the maintenance of the public tranquillity through-
out a great part of the north of Scotland at this crisis is
considered to have been mainly owing. His services were
rewarded the following year by his appointment to what
was then called the office of deputy lord-advocate, which
was similar to that of the present solicitor-general. In the
office he did himself as much honour by the high-minded
delicacy which he showed in conducting the trials of the
persons charged with participation in the recent treason,
as by the talent, activity, and courage he had displayed
during the insurrection. The cry indeed that he was him-
self a disguised Jacobite was raised by the zealots of the
government. In 1722 he was returned to parliament for
the Inverness burghs, for which his elder brother had previ-
ously sat. In the House of Commons, of which he con-
tinued a member for the next fifteen years, he of course
generally supported the minister, Sir Robert Walpole, as
his official situation implied. In 1725 he was appointed

Nummulites lenticularis.
The letters and drawings from which these memoirs were taken, are stated to occupy 52,000 folio pages, in 150 volumes. They appear to have been the production of a mind prone to the marvellous, but active, intelligent, and benevolent.

Mr. Forbes was born in London in 1749. It is erroneously said in the French 'Biog. des Contemporains,' that he left England to gratify his love of travel, a statement contradicted by almost every chapter of his book. He went to Paris in 1770. He was commissioned by the French government, accompanied, in a civil capacity, the troops sent to assist Ragonath Row, peshwa of the Mahrattas, in 1775; and, after a short visit to England for his health, received an appointment at Barcohe, in Guzerat, from which he was promoted to the chief of the revenue department of the district of Dhuboy in the same province, then newly occupied by the Company. On the cession of that province to the Mahrattas, in 1783, he returned to England, honoured by the affection and sincere regret of the natives who had been placed under his charge. Being in Frangres in 1803, he was invited among the numerous détenus confined at Verdun, but was released, with his family, in 1804, as a man of science, by the mediation of the French Institute, at the instance of our Royal Society.

In 1806 Mr. Forbes published two volumes of letters, descriptive of his travels in Switzerland, Holland, Belgium, and France, with a more particular account of Verdun, and the treatment of the British detained there. He died August 1, 1819. He was a fellow of the Royal and Foreign Archaeological Societies, and the Arcadian Society of Rome.

FORBIN, CLAUDE, one of the most distinguished naval officers that France has ever produced, was born in Provence in 1656, and died in 1734. It is unnecessary to enumerate his various exploits in the English, Dutch, Venetian, and the Barbary powers, but we may mention a remarkable circumstance in his life, of which he has left an account in his memoirs. We allude to the attempt which was made in the 17th century to introduce European civilization into the island of Cythera, under the direction of an adventurer, a native of the Ionian Islands, called Constance Foulcon, who came at an early age to England, and entered the service of the East India Company. After many vicissitudes he reached Siam, and entering the service of the king of that country, became, in a short time, not only of the prime minister but even of the king himself, who, on the death of the minister wished to appoint Constance in his place. He had the good sense however to decline the title, in order to avoid exciting the jealousy of the king himself, and turned his attention to the promotion of the power. The beginning of Constance's administration was successful, and notwithstanding many difficulties, the country began to improve under the administration of this able foreigner. He now conceived the plan of introducing, with the aid of the Company, Christianity among the inhabitants of Siam, into Siam, but also into the adjacent countries, and with that view he persuaded the king of Siam to send three deputies to Louis XIV. The three deputies died on their way, but Louis having heard of the circumstance, sent another, accompanied by Forbin, to the Siamese monarch. The embassy was accompanied by some troops. It concluded a treaty of commerce, secured protection to the Catholic religion in Siam, and induced the king to add an embassy from the embry. Constance having prevailed on his master to take some French officers and troops into his service, Forbin was appointed grand-admiral of the fleet, general-in-chief of the army of Siam, and governor of Bang-kok. The king of that country, induced in a certain part of the island of Bang-kok; they occupied the fortresses of Mergui and Bang-kok, and the king requested Louis XIV., by the Jesuit Tachard, to increase their number. Everything seemed now favourable to the progress of European civilization in Siam, and the conquest of the kingdom by a Christian power. The king, taking advantage of the quarrels which divided the European nations, united all their enmities against the Christian religion, when jealousy between Constance and the commander of the French troops destroyed all these brilliant prospects. A Siamese grandee called Pittracha, taking advantage of the quarrels which divided the Europeans, united all their enmities against the Christian religion, when jealousy between Constance and the commander of the French troops destroyed all these brilliant prospects. A Siamese grandee called Pittracha, taking advantage of the quarrels which divided the European nations, united all their enmities against the Christian religion. The king, taking advantage of the quarrels which divided the European nations, united all their enmities against the Christian religion. The king, taking advantage of the quarrels which divided the European nations, united all their enmities against the Christian religion.
tired. Forbin's memoirs were published, during his lifetime, in 1730, at Amsterdam, 2 vols. in 12mo. They are written with great ease, and his lively description as well as the variety of events related make them exceedingly interesting. Forbin was distinguished for his disinterested conduct, and for the kindness which he showed to the students, securing merit its just reward. The last years of his life were spent in retirement and devoted to religious exercises and works of charity.

FORCE, a mechanical term, which, though it be sufficiently understood in its common and popular meaning, requires some consideration before its strict and philosophical sense can be understood.

The term force always implies the existence of some cause which produces a visible mechanical effect. Thus the wind, acting with a certain violence on a ship, lifts it to a height, it will, when thrown upwards with twice the velocity, ascend through four times the height. Here, then, considered with respect to one effect, the second force should be twice the first: considered with respect to another time, four times the effect. Such consequences of appearance in the numerical quantities of different effects led at one time to long and warm disputes on the proper method of measuring force, all of which a clearer knowledge of mechanics has shown to be of very little use. One must consider with care the consequences of any other meaning as necessarily deducible from the first, will enable the mechanical reasoner to establish the whole doctrine of statics, or equilibrium: another, the whole doctrine of dynamics, or motion.

But the joint action of these two forces should have different names; but custom has settled otherwise. We proceed to the definitions of force.

In the theory of equilibrium, force is a synonyme of pressure, and weight is its measure. The notion of force is here derived, most probably, from the sensation which accompanies muscular effort. Whatever pressure is produced we can find a weight which will supply the place of the pressure: thus, if a string of Indian rubber, hanging from a fixed point, be extended by the hand placed at its lower extremity, and then, by degrees, drawn upwards, at the weight at the lower end, find what the weight must be in order to produce the same effect. And we then say that the force which the hand exerts is the same as that of the weight. The immediate causes of the effect are very different, the action of the tension of the rubber on the hand is different; but the force is the same, because the weight is the same. Hence, in different masses, the pressures necessary to destroy the motions in the same given time are as the products of the masses and velocities. Thus, the pressure which will in one-hundredth of a second reduce to a mass of 10 ounces moving 100 feet per second, is to the pressure which will (also in one-hundredth a second) reduce to a mass moving 85 feet per second, as 10 x 100 to 20 x 85, or as 1000 to 1700. It is customary to call this product of mass and velocity the momentum or moving force of the body. 

When bodies are in motion, and with a continually varying velocity, it becomes desirable to consider their motion, not at all with reference to the masses which are moved, and solely with reference to the alterations of velocity which are produced. Thus if a feather and a cannon-ball move together in the same way, the force that is exerted upon the feather is the same in motive effect (upon the feather) as that which acts on the ball (upon the ball). It is customary to assert the amount of velocity which would be produced in one second if the acceleration, such as it is at the present moment, were continued uniformly. 

[ACCELERATION]

And this is called the velocity which in the simple term acceleration might be advantageously substituted. It is found by the rules of the Differential Calculus in the following manner (for the demonstration, see "velocity"). A bullet starting from a given point in the line at the end of the time t seconds, and if x be a function of t, then the velocity of the body (v) at the end of the time t is
Forces, Parallelogram of. Any two forces acting at the same point, and represented in magnitude and direction by two straight lines, are equivalent to a third force which is represented by the diagonal of the parallelogram constructed with the two lines as its sides. [Composition.] This theorem is frequently called that of the parallelogram of forces.

Forcing, in horticulture, is the art of hastening the growth and maturity of flowers, fruits, and vegetables by artificial means.

Many of our finest exotic fruits are indigenous to warmer countries, and would scarcely ripen even in our warmest seasons; but by this art they are brought to great perfection in cold climates. This kind of advancement of the growing season of hardy kinds they also can be had in regular succession throughout the greater part of the year.

Although forcing to any extent is but of recent date in the country, yet it appears to have been practised in other countries at a very early period of time. Sir Joseph Banks, in the 'Hort. Trans.,' cites some epigrams from Martial, to show that hothouses were not unknown to the Romans, and adds, 'At the conclusion that in all probability they had both vinedam and glasshouses, furnished with artificial heat and glass, which is now commonly used.' Piny tells us that Tiberius, who was fond of cucumbers, had them in his garden throughout the year by means of a (specularia) stoves, in which they were both preserved in the summer and winter, and replaced in the night or in cold weather (Phil. Hist. Nat., xii. 23); whence it may be inferred that forcing houses were not unknown to the Romans, though they do not appear to have been in general use. This branch of horticulture was almost unknown in Britain until the end of the 17th or beginning of the 18th century, and Lady Mary Wortley Montagu, on her journey to Constantinople in the year 1716, remarks the circumstance of pineapples being served up in the dessert at the electoral table at Hanover, as a thing she had never seen before that coming of glass, which is now commonly used. Sir Joseph Banks justly remarks, had pines been then grown in England, her ladyship, who moved in the highest circles, could not have been ignorant of the fact. It is said that the discovery of peach-forcing in Holland arose from an old Dutch gardener having, in a bad season when his peaches would not ripen, accidentally placed the sashes of a holed over them, which had the effect of ripening them.

Even after forcing was practised to a considerable extent, its principles were so little understood, that fruit was forced in the same nearly dead state in which it naturally flourished. That natural flavour which it acquires when exposed to the genial influence of the sun's rays in their most powerful state.

The fruits of warmer climates, growing in a wild state, enjoy a greater degree of light than it is possible to give them under artificial forcing. It is a fact which is one of the most important circumstances to attend to in the art of forcing. Nature is in all respects the best guide in these matters, and care should be taken to imitate her as far as possible; first, by taking care that forced plants are exposed to all the light that can be collected; and, secondly, by preserving a due proportion between the quantity of heat and light to which forced plants are exposed; in other words, by not forcing too hard at a season when the sun's rays are least powerful, thus acting in direct opposition to the laws of nature. Attention to this point is one of the main causes of the success or failure of the whole process. When early crops are more desirable than high-flavoured fruit, gardeners are obliged to apply heat without reference to the intensity of light; but if this is not the object, forcing should never be commenced before the spring, in order that the fruit may be free of light when ripening. These principles are now generally understood and appreciated, and consequently our peaches, grapes, and other forced fruits are even superior to those grown under the clear skies of the south of Europe.

Mr. Knight, the president of the London Horticultural Society, recommends the temperature to be kept much lower during night than is generally done, and remarks, 'A gardener in forcing generally treats his plants as if he wished to be treated himself, and consequently, although the aggregate temperature of his house be nearly what it ought to be, its temperature during the night relatively to that of the day is almost always too high.' In one
of his vineyards he always takes the temperature in the middle of a bright day in summer to rise to 90°, and which the leaves of his plants are quite dry, he does not object to ten or fifteen degrees higher. But he most justly adds, "that if this is accompanied by a high temperature at night, it exhausts the excitability of the tree much more rapidly than if the growth or evolution is accelerated by the natural heat of the fruit, which is in consequence all supplied with nutrient at the period of its ripening, when most nutriment is probably wanted."

The same experienced author recommends the plants for fruits to be received by previous treatment, as excitable as possible, which may be done by ripening the wood early in autumn, and putting the tree into a state of repose, ready to be roused into action by the application of heat.

It appears to be a general rule that plants from warm countries are the more slowly to be acclimated to a temperate climate, and the more impatient of artificial heat, and hence the difficulty of forcing the plants of northern climates; for example, the same degree of heat in which vines flourish would be much too high for cherries, which throw off their blossoms after exposure without setting their fruit. The reason of this seems to be the following: each plant is adapted to the peculiar circumstances in which it is naturally placed; the influence of warm climates are formed to endure heat, and those of higher latitudes to suffer cold; and when these circumstances are reversed, those of cold countries being placed in excessive heat, and those of warm regions in unusual cold, the former are excited by far too much and too rapid a change of heat and frost; and the leaves have got to organize matter to support them; and the latter, if they endure the cold, are not excited, and remain in a languishing unhealthy state. These reasons will at once show the extreme caution which is necessary in forcing the plants of northern climates, and at the same time suggest the treatment that plants of such a description require, and which both reason and experience agree in recommending to those who would be at all successful in the art.

Firstly, the increase of temperature must be slow and gradual, and the plants kept at the time of transplanting to a Fahrenheit with artificial heat; air must be freely introduced, particularly in fine bright weather, and the house so constructed as to admit of the greatest possible quantity of light, as, for instance, having movable lights which can be drawn back and put on at pleasure.

The Dutch have long been celebrated as excellent forcing-gardeners, and as their manner of performing the operation is peculiar, a description of it may be interesting. The principal feature in their system is conducting the operation of forcing the plants in the house, which are usually hardened with fermenting dung. The trees employed in forcing are generally taken from a wall in the open air, planted in a rich border of leaf mould, and trained to a trellis a few inches below the glass; here they remain until they have had the fruit, and then they are brought back to the wall until wanted for the same purpose in some succeeding year; they never force from the same plant two years in succession. Their system of employing dung instead of fire heat gives them an excellent opportunity of forcing vegetables, such as French beans, endive, lettuce, &c., which are either placed on, or plunged in, the bed in the inside of the frame.

Although pit and frame forcing is a principal feature in the horticulture of Holland, yet they have now, as well as in that season the elevated structure.

The Dutch plan of forcing is now practised to a considerable extent in a number of gardens in Britain, particularly in that of P. C. Labouche, Esq., Hylands, near Chelmsford, of which a full account is given in the first vol. of this journal, and another interesting paper upon the same subject, communicated to the Horticultural Society by M. Lindegraaf, is published in their Transactions, Series I. vol. v. The best information regarding the scientific principles of forcing is contained in the various papers scattered amongst the Transactions of the London Horticultural Society, and communicated by Mr. Knight and other scientific individuals. The best practical works upon the subject are those from the pens of Spectrilly, M'Phail, and Abercromby, the contents of which are very clearly given in London's "Leydenbridge of Gardening."

FORD.

A name applied to that part of a river where the water is sufficiently shallow to admit of wading through it, and thus crossing over without having recourse to a bridge, a ferry, or other similar means of passage.

Some rivers are never fordable, others are always so: in some the fords are temporary as to season though permanent as to place, and in others they frequently change their situation. Rivers whose banks are steep and coarse straight or rambling, are rarely fordable. In some it is necessary to ford a river too deep or too rapid to admit of fording. Small and regular streams issuing from springs in flat countries are generally fordable at all times and in all parts. The most common cases however are those of temporary and changeable fords. On the first of these it is observable that where a river has once formed its bed in a soil in a certain degree of tenacity it seldom changes its channel, so that its shallows and deep parts remain constant, and, if the former permit of being forded, nothing but a rise of the waters renders the ford impassable. Where the river flows through a glacial or morainic valley it falls into the basin of which the river is the drain and the size of the basin itself, to which two circumstances the river is generally proportionate. If the basin be large and subject to frequent rain the fords will frequently be rendered impassable, if the rains of long duration, the passage of the ford will be interrupted for a time proportionably long. The channel however remaining permanent the ford may again be passed as soon as the excess of water has flowed off. Such fords have generally been used long enough before bridges were constructed, and as travellers from a distance sometimes found the ford impassable on arriving, hostilities for their temporary reception were constructed on the banks.

Such waters as flow through a loose soil, or sand or gravel, have generally a very winding course and are constantly shifting their channel, that is, the deep part which the Germans call the "edere" or bed of their river. These rivers though they present the greatest number of fords are constantly varying the situation of them, so that they are not only temporary as to season but also as to place. The rains by increasing the mass of water increase the strength and velocity of the river, which is divided in the bed deepened in an irregular manner. Banks also are carried away and others formed in parts that before were deep. Thus after every flood the place of the ford is changed.

In the case of torrent rivers, such as those of Italy, fords are largely used, and are constantly shifting their channel, that is, the deep part which the Germans call the "edere" or bed of their river. These rivers though they present the greatest number of fords are constantly varying the situation of them, so that they are not only temporary as to season but also as to place. The rains by increasing the mass of water increase the strength and velocity of the river, which is divided in the bed deepened in an irregular manner. Banks also are carried away and others formed in parts that before were deep. Thus after every flood the place of the ford is changed.

In military operations fords are of the greatest importance. The inhabitants on the borders of a river generally know where they are, but as their indications cannot always be relied upon, particularly in an enemy's country, the fords are guarded by detachments of horsemen. They are usually on the widest part of the river, or in the direction of the diagonal line joining the salient angle of one side to the salient angle of the other side, as A B or C D.

Fords for infantry should not exceed the depths of three feet, and for cavalry that of four feet. These are the extreme depths, and if the current be somewhat rapid it is dangerous to risk fording through more than two feet water without the assistance of horses. The horses should be firm and even. Mud, weeds, or blocks of stone are great obstacles—loose sand is also bad as a ford for cavalry, for, being stirred up from the bottom by the horses it is carried away by the stream, and the ford thus becomes so up to the horses, in some cases to the depth of four feet. The opposite bank must also be easily accessible and clear, for it is useless to cross a river when, on gaining the opposite side, your further progress is impeded by rocks.
or impassable forests, thick brushwood, or swampy ground. Having discovered a ford, it is indispensable to mark its situation, and if some time should have elapsed previous to conducting the troops to it, the ford should be again examined in order to be sure that the waters have not risen, or that the enemy may not since have rendered it impassable. Such considerations are necessary when the ford is to be passed in presence of an enemy, but these belong to a different subject.

FORD, JOHN, the dramatist, descended from a highly-esteemed family in the north-west of Devonshire, was the second son of Thomas Ford of Ilsington in that county. The exact date of his birth is not known, but Malone's industry has fixed his baptism at April 17, 1656, as appears from the parish register of Ilsington.

In the spirit of his age, he turned to the foeman, the chief justice. Ford was designed for the bar, and entered at the Middle Temple, November 16, 1692; four years after which time he produced his first poem, 'Fame's Memorial,' an elegy on the death of the earl of Devonshire, dedicated to his memory, the beautiful all of his dramatist personages. This poem adds nothing to the author's present reputation, and all we gather from it are some hints of a disappointment in love, for the cure of which he had recourse to writing.

In addition to this mode of mental relief, he applied himself to the composition of plays, but he did not appear as an independent writer till 1629, when he published 'The Lover's Melancholy,' which followed four years afterwards by 'Tis Pity She's a Whore,' 'The Broken Heart,' and 'Love's Labor's Lost.' These two books were followed by 'The Spanish Gipsy' by Perkin Warbeck,' and in 1638-39 he published two serious comedies, called 'The Fancies chase and noble,' and 'The Lady's Trial.' Besides these, he wrote in conjunction with Decker 'The Sun's Darling,' a moral mask, which was not printed till 1657, according to Lang's or 1658 according to Gifford.

Nothing more is known of Ford; but from some obscure traditions it has been supposed that soon after 1638 he retired to his native place of Ilsington, and there spent the remainder of his days.

Ford's plays contain many fine thoughts, and numerous specimens of harmonious versification, apparently the result of considerable labour. One fault into which he has fallen in common with others his contemporaries, that namely, the characters of his dramatist persons, at the end of the fifth act, appears to arise from an overstrained desire of completing and perfecting the action of the play. Forgetting that the end of every drama is to represent a certain crisis in the affairs of one or more of the principal agents, and that the action, which has till then been on the inferiors converge to the same point, and accordingly involves them in a similar ruin. This is very much the case in 'Tis Pity She's a Whore' and 'The Broken Heart,' in the latter, as much from the intricacy of the plot as from any other cause.

His best work is, we think, 'Perkin Warbeck.' It has an air of repose throughout which we do not see in Ford's other plays. The device too of making Perkin believe in the justice of his own claims is highly ingenious; besides which the characters of Katharine, and Dalby, are so excellent, that the whole effect of the play is very much what is called Shakespeare's second manner. Here however, as in all Ford's dramas, we want Shakspeare's clowns and fools. There is nothing of nature, or even of gentleness, in the characters affected by Ford, and they are especially the case in ceasing, where the figures are supposed to be above the spectator, and seen from below the plane on which they stand, foreshortening—at least any considerable degree of it—in proportion to the point of view; while, on the other hand, it occurs more or less in almost all those of animals, their forms being more compounded and their bodies placed horizontally. An example of foreshortening may therefore at any time be found standing either on the point of or being supported by the ground or fore-legs, as the case may be, will be nearly concealed by those towards the eye, and the back of the animal or its length be no longer visible. In sculpture, unless it be in reliefs, the foreshortening of the limbs depends entirely upon the point of view, the surfaces being so crossed, whereas in painting it depends upon that chosen by the painter for him; and several fine examples of it occur in the works of Michael Angelo, Correggio, and Rubens.
FOREST, an extensive tract of ground overgrown with trees alone, or of one or several species, or with trees and underwood.

Forests are not only highly interesting in themselves, but are of most extensive importance, whether as regards their influence in the general economy of the world, or as a means of affording shelter to trees. The forests of the earth's surface, the first thing which strikes us is their variety. In one place they are composed of pines, in another of oaks, and elsewhere of pines and birch trees. The same thing is expressed at the latitude of 32°, and the same phenomenon is usual in the situation in which we find collected together trees of the same kind; pines in America, in Africa, and in Asia; oaks and pines in Russia and in Mexico, in plains and on mountain tops. A little consideration however will satisfy us that the variation in trees, like other vegetable require, according to their several natures, and independent of suitable soils, different modifications of heat, light, moisture, and atmospheric pressure; circumstances which, so far from being influenced by latitude alone, are much more dependent upon height above the level of the sea, its vicinity and other circumstances, than upon proximity to or distance from the equator. Hence, not only do we find particular kinds of trees associated in those regions which are most conducive to their perfect development, but as we find the climate, the height above the level of the sea, so do we find them producing vegetation of similar character, and thus, though the forest zone has forests peculiar to itself, we there find also, at different heights above the sea, the forests of what are termed the temperate and frigid zones; of this however remarkable and not easily accounted for, that, although the same trees seem to require similar climates, these climates do not always give birth to the same kind of plants. The climate of many parts of the mountainous region of the forest zone is similar to that of the frigid, and yet these parts have no forest-trees at all; indigenous rose-tree in all South America, and this shrub is entirely wanting in the southern hemisphere. Heath is peculiar to the old world, for of 137 known species, not one is found in the new continent from Pennsylvania and Labrador to Nootka and Alaska; and the greater part of our European forest-trees, even the hardest, disappear towards the Tobol and the Irtysh. They do not grow in Siberia though the climate is the same. The oak, the hazel, and the wild-olive are not found from the Tobol to Da-vaia, and yet these appear to have been in the possession of the Argonaut and the Amur, and the last is again found in the Altai islands.

According to Humboldt, whether we ascend from the plains of Otranto to the top of the Peaks of Teneriffe, or from the slopes of the Andes to the summit of the Mexican Andes, we find different zones of vegetation, in which the succession of forest-trees follows generally, the same order that is observed in passing over the surface of the earth from the equator towards the poles. Raymond, also, in the Pyrenees, and Tournefort, who described the form and condition these mountains, the same succession of trees as exists in passing from their particular latitudes towards the frozen regions. From this fact it has been rather rashly concluded, that certain heights correspond in the nature of these regions with certain latitudes; but however it may be, the case is nor the succession we have mentioned strictly the case, nor that observed in proceeding from the equator northward. The extreme heights at which certain forest-trees rise in the Andes are different from those at which the same trees are found in the Pyrenees, and while the birch is nearest the snow in Lapland it is succeeded in the Alps by the pine. These anomalies are explained by a difference in some of the elements of local climate, and by the greater extent of some of the particular primitive distribution. It is also remarkable that in some cases forests are composed solely of some particular tree. Thus, in Lapland there are extensive forests of birch without a single tree of any other kind, and without underwood. In Mazovia also are extensive forests of birch without any other tree, and in Sweden, and Finland many forests consist exclusively of pine. Asia has whole woods of nothing but coconut, &c.

Our European forests, generally considered, are composed chiefly of oak, elm, ash, beech, alder, poplar, willow, plane, birch, and lime, together with interspersed wild-pear, hawthorn, and service-tree; the underwood being hazel, elder, buckthorn, viburnum, dog-rose, &c. Yew and holly are the extreme of the forest, and are found in Sweden and Finland, and the birch, different species of the pine and fir, the yew, and the juniper.

**Forests of Great Britain and Ireland.**—The British Isles, like other countries of Europe, were in former times much more abundantly covered with timber than they are at present. The increase of population tends to the destruction of forests by causing a demand for the productions of arable land; and this, together with the prodigal expenditure of wood, when it is abundant, and the general policy of clearing the ground of underwood to ensure a constant supply, have been the chief causes of the great diminution of wood. But though we have nowhere any forests of considerable extent, there are perhaps few countries over which timber is more equally distributed, that is, in those counties where the soil and aspect are favourable to its growth. Woods of small extent, coppices, clumps, and clusters of trees are very generally distributed over the face of the country, which, together with the timber scattered in the hedge-rows, constitute a mass of wood of an invincible durability, for the purposes of the commonwealth.

In Herefordshire, Warwickshire, Northamptonshire, and Staffordshire is abundance of fine oak and elm woods. In Buckinghamshire there is a quantity of birch and oak, and also fine beech. Sussex, once celebrated for the extent and quality of its forest, has yet some good timber to present its woodlands, including coppice-wood, over 175,000 acres. Essex, with 50,000 acres of woodland, has some clumps and oaks. Surrey, Herefordshire, and Dorsetshire abound in coppice-woods. In Worcestershire is found the best stand of oak, and the woods of Winchcombe and Stokenchurches, chiefly of beech, with some oak, ash, birch, and sycamore. Berkshire contains a part of Windsor forest, and Gloucestershire, the Forest of Dean, so that these three last counties are esteemed the most wooded parts of the kingdom in any extent, but the hodgepodge timber and coppices are of such abundance as to give the whole country, especially when seen from an elevation, the appearance of a vast forest. Of the remaining counties some have very little wood, and a few are altogether destitute of wood and plantations. The value of timber have given rise to a great many flourishing plantations. In Wales particularly, there is a race for planting. In South Wales alone six millions of trees, it is said, are annually planted: if that is the case, nine-tenths of the trees grown are of no use, or nothing, the whole country would be one entire forest.

**Scotland** has few forests of large timber, if we except the woods of Inverness-shire and Aberdeen-shire. In the former of these counties the natural pine-woods exceed in value any other wood growing naturally in all parts of Britain. In Strathspey alone there are 15,000 acres of natural fir; and in other parts the woods are reckoned by miles, not by acres; there are also oak woods and extensive tracts of birch. In Aberdeen-shire, in the higher parts of Mar, there are 100,000 acres of wood and plantations. The pines of Braemar are magnificent in size, and are of the finest quality. Argyle-shire, Dumfriethshire, and Strathspey have many thousands of acres of copeice-wood and, with a very few exceptions, the remaining counties have a few clumps of trees. The want of wood however in this country, so far as it is employed for fuel, is little felt, in consequence of its extensive bogs, which furnish an almost inexhaustible quantity of peat.

Upon the whole then, though Great Britain and Ireland do not now possess any extensive forests, still there is a considerable quantity of timber, and the extent of
planted to promise that we shall never be wholly destitute of so essential an article as wood. According to Kew, 10,000,000 of the finest trees from Britain and Ireland timber to the amount of 2,000,000d.

If from our own country we pass over to the continent of Europe, we shall find forests of much greater extent, particularly in the north-east.

Across the northern part of this country the mountains are covered with wood; birch, maple, pine, and fir, forming immense forests; the fir, sometimes attaining a height of 160 feet, is in great estimation for masts and building timber; in the regions of moderate elevation are aspen. The good lands have some fine forests of oak, which extend as far as Drontheim, in 65° north latitude. The forests of Sweden are similar to those of Norway. In the damp places there grows in abundance the alder-leaved willow (Salix amygdalina).

Denmark.—Of this country it may be remarked that Jutland, once covered with thick forests, has now only a few long strips on its eastern side. Holstein has very little wood. The island of Funen has some small woods, as also Besland, in that part of it which borders on the Sound. Palster is well wooded, and Bornholm has a good deal of birch. In all, Denmark possesses about 130 square leagues of birch, chiefly birch; there is also asl, alder, and oak, but pine and fir are scarce.

Holstein possesses timber, though not in very great quantities. What there is, consists of beech, fir, poplar, and ash; willow grows along the canals, and the coppices are of maple, ash, hornbeam, birch, and beech, with a slight portion of oak-bushes. In Guelderland there are plantations of many miles in extent of fir and aspen; while the pyramidal poplar forms a contrast by its tapering form with the flattened and branched heads of the stone pine, and the same may be said of other parts of Italy.

Spain and Portugal are deficient in wood, both as regards quantity and quality. The peninsula however is not altogether destitute of timber; and in the western provinces, the southern districts are rich in olive wood, which is one of the most valuable in Spain; thus between the two Bagneres, in the Spanish valley of Aran, and on both sides of the western Pyrenees, there are forests of the silver fir; and on the south side of these mountains, east of Besançon, as well as near Mont Perdu, on the borders of Aragon and Catalonia, is a fine forest of oak, among which is the cork oak (Quercus suber), the common oak (Q. robur), and the evergreen oak (Q. ilex).

France has many fine forests, though hardly sufficient for the consumption of a country where wood is the chief combustible, and where the state of the arts and general civilization create a constant demand for large timber and fuel of every kind. The variety of climate and position in that country renders it favorable for the culture of all kinds of European and many exotic trees; the oak, the birch, the elm, the as, and the beech, are abundant; the alder grows in the damp places, and the mountains are clad with pines and fir. The woods are generally distributed over the country, with sheets of unbroken forests into which the country is divided, there are 24, in each of which there are from one to two hundred thousand acres of woodland, a dozen more containing each from two to three hundred thousand acres, six having from three to four hundred thousand acres, of which the 36 contain the above four hundred thousand acres. The department of Dordogne alone contains upwards of a million acres of wood. In all France there is reckoned about 21 millions of acres of woods and forests; of which about one-seventh, consisting of 1473 different forest, is capable of being converted into useful crops. In Italy, the geographical position and local peculiarities of which are favorable in a high degree to vegetation of every kind, is not particularly rich in forest trees. There are, however, some fine forests of Ravena, and of the stone pine (Pinus pinea). The Apennines also have their portion of well-grown forest trees, and are in some places covered to the top with luxuriant forests of chestnut-trees. The fertile basin of the Po abounds in plantations of olive, mulberry, fig, and almond-trees, while the pyramidal poplar forms a contrast by its tapering form with the flattened and branched heads of the stone pine, and the same may be said of other parts of Italy.

In Sicily the forests have long since been exhausted, and wood is extremely rare in that island. But in Sardinia there is a breadth of the surface covered with magnificent forests of oak, among which is the cork oak (Quercus suber), the common oak (Q. robur), and the evergreen oak (Q. ilex).

The principal forest of Spain however is still that of St. Josen, in the north of the Pyrenees, and in the neighbourhood of Campo, in Upper Aragon, are forests of the Pinus pyreneae, or, according to some, the P. Laricio, or Corsican pine. On the Sierra de Guenga, the Sierra de Segura, the Wallachia there are great forests of fir, beech, and variously plum, apple, pear, cherry, and apricot. On the southern
side of the chain the forests are particularly varied. Different kinds of pine and fir, oak, maple, sycamore, walnut, chestnut, and beech, are found in succession on the several terraces. Most of the mountains themselves consist of forests of oak, elm, and lime, and beech. The Morea produces the cork tree, the Kermes oak, the Vellama oak, of which the acorns are eaten, the pine, the wild olive, the sweet chestnut, the horse ash, pine, and beech, the barberry thorn tree, the hazel, oak, and a variety of plants used in the arts, and in pharmacy.

Russia.—Of all the countries of Europe, Russia is the most abundantly provided with timber; and her forests would be an almost inexhaustible source of wealth, if her government effectually to protect them from destruction. In 1802 regulations for the preservation of the forests were established, but such is their extent and that of the country, that it is next to impossible wholly to protect the woods. Her Majesty's Statistical Notice of the Agriculture of Russia, published in the 8th vol. of the Memoirs of the Academy of Sciences of St. Petersburg, and quoted in Mr. Schmitzler's late work, states, 'there are still 200,000,000 of acres exclusively of forest, with the number of trees, 819,300, more than 24 inches in diameter and in length more than 87,000,000, more pine trees proper for building timber. Enormous as this may appear, the statement, so far from being exaggerated, would seem to be considerably below the truth, it being certainly three times the number given by the government of Wurttemberg, and twice the number of Wurtemberg, Archangel, and Omenet, there are 216,000,000 of acres of forest trees, chiefly pine and fir. Birch, pines, fir, and limes, are the common forest trees of European Russia. The first is the most abundant as far as the 52nd parallel, beyond which there are still found vast forests of pine. The governments of Novgorod and Tver are covered with wood; the Volga forest is the largest in Europe. In the government of Perm, of a surface of 90,000,000 of acres, 47,000,000 of those are covered with forest. The woods of these countries are impenetrable, and harbour great quantities of bears, wolves, and other savage beasts, while others abound in deer and game of all kinds. In Estonia, Latvia, and Courland, there are fine forests of pine and fir, and beyond, the latter predominating in the most places; elder, ash, elm, and plane, are found in the good soils, but oak is in general scarce. In Courland lime is abundant, but beech is rare; there are willows of several varieties. In general it may be observed that, in Russia, the coniferous trees are more evenly distributed than in any other part of Europe, north as 57°; birch, aspen, and extensive forests of lime, as far as 54° or 55°; oak, rare in the central plateau, pros- pers towards 51° or 52°, but in the valley of the Volga they are fine and abundant at 55°. In the same region where the coniferous, the falling of timber and cutting of wood abundance, as also white poplar and hornbeam. In the central provinces beech hardly reaches Smolensk, and does not pass beyond Little Russia. In some parts of the Ukraine are fine oak forests. In Lithuania the timber is generally fir, intermixed with pine and birch, and occasionally oak. The woods of the latter province contain bears, elk, &c., and in the celebrated forest of Bialowieze is found the bison, a species of Ursus.

Poland, generally speaking, is covered with magnificent forests, and particularly there are some very fine woods. The different varieties of the pine are found in the sandy places, and on the mountains are fir and beech. Oak succeeds well in good soil. In addition to these trees Poland also produces larch, lime, elm, and ash. In the Bukowina are forests of beech, intermixed with fir and birch woods.

It appears then, that although the progress of civilization and increase of population have greatly diminished the forests which at one time covered great part of Europe, yet there is still an immense quantity of wood, and the necessity of keeping up a constant supply being now very generally acknowledged, there is reason to hope that the forests will no longer be abandoned to wanton destruction, but that, on the contrary, the falling of timber and cutting of wood will be properly regulated, and fresh plantations made to replace the wood consumed.

We will now take a hasty glance over other parts of the world.

Asia.—In the Caucauses we find that on the western, eastern, and southern slopes of this chain, there are forests of cedars, cypress, juniper, beech, and oak, and on the edges of these, quinces, wild apple, and pear trees, while the warm and sheltered valleys produce the almond, the peach, and fig. The borders of the Caspian there are woods of olive, plane, and laurel.

In Asia Minor, Mount Taurus is covered with forests of cypress, juniper, and savines. The gall-nut oak grows from the Bosporus to Syria, and the Persian frontier; oaks and elms abound in the Black Sea. There are also different parts woods composed exclusively of fruit trees. Syria, to a vegetation greatly similar, adds the sycomore and palm trees.

Arabia has no forests, properly speaking. The Oases, however, abound of date palms, tamarisks, and different fruit trees. In Hejaz the date palm is abundant.

Persia.—In Mekran there are forests of the Indian palm intermixed with the odorous shrubs of Arabia Felix. In the valley of Shiraz we find only clumps of plane trees, black and white fir, and the Black Orumel. The northern parts of the Persian Gulf border the Caspian are covered with oak, lime, acacia, and chestnut, and higher up cedar, cypress, and other pines, with the sumach and the mountain-ash. Gilan abounds in boxwood, and on the south-east of the Caspian there is great abundance of Arabic oak.

Siberia is too cold for the oak, the hazel, the elder, the plane, and the wild apple; even the ash ceases towards the Irish; and the fir, which in Norway grows as far in as 70° 30', begins to be scarce at 60°, while it is profusely found at 55° than 55°. On the great steppes of this country are nevertheless bounded by thick forests of birch, willow, elm, Tartar maple, black and white poplar, aspen, and a great variety of firs, among others the Siberian cedar, which sometimes attains a height of 120 feet, and is particularly fine on the banks of the Yenisei. The country between this river and the Baikal is well wooded. At Tobolsk are fine woods of birch, and of the pitch pine. Berezoff has also forests of birch and fir, with stunted Siberian cedar. In the government of Tobolsk there are magnificent forests, and the natives are abundant on the banks of the Yenisei. Between the Obi and the Tom, the land is covered with birch. To the west of Irkutsk the country is nothing but one vast dense and swampy forest. At Nertchinsk, in Russian Daursk, forests abound formed of larch, black and white fir, Siberian cedar, and birch, which latter is found only here. There are also whole forests of wild apricot and rhododendrons. At Ochchotk there are immense tracts of swampy forests, and Kamutitchaka, the eastern limit of the Ohi world, abounds in larch, white pine, birch, and willow. The larch is cut only for fuel. On the whole, Siberia, notwithstanding its immense steppes and marshy plains, still reckons upwards of 2,000,000 of acres of forest in the two neighbourhoods alone of Ekaterinburg and Tobolsk.

Central Asia.—We have not yet seen a country with us to speak with any certainty regarding the forests it may contain. The greater part of the vast plateau of Tartary is a sandy and desert region, except at the immediate borders of the water courses; what forests do exist are on the slopes of the mountains by which the plains and valleys are surrounded. In the province of Leao Tong, in Mannshuria, there are some extensive forest of fir, cypress, acacia, willow, alder, poplar, peach, and mulberry, and on the coast the mountains are covered with oak and pine, while towards the lower lands the willow, the aspen, and alder abound.

Ceylon has immense forests in the mountains of its northern parts. The islands of Sozallem Jessoy, and the Kurils have large forests of the finest timber.

Japan has a vigorous vegetation, partaking of the European and Suidasian; larch, cypress, and weeping-willow, which, by the way, is found in all the temperate countries between the Mediterranean and the empire, are here blended with the cocoa-nut, the fupalina, and arborosemeen of Europe.

China.—On the mountains of the western district of this great and populous empire there are forests of immense extent, abounding in almost every species of tree known in Europe, and many others unknown. These forests, besides timber and fuel, supply many valuable products, such as gums, barks, oils, and resins used in the arts; rosewood, ebony, sandalwood, and the valuable Chinese acer;
the camphor-tree, which furnishes the best and most beautiful timber, the paper and other mulberries, the tallow-tree, the bamboo, &c. The provinces of Kiang-si and Quang-si have also their mountains covered with forests, and in the latter province there is cinnamon superior to that of Ceylon.

The islands of Borneo and Hainan are abundantly wooded, producing, besides timber, several woods remarkable for their perfume, and others of great value for carving, as rosea-wood, violet-wood, and a yellow wood of remarkable beauty, said to be incorruptible. Returning to the continent of Asia, we find Tibet, having the bases of its mountains girded with forests of bamboo, aspen, birch, cypress, and yew, and ash of great beauty, pine for low and stunted.

Cashmere has abundance of oak.

India, both within and beyond the Ganges, is rich in wood. There are whole forests of the bamboo, which sometimes attain a height of 60 feet. Cork-nut and palms of all kinds cover the plains. Here are abundantly wooded in which, cypress, and poplar; there of mangos, banyan-trees, uvarias, robinias, sandal-wood, &c. Guzerat, Oudepore, the kingdom of Asam, Bengal, along the coast particularly, the Australian rains for Tung-ah, that are abundant woods, the latter produces teak. In the Burman empire there are magnificent forests of the last-named valuable tree, together with white sandal-wood, eagle-wood, iron-wood, ebony, sycamore. Indian fig, fanpalms, bognoias, coconuts, and sago-palms, everywhere.

The kingdom of Laos, Tongquin, Cambodia, Siam, and the peninsula of Malacca, have a nearly similar vegetation. Ceylon is also well wooded with Asiatic trees and shrubs: among the former are the ebony and satin-wood, and of the latter the cinnamon is the most remarkable.

Of Oceania it is sufficient to say, that all the islands are more or less abundantly covered with timber; many produce trees of immense size, and of the finest wood, while others furnish the most valuable gums, drugs, and spices.

Africa. With the exception of the wide-spread deserts and sandy tracts of this part of the world, and in spite of the burning heat of a vertical sun, there are spots which, by reason of their elevation or their proximity to the sea, enjoy a milder climate. Whole forests of gum-, eucalyptus, and myrtus, grow where these places vegetation is rich beyond description. Thus Senegambia, Guinea, and Congo are covered with forests, which consist of the baobab (of which there are different kinds, though only one seems to have been described), of palms, and a great variety of trees, such as the juma, houm, and munga, the tamarind, interspersed with bananas, oranges, limes, and pomagranates; there are also coco-nut trees in great abundance. The tamarind and cedar, which grow in the greatest profusion on the borders of the Congo, furnish timber of the finest quality, which Bruce calls ruk; but the botany of this country is little known. On the coast the Adansonia are abounding, and the same results the palm of Java, myrtus, &c. Egypt, though abounding in plantations of fruit-trees and dates, has no forests. The Atlas mountains, on the contrary, are covered with magnificent forests, equal to the finest in Italy, and producing a variety of fruits, and the mastic tree, the cypress, &c. In the interior of the Atlas, the environs of Borgou are said to be covered with trees, among which are several kinds of sycamore, palms, and the mimoso ma-hinica. The kingdom of Borneo has immense forests, and the other islands of the Archipelago, the vegetation of which was generally thought to be deficient in forest-timber, but it has been discovered that, to the eastward, there are forests of the finest oak of the Albanian kind, celebrated for its quality and durability. These forests also produce dipterocarps, species of teak, and other useful woods, which they have been but imperfectly examined. Of the African islands, Madagascar is rich in timber, and a variety of woods useful in the arts; the same may be said of the islands on the west coast, they are generally well wooded.

America is, of all parts of the world, the most thickly covered with wood. Beginning with the north, we find the Russian territory on the north-west coast abundantly stocked with fine timber: pines 300 feet high and 45 feet in circumference, Canadian poplar, alders 40 feet high below the branches, birch, yew, black and common oak, American ash, sycamore, sugar maple, cypresses 24 feet in circumference, and willows. The islands on this coast have also magnificent forests of pine and other lofty trees.

In New Britain the forests are extensive, but they present little variety, and in some parts, to the northward particularly, the larches and birches are stunted in their growth. The environs of Lake Winnipeg are covered with the trees common to Canada.

In Greenland there are only a few stunted willows and birches and pine.

Labrador has merely some pines and pinasters in the valleys.

Canada contains immense forests, though the trees are neither so large nor of such vigorous growth as in the United States. Pines and evergreens are the most abundant, after which come the red and the sugar maple, the birch, the American elm, and iron-wood, the yew, the common and the mountain-sah; also a great variety of oak, different from the European species, which does not thrive here.

New Brunswick has large forests of fine timber, particularly pine, which it exports.

Nova Scotia produces good oak, but the principal wood is pine, fir, and beech.

The island of Cape Breton furnishes immense oaks and magnificent masts. Newfoundland, and the other islands at the mouth of the St. Lawrence, also produce timber fit for naval and other constructions.

The United States, being abundantly wooded, the cleared land even in some of the Atlantic states being inconsiderable when compared with that still covered with the primitive forests, which contain an immense variety of trees. There are about forty different kinds of oak, fourteen of beech, ten of maple, and six of pine. Ohio produces a species of white oak, among which is that from which sugar is obtained, birch, beech, iron-wood, hornbeam, hickory, wild-cherry, and apple, mulberry, poplar, willow, magnolias, elm, chestnut, &c. Of all the states, Ohio perhaps contains the finest white oak trees. The Ohio River is remarkable for the increasing cultivation, exhibiting the productions of both the north and the south. Thus there is red and white pine, evergreen oaks, chestnut, mahogany, walnut, cherry, maple, logwood, Brazil-wood, and sassafras. There are also in Florida whole forest of pinel and mutton, the finest in America. All European fruits also grow here, and the oranges are finer than in Portugal.

In Mexico and New Spain there are abundant forests, differing in character according to their position on the mountains or in the plains. In the mountains the pines and fir trees, plains covered with palms, while the heights are clothed with the timber-trees of Louisiana. The mountains in the neighbourhood of Guanauatua and Valladolid are covered with forests, and the Incendian of Mexico abounds in cedar and oak.

Yucatan is famous for its logwood and mahogany; the latter is also produced in great abundance round the Bay of Honduras.

Nicaragua has groves of palms which attain an immense magnitude; and in Costa Rica and Veragua there is fine forest timber.

The West India Islands generally abound in wood, though there are exceptions.

In South America the Caracas possesses innoxious forests, which, besides the finest timber, produce also a great variety of beautiful woods for cabinet-work, dye-woods, drugs used in the arts, and medicinal plants, as the sarsaparilla, bark, &c.

In New Grenada the plateau of Bogota, Popayan, and Paato have fine forests. The neighbourhood of Guayaquil, besides the common timber of the country, possesses a wood remarkable for strength and solidity, which is said to be incorruptible, and to resist worms better than any other; and lastly, a kind of wood which renders it invaluable for the keels and ribs of vessels.

Peru is rich in forests, which furnish timber, gums, resins, and cabinet-woods, all of the finest quality.

Chile possesses forests of gigantic trees, many of incorruptible wood, and others useful for their gums, resins, &c.
Pines and cedars are abundant. The whole chain of the Andes abounds in wood, varying in kind according to height, latitude, and climate. The vigour of the vegetation in some parts is inconceivable: thus in Chile trees have been found so large, that an entire church, 60 feet long, with all its wooden furnishings of doors, windows, &c., has been built of a single tree. The same country produces apples as large as coffee-pots, pear-trees 100 feet high, and firs 500 feet high. The Magellanic lands, on the west or mountainous part, contain forests.

Paraguay is rich in wood, on the borders of the upper Uruguay; and, among other trees, produces in abundance the pachira anam, from which a terneal drop is obtained. Brazil contains extensive forests, which cover immense tracts, and are composed of palms, Brazilian cacao, looser than the Indian, together with an endless variety of other trees peculiar to the country; some of these are of extraordinary size. The Brazilian pine furnishes very fine masts; this country exports a large quantity of timber, and supplies all the Portuguese shipping. At Bahia ship-building is carried on to a great extent. Brazil also produces the dye-wood which bears its name.

Guiana has extensive forests in its higher parts, but the wood of many of the trees is so soft as to be only good to burn, and that of others is too hard to be worked. It produces many dye-woods.

The forest region of the river Amazon and of the upper Orinoco, against Humboldt, covers an area of about 719,000 square miles.

From the above rapid sketch of the forest lands of the globe it appears that they still cover a great portion of its surface, nor can it be doubted that the immense tracts of wood exist, and that the enumerations and statements of the powerful influence on the physical economy of the earth. This influence is both direct and indirect. The direct influence of forests is the diminution of temperature, effected, according to Humboldt, by screening the soil from the heat of the sun, and by sparing the moisture from the leaves, and by the immense surface which these same leaves offer to the cooling process of radiation. This however seems only a partial view of the subject, and it is considered more fully under another head. The indirect influence is the removal of the circulation of moisture by which the fertilizing rivers of the earth's surface are furnished with a perennial supply of water. Such indeed is the importance of forests in this respect, that if it were possible to annihilate at once all the forests of the earth they would, I believe, be no longer habitable. The rains which fell in the mountains, no longer arrested by the trunks and roots of the trees, would not have time to percolate through the soil and fissures of the rocks to supply the reservoirs of springs, but would pour down the steep slope in torrential courses dry as soon as the rain had ceased. This, in a limited degree, has been already experienced in places where the heights have been partially denuded of their forests; and its effect on the rivers in some parts of the United States where the portion of cleared land is considerable, is distinctly observed. Nor would this be all: lakes, for want of supply, would soon be dried up, and as no waters but those of the ocean would then exist, the atmosphere would be deficient in moisture; no vegetation could exist, and the world would perish like hunger, and heat.

Forest then, are of primary importance in the economy of the globe, independent of their utility in a thousand arts which are necessary now to our comfort. This consideration has at length awaked governments to the necessity of protecting forests, and to the preservation by acts enacted for the purpose, and of forms of corporations in which all that is necessary to be known for the management of forests, so as to maintain a constant supply of timber and fuel.

[For an appendix on Forest Laws see page 359.]

For the antiquity of the royal forests in England, ' the best and surest argument,' says Coke, elsewhere (4 Inst., 319), 'is, that the forests in England, being sixty-nine in number, and extending to the reign of Edward the First and Henry the Seventh, the King's predecessors, William the Conqueror, and Hampton Court Forest, by Henry VIII, and by authority of parliament, are so antient, as no record or history doth make any mention of their history or beginning.'

Yet it appears, both from the great antiquity of the woods and from a passage in Stephen, that some lands had been aforesaid (as the term was) after the time of the two first Norman kings. 'The forests,' says Stephen, 'which King William my grandfather, and William II. my uncle, made and held, I received to myself; and others which my father, who added me to this, bequeathed me, I render up and conceive in quiet to the churches and the kingdom.' And one of the concessions demanded from John and granted in Magna Charta (§ 47) was, that all the lands which had been aforesaid in his time should be immediately desforestet. No additional forests appear to
have been made from the reign of John till that of Hampton Court was constituted by act of parliament in 1539 (31 Hen. VIII). The great advance was made by the Hampton Court Chase; but it is enacted that all offenders in it shall incur such penalties as the like offenders do in any other forest or Chase. It was therefore made a forest as well as a chase.

In his majesty's speech to the House of Commons, King George II tells us that King John granted a charter of forests at the same time with Magna Charta. This is indeed distinctly asserted by Matthew Paris, who even professes to give the charter at full length. But the statement is entirely unfounded; the concessions obtained from the king in regard to the forests, that the law above contained in the Great Charter, the Carta de Foresta, which M. Paris quotes, is a charter granted by Henry III. in the 9th year of his reign (a.d. 1224). This was the first separate charter of forests. It is commonly prided in the statutes from the Inapeximus, or confirmation of it, in the 28th of Edward I. (a.d. 1299). The subsequent legislation upon this subject is principally to be found in the following statutes:—The Customs and Azure of the Forest, or the Articles of Attachments of the Forests (of which the date is not known); the Ordinatio Forestarum of the 33 Edw. I. (1365); the Ordinatio Forestarum of the 34 Edw. I. (1366); the 1 Edw. III. c. 8 (1327); and the 7 Ric. II. c. 3 (1383).

One of the chief things insisted upon in the early narrative in support for the reform of the forest laws, was the mitigation of their severe code of punishments. The Conqueror, who, as the "Saxon Chronicle" says, loved the red deer as if he had been their father, is affirmed to have visited the haunts of one of these animals with a heavier punishment in mind than he could bring the must. Laws must appear from the charter of Henry III. that the offence had previously been punishable not only with mutilation, but with death. 'No man from henceforth,' says the 10th clause or chapter of the charter, 'shall lose either life or member, unless he be first taken and convicted for taking of our venison, he shall make a grievous fine, if he have anything whereof; and if he have nothing to lose, he shall be imprisoned a year and a day; and after the year and day expired, if he can find sufficient sureties for his good behaviour, he may return into the realm of England.' According to Matthew Paris (whose authority however, on such a matter, is not worth much), Richard I. had already repealed the penalties of mutilation for offences against the forest laws.

The森林法官 were administered by their own officers and courts. The officers were the justices in eye of the forest [Eves]; the wardens or warders; the verderers, foresters, apostars, warders, keepers, bailiffs, beatles, &c. The courts were — The Court of Wold (Woodward Court) of the forest, held once in every forty days before the verderers; 2. The Court of Swainmote, held three times in the year before the verderers as judges, and with a jury composed of the suants, or freeholders within the forest; and 3. The Court of Justice-seat, which was the supreme court, held every third year before the chief justice in eye of the forest. This was a court of record, and, at least in later times, it was held that a writ of error lay from it to the Court of King's Bench. With the exception however of such cases as involved the king's forest, all matters of dispute were decided by the justices in eye of the forest, as the law had been held pro forma soon after the Restoration, no Court of Justice-seat has been held since 1632. A minute survey of the forest was also taken every third year by its twelve guards; and it was upon this occasion, and under the inspection of the deer, that the years in which the expiation of all the mastifs in the forest took place, which consisted in cutting off the claws and ball (or pelote) of their forefeet, to prevent them from running after the deer. The four principal forests in England were accordingly those to be, 1. the New Forest; 2. the Forest of Weymouth; 3. the others who were Epping, in Essex; Dartmoor, in Devonshire; Wichwood, in Oxfordshire; Salcey, Whittlebury, and Rockingham, in Northamptonshire; Waltham, in Lincolnshire; Richmond, in Yorkshire, &c. As the new powers vested in the crown by the forest laws, after having to a great extent long ceased to be exercised, were revived by Charles I., and devaluesed to be turned to account in replenishing his empty exchequer. At the Court of Justice-seat, held in 1632, before the earl of Holland as chief justice in eye of the Trent, large sums of money were extracted from many persons, chiefly as compositions for alleged encroachments on ancient hunting-hounds, or the hunting of forests, although after a quiet possession of three or four centuries. This accordingly was one of the grievances to which the Long Parliament directed its earliest attention. One of the Acts which that assembly passed in its first session and which was entitled "The Act for the Clarification of the Tenantry of Woods, and of the Meets, Meers, Limits, and Bounds of the Forests," which set forth in the preamble, that not only judgments had of late been given by which the bounds of some of the forests had been variously extended, it pretended to extend, beyond the bounds to be commonly known, and formerly observed, to the great grievance and vexation of many persons having lands adjoinning; but there had also been some endeavours or pretences to set on foot forests in some parts of this realm and the dominion of Wales, where, in truth, none have been or ought to be, or, at least, have not been used of long time,1 is therefore enacted that the bounds of every forest shall be those commonly known, reputed, used, or taken to be its bounds; and that all judgments, &c., to the contrary shall be void; that no place where no justice-seat or other forest court had been held within sixty years should be accounted forest; and that commissions should be issued for ascertaining the bounds of forests as they stood in the 20th year of the preceding reign, and beyond which they should not be extended thereafter. Since the passing of this act, the old forest laws may be considered as having been practically abolished, and the offices connected with their administration and execution turned into little better than sinecures.

The 11th chapter of the Carta Forestarum of Henry III. contains the following curious provision:—— Whatever archbishop, bishop, earl, or baron, coming to us at our commandment, passeth by our forest, it shall be lawful for him to take and kill one or two of our deer, by view of our forest; or, also he shall have for a year an horn for him, that he seem not to steal our deer; and likewise they shall do returning from us as it is aforesaid. As this law is still un repealed, any bishop or nobleman may shoot one or two of the deer if he should pass through any of the royal forests, which he might do, and hunt in his own deer. Hunting, it may be observed, was formerly so common or universal an ancient amusement, that the crown is still entitled, at the death of every bishop, to have his kennel of hounds, or a composition in lieu thereof. Auckland Park, and certain other demesnes, are now the property of the Bishop of Durham by forest services; particularly, says Camden, upon his great hunting, the tenants in these parts were bound to set up for him a field-house, or tabernacle, with a chapel, and all manner of rooms and offices; also to furnish with dogs, or dogs, or to engage a good huntsman for his provision, and to attend him during his stay for the supply of all conveniences. But now all services of this kind are either let fall by disuse, or changed into pecuniary payments. (Game Law; Woods and Forests.)

FOREST SCHOOLS. The ancient and distinct branch of education, which originated in Germany from the increased scarcity of wood. The first special instruction of this kind was given by Mr. Zanthiier at Islenburg, near the Harz forest, and its importance being immediately appreciated by the court and noble families, forest academies or schools were established in the central parts of the country. Prussia directed particular attention to the subject, and the present king, on coming to the throne, ordered that, in future, situations in the forest department should be bestowed on those who best preserved and perfected the forests; that the nominations should be founded on knowledge and experience, and no longer granted as a recompense for service. In consequence a new organization took place, and competent instruction in all things appertaining to the government of forests became a necessary qualification for an appointment to any post in the forest department.

In the forest academies are taught botany generally, and particularly as regards the ordinary productions of the forest, including vegetable physiology, chemistry, surveying, mensuration, mechanics, the methods of restricting the encroachments of sands, draining and embanking, together with the care and chase of game; as also the laws and regulations of forest administration. The examination which the candidates undergo is very strict, and the result of the system has been eminently beneficial.
France has also a particular administration of the forests, and a very detailed code of forest laws. Russia, from the immense extent of its forests, is under little apprehension of a scarcity of wood, nevertheless the consummation of this article is so enormous, all the houses of the peasantry being built of it and no other fuel being used, that it has been deemed advisable to pay some attention to the subject, and a board has been formed under the particular sanction of the government for the better preservation of the forests and more general instruction in forest science.

Louis XIV., an ardent lumberman, directed the forests under the direction of a separate branch of the government. Men of science then began to turn their attention to this subject. Du Hamel, du Monceau and Buffon were among the first naturalists who wrote on the management of forest trees.

The consideration of the various trees which may be cultivated to advantage, and the uses to which their woods may be put, with the mode of their propagation in various soils, forms a branch of forest science.

The following is a list of the principal forest trees:

The oak (Quercus), and its varieties, the beech (Fagus sylvatica), the hornbeam (Carpinus betulus), the birch (Betula alba), the elm (Ulmus), the maple (Acer campestre), the alder (Betula alba), the ash (Fraxinus excelsior), lime, chestnut, the chestnut (Fagus castanea), the walnut (Juglans regia), the crab (Prunus avium), the wild cherry (Prunus avium), the mountain service (Sorbus aucuparia), the service (Sorbus domestica), the aspen (Populus tremula), the linden (Populus alba), the common poplar (Populus nigra), the Lombardy poplar (Populus nigra), the sycamore (Acer pseudoplatanus), the plane (Platanus orientalis), the hazel (Corylus avellana), the sallow (Salix caprea), the osier (Salix viminalis), the pine (Pinus sylvestris), the fir (Fagus silvatica), the beech (Fagus silvatica), and the larch (Larix europaea). The wood of all those trees is divided into three sorts: hard wood, white wood, resinous wood. The German writers admit only two sorts of trees, the deciduous and evergreen, but this is more a botanical division than one applicable to the forest.

The uses to which the wood is applied vary much, according to circumstances and situations. The most profitable is that of timber for buildings, and more particularly for naval architecture. The oak, beech, elm, and fir, are the chief woods employed for this purpose; but the chestnut was at one time considered as equal to the oak, as the roofs and beams of many old buildings testify; Windsor castle among the rest. For millwrights the ash, beech, service tree, walnut, and crab, are most useful. For various utensils for the dairy the linden and chestnut are suitable; for the larger poplar, are used on account of the whiteness of their wood. Various soft woods are used for turning, as well as the hardest, when they have a close grain and are not apt to split.

When wood cannot be applied to building or domestic uses it is still very valuable as fuel, and in this point of view it is important in those countries where pit coal is not abundant. The best wood for fuel is oak, and next to this beech. The harder the wood, in general, the more heat it gives out in burning. The trunks of large trees, sawn into convenient lengths and then split into billets, make the best fuel; but where wood is scarce it is found most profitable to cut down the trees at the age of 30 or 40 years at most, when they have acquired but a small size but no great girth. In the woods which are planted for this purpose in France and Germany the trees are drawn up by being left close together, and the side branches are kept cut out to the height of 30 or 40 feet, so that they only spread out at top and form being never thinner than the trunk, which would if the tree stood singly, and had room to spread out its branches.

In order to judge of the value of woods in different soils the following table may be useful. It is calculated on the supposition that the ground is covered with trees as much as it will bear.

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<tr>
<th>Age of Tree</th>
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This table is the result of careful measurement of woods cut down at different ages; and it shows that the maximum in poor soils is attained in thirty-five years, in middling and good soils at 200. But it also shows that the increase of wood per cent, in ten years is greatest from twenty to thirty in poor soils, from forty to fifty in middling soils, and from fifty to sixty in good soils, so that it is in the better soils that the trees may be properly thinned to allow any wood which is to be used for fuel to stand above eighty years.

In good soil at thirty-five years growth the wood in the tree has increased one cord per acre each year; and the wood in the tree is worth from $1 to $2 per ton; the highest price that they can be expected to bring is 35c. This gives a rate of increase that may be used for fuel to stand above eighty years.

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for the town, 9360 for the whole commune). It is now comprehended almost entirely in the department of Loire: a small portion is included in that of Haute Loire.

The other principal towns of the ci-devant Forez, with their population in 1832, are—St. Bonnet le Château (3079 town, 2169 commune), Bourg Argental (1734 town, 2503 commune), Challes sur Lyon (3067 commune), St Etienne (33,804, Firmi (3438 town, 3779 commune), St Espirit (2591 commune), St Julien in Serre (3274 commune), St Just sur Loire (1525 town, 2500 commune), La Fouillouse (3471 commune), St Rambert (3015 commune), Val Beaulieu (4453 commune), and Beaune-Sasset (5054 commune).

In the middle ages a county which was rendered hereditary by Guillaume, one of the officers of Charles Le Chauve. He was about A.D. 890 succeeded in Lyonois and Forez by one of his sons, and by another in Beaufort, which was adjoining. In the consequent period these counts seem to have lost first the jurisdiction of the city of Lyon and afterwards of Lyonois, through the increasing power of the archbishopric of that city.

The county of Forez afterwards came into the hands of the dukes of Bourbon, and was, together with their duky, united to the crown.

FORFAR, the county-town of Forfarshire, is an ancient royal burgh, situated 13 miles north of Dundee, in the great valley of Strathtyrum, and seems to have been a battle-ground, to be seen on the top of a mount. A figure of this castle, cut in stone, forms the heraldic device of the borough. Here Malcolm Canmore held his first parliament in 1057, after recovering his kingdom from the usurpation of Macbeth, and here the town was visited by John and the English troops, when all its written documents were lost. It is recorded that nine poor women were burned for witches at the end of the seventeenth century, and that in the reign of James VI. the weekly market-day was on Sunday. An ancient church, called the church of the basilica, still survives in the town; it was fixed on the head by two iron spikes put into the mouth, and by a long iron chain attached to it the dreaded agent of Satan was led to the flames. The houses are neat and well built, though the streets are irregular, and the chief church is by choice of the most ancient and ornamental edifice. There is also an episcopal chapel, and a new and elegant town-house serves at once for judicial and other public purposes and a prison. Three endowed public schools are well conducted in commodious rooms. The town being the seat of the county court, is the residence of many members of the legal profession. The linen manufacture is very extensively carried on. Several hundred looms are employed, and the quantity annually produced of Osanburghs and various other kinds of linens exceeds 100,000. Slooes, called brogues, are made in large quantities for exportation. This town is also distinguished for its breweries of porter and beer. Of late years many improvements have been made in the general appearance of the place and its situation. An extensive length of the county garden, first laid out by the celebrated Mr. Don, who resided here, has been replenished with a great variety of indigenous and exotic plants. A nursery too has been formed, containing nine acres planted with all kinds of fruit and forest trees. The inland situation, 15 miles from the sea-coast, is disadvantageous for commercial business; but the active spirit and industry of the inhabitants secures to the town a satisfactory degree of prosperity. In 1831 the population was 20,560.

FORFARSHIRE is a maritime county on the east side of Scotland. Though it usually takes the name of Forfar, the county town, it is also named Angus, probably from the high land, south of the town of Montrose, called the Hill of Angus, on which the chief seat of the hardware manufacture: St. Etienne, the Birmingham of France, is within its limits. It produces also abundance of flint-termer and excellent turpentine; and corn, wine of good quality, and excellent hemp. It is watered by the Loire and several of its tributaries, and extends in one part across the hills which ordinarily bound it on the east down to the river Rhône.

The district of Foréz was subdivided into Haut Foréz, capital Feurs; Bas Foréz, capital Montbrison (population 8890 commune); and Roannois, capital Roanne (population 8890 commune).
east to west 26 miles. Its area is said in Mr. Headrick's 'Agricultural Survey' to contain 33,243 English acres, or 43,141 Scotch acres. The latter measure, which is most commonly used in the county, is found in the former, four Scotch being nearly equal to five English acres. In the same work, published in 1813, the constituent portions of the whole surface are given as follow:—

Woodland, cultivated land, woodland, and arable land. Woods and plantations 20,764 Cultivable wastes 20,000 Hills and mountains unarable 159,836 Cultivated and improved 340,463

In Mr. MacCulloch's 'Statistical Account of the British Isles,' the superficial contents of the county are stated to be 570,000 English acres, of which 2,560 are water. In other recent accounts, the extent of land in cultivation is stated at 37,000 acres, and the wooded land 35,000 acres, of which 5000 acres are natural wood and coppice.

General Appearance.—There are four natural divisions of the surface. The first is the Grampian district, which comprises somewhat less than the north-western half of the county, and exhibits a tract of irregular mountain ridges, which, for the most part, have a shallow mossy soil, and are covered with short heath, and large tracts of pent moor, but numerous valleys by which they are intersected are fertile and picturesque. The direction of the ridges is generally from north-west to south-east, and the numerous streams which rise in this mountainous district all flow in a south-westerly direction. The Grampian mountains which form this county are called the Grampians; they rise in several places to an elevation of 3100 feet above the level of the sea, and exhibit all the grand and various scenery of an alpine country. The principal valleys are Glen Isla, Glen Ericht, Glen Garioch, Glen Lochy, and Glen Gelt. The second division is formed by the great valley of Strathmore, or How (hollow) of Angus, which extends across the centre of the county, from south-west to north-east, including the towns of Cupar, Forfar, and Brechin. Its length is thirty-three miles, and the width from four to six miles. Here the surface is gently undulating, and beautifully diversified with streams, well cultivated fields, plantations, villages, and gentlemen's seats. The third division consists of the Sidlaws or Sillaw Hills, which run parallel to the Grampian range, and are situated on the south-west extremity of the county, and terminate in the promontory on the coast called Red Head, which rises to about 1500 feet above the sea. Some of these hills are upwards of 1400 feet above the level of the sea, and command extensive views of the Grampian mountains, the Tay and the sea. In many parts they are covered with short heath, in others they are cultivated up to their summits, and contain many fertile and beautiful valleys. The length of this district is about 30 miles, and its breadth from two to four miles. The fourth and eastern district, included between the Sidlaws and the shores of the Tay and the sea. It extends from the boundary west of Dunkeld to the hills about seven miles south of Montrose, varying in width from three to eight miles, and sloping gently towards the shore to the east and south. This tract is generally very fertile, under high cultivation, and adorned with numerous villages, plantations, farm offices, and elegant villas. Near the shore of the Tay there are mounds of loose sand, containing extensive beds of sea-shells, at about 12 feet above the present level of the sea.

Although so great a portion of this county is covered with mountains, it contains, on the whole, a greater proportion of arable land than any other county of Scotland; and it is not inferior to any in opulence and prosperity.

Mineral and Limestone District.—The great chain of primary rocks called the Grampian Hills, a section of which forms the north-western portion of this county, has been minutely described in a geological survey of these mountains by Colonel Innes. They are composed chiefly of—1st. granite, a hard and crystalline rock, and very durable for building. It is formed of crystallized rhomboidal felspars, commonly intermixed with laminated tale or mica, and takes a brilliant polish. In the cavities and fissures are found yellow- and smoke-coloured topazes; when they are white, the rock is called the 't' of pentagonal prisms, sometimes 12 or 14 inches in length. 2nd. Next to the granite a very large proportion of the Grampians in this county is composed of fine grained, hard, and greyish quartz, and micaceous schistus or mica schist. It is always stratified; the beds lie at various angles and are often perpendicular. This rock is generally of a lead colour, but is found occasionally with the black and blue iron ore. It forms the beds in which the slate of a silvery hue occurs among the schistose rocks in large biretches or in irregular veins. It often contains silicious spar, and is thickly studded with small garnets, varying in colour from a faint to a deep crimson. Porcelain stone is sometimes found on some of the outcrops of these rocks. Among the slate bones was given to by Dr. Walker, professor of natural history in the university of Edinburgh, because it contains the same proportions of in silica and alumina which are required to compose the finest porcelain. Its colour is generally white, inclining to grey, or redish, owing to the presence of iron. Lead mines were wrought in the Grampian range a century and a half ago, and the ore is said to have yielded a part of silver. The ore, which is galena, is of a blackish colour, and metallic lustre, and is thought to be obtainable in abundance, if pains were taken to make excavations for the purpose. Limestone is plentiful in various parts of the mountainous district; it is frequently streaked with blue and white, or spotted with yellow, and contains crystals and tine. Large veins of slate occur along the declivities, but much of this slate is impure, and is broken into fragments on the bank of the North Esk, and at Cortachy on the South Esk, large masses of jasper are imbedded in schistose and micaceous rocks. It varies in colour from a bright yellow to a deep red, is susceptible of a high polish, and may be seen in the walls of Quoich and Glen Cholme. The felspar of the Grampian rocks is porphyry. It occurs in broad veins contiguous to the schistose rocks, and forms numerous hills; it is generally of a brown, yellowish, or whitish colour, and is interspersed with grains of quartz and rounded felspars. These rocks, unlike granite, gneiss, marum, schistus, mica slate, clay slate, and porphyry, are the usual constituents of the primary mountains in Scotland, and they entirely succeed each other in the order here described.

The transition rocks, lying between the granite and felspar, appear on the declivities of the Grampians towards the valley of Strathmore. They consist of grey schistose wacke slate, in which occur beds of slate, spar, and numerous elliptical masses of jasper; some measuring 30 feet by 50 feet and 10 feet in thickness. These rocks, unlike granite, gneiss, marum, schistus, mica slate, clay slate, and porphyry, contain veins of heavy spar, and traces of copper ores. Pearls have been found in the bed of the North Esk.

Strathspey District.—In descending from the Grampians the first rock that occurs after the porphyry is a coarse pumice-stone, gravel-stone, or breccia. By the peasantry it is called 'gully-stone,' from being composed of pebbles of different sizes and colours, which are held together by a ferruginous cement of great hardness. This rock has evidently been formed from fragments detached from the rocks above described, which, in their progress towards their present position, had been rounded by the action of water. This, and other local circumstances, have induced several scientific topographers to believe that this spacious valley, of which the How of Kincardine is a continuation, was once the channel of a great river or lake. As we descend along the beds of the streams which form the heads of these lakes, the coarse pumice-stone gives place to a finer and more uniform quality, and becomes more and more resembling the gravel-stone which occurs near the head of the pumice-stone. Lower down this first species of sand-stone graduates into one which is softer, of a deep red colour, and has beds of red clay interposed between its strata. It consists of particles of silex connected...
by ferruginous clay. It often occurs in laminae, or slates, for roofing, and is easily cut with the chisel. Its beds frequently contain detached yolks or rounded pebbles, and puddling-stone is often found with it in alternate beds.

Shell-marl, formed from the exuviae of several kinds of foraminifera, is common near Newcastle. It is dark brown or black, and is a very useful manure. It is procured in large quantities from beneath beds of peat-moss at the bottom of several ancient lochs which have been drained chiefly for this purpose, namely the lochs of Kinordie, Lundie, Logie, and Restennet. From the undrained lochs of Forfar, Resowie, and Balgavies, it is dragged up by means of iron scoops worked from boats. In the Agricultural Survey it is stated that the value of 100 acres of this marl, averaging five feet in thickness, in the drained bed of Loch Lomond is £100. In the same year it is stated that at Restennet the sale of part of the drained marl had yielded (in 1813) a clear profit of 16,000l. This manure is here also obtained from several drained mosses or peat-bogs.

The description of the other alluvial strata comes under the head of soils.

Iron has been discovered, and from the numerous ferruginous springs which rise in various parts, several beds of iron ore are conjectured to exist. The only other mineral worthy of notice in this district is a species of pipe-clay, found promiscuously in the south-west extremity of the valley near Glammie.

District of the Sidlaw Hills.—These mountain ridges are composed chiefly of sand-stone, the strata of which lie nearly horizontally towards the south, and decline towards the north. Some are of a fine texture, of a brown, grey, white, and greenish. Some of the fine-grained is susceptible of a polish sufficient to form an imperfect mirror. Numerous beds of indurated clay of a red, grey, and bluish colour, are interstratified between the strata. It lies below the nature of the mineralogy of the strata, and is a brown, grey, and greenish. Some of the fine-grained is susceptible of a polish sufficient to form an imperfect mirror. Numerous beds of indurated clay of a red, grey, and bluish colour, are interstratified between the strata. It lies below the nature of the mineralogy of the strata, and is a brown, grey, and greenish. Some of the fine-grained is susceptible of a polish sufficient to form an imperfect mirror. 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foams from rock to rock with a picturesque beauty, which has been artificially improved by the elegant taste of Lord Gordon, in whose estate it flows. No part of this stream is navigable.

2. The South Esk issues from the north-west summits of the Grampians, and having received numerous mountain streams, descends into the fertile valley of the Eden, where it is further augmented by several brooks: continuing eastward by the town of Brechin, it passes through the basin of Montrose into the sea. On several of its falls are erected many spouting mills, and other machinery. 3. The Isla rises from two streams rising among the Grampians and runs north-west to south-west over the county.

The course is south-west to near Ruthven, where it turns off to join the Tay, in Perthshire. Like the North Esk, in escaping from the Grampians, it has worn a chasm in the granite rocks more than 120 feet deep, and forms the lowest and finest cataracts of the greatest beauty. One has a clear precipice falling at least 25 feet. The banks are very steep and richly wooded for many miles, and the scenery, at the junction of the Melgama water, is highly romantic by the extraordinary beauty of the rocky scenery, and the islands and falls of the water. The Dee, Lunan, Dighty, and other smaller streams, are not of sufficient magnitude for particular notice. Numerous perennial springs flow from the sandstone hills. One at Kirktown, in the parish of Kinnetts, emits 25 gallons per minute at all seasons of the year.

The principal roads branch off from Dundee—1, to Aberbrothick, Montrose, and thence to Aberdeen; 2, to Forfar and Brechin; 3, to Cupar Angus and westward.

These, and other lines of internal communication, are kept in repair, and there are number of bridges across the small streams. The principal one is over the North Esk, on the road from Montrose to Kincardine. A railroad from Dundee crosses the south-west corner of the county.

Woods and Plantations.—Numerous trees found in the mosses and marshy ground, consisting of enormous oaks, ashes, elms, and birches, indicate that formerly the lower part of this county was covered with forests. Some of the coppices are still managed with pitch pine, oak and chestnut. Other plantations are managed by the tenants for profit and recreation. The Dean, Lunan, Dighty, and other smaller streams, are not of sufficient magnitude for particular notice. Numerous perennial springs flow from the sandstone hills. One at Kirktown, in the parish of Kinnetts, emits 25 gallons per minute at all seasons of the year.

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A species of barley called *Bear*, or *Bare, Bigg*, and *Chester* is that which alone was antiently cultivated. It has six rows of grain in the ear, by which it is distinguished from the common barley, which has only two rows. It is a larger and less valuable species; has a thicker husk, and the awn is longer and more firm, and produces an inferior kind of malt.

The bleak and elevated lands on the Grampian and Sidlaw mountains are the chief places where it continues to be cultivated, as it thrives on poorer soil and with less cultivation than common barley. All the grain is consumed by the poorer class of labourers; but in nutritious properties it is much inferior to oatmeal. Hulled pot or pearl barley is much used in the county by all classes in meat broth, commonly mixed with vegetables.

This is an ancient and very general Scottish dish, and pearls barley is largely exported to Leith and London. The ale and beer breweries of the county, and distilleries for whiskey, consume a great portion of the produce of barley. It is also exported for the same purpose to Leith.

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tasted into an unfavourable subsist; to prevent which it has been discovered that in the old abbey orchards the mens made use of the bottom of the deep hole in which the trees were planted.

**Live Stock. Wild Animals.—** The ancient breed of horses in this county is small, but very hardy, and capable of enduring much fatigue with scanty nourishment. These animals are found in the western part of the district. A great part of the country is covered with a wintry kind of vegetation, for which reason the breed of horses has a peculiar value. They feed chiefly on the stunted grass which they find on the sides of the mountains.

In the lower districts this breed has been much improved in size and form by regular feeding, and shelter from the piercing wintry winds; but generally throughout the midland and maritime plains are found the larger animals of the Lanark breed, which, as stated in *The Agricultural Survey,* are the best working horses in the world. The weight of the horse is about 1,200 lbs.

A few gentlemen rear horses for the turf, and keep studs of thorough-bred racers. Of late years much attention has been given to the breeding and treatment of horses, and very great improvement has been effected in their quality. The Gelerts of the present day are very different from those of 1813, when the weight of a stud was about 900, and their value about 220,300. In remarking that it is mere prejudice and invertebrate habit that causes us to loathe the flesh of horses while we devour that of oxen, the learned and philosophic author of the *Agricultural Survey* asserts that he once partook of the flesh of a young horse, and found it extremely palatable: he adds that he also partook of a fattened old horse aged above twenty-two years, and that he could not distinguish the flesh of the horse from that of the fowls.

Before the introduction of inclosures, turnips, clover, and sown grasses, the size of black cattle was diminutive, and eight or ten were usually yoked in one plough. The great influence of superior feeding and treatment is shown in the fact that the black cattle of the county are now reckoned among the best in the kingdom. The number of horses on the farms in 1813 was about 9,000, and their value about 220,300. In remarking that it is mere prejudice and invertebrate habit that causes us to loathe the flesh of horses while we devour that of oxen, the learned and philosophic author of the *Agricultural Survey* asserts that he once partook of the flesh of a young horse, and found it extremely palatable: he adds that he also partook of a fattened old horse aged above twenty-two years, and that he could not distinguish the flesh of the horse from that of the fowls.

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and maritime trade carried on at its principal towns is given under the respective description of each [see under Dundee, and the sections of the present article relating to Montrose,] it is sufficient to mention here only a few general facts of commercial importance. There are two custom-houses in the burghs, one under the jurisdiction of Aberbrothick, and one under the jurisdiction over the port of Aberbrothick, or as it is commonly called, Arbroath. The navigation of the Firth of Tay is much inquired after by a sand bar across the entrance and a great extent of shallow sands, which were the cause of many shipwrecks until the 18th century. The navigation of the south-east extremities of the coast, one of which is moveable to admit of adaptation to the shifting of the coral. About 12 miles east of the Tay-mouth, and at about the same distance south-east from the port of Arbroath, is the dangerous reef called Bellows sands, which are derived from the fact that the monks of the ancient abbey of Arbroath, to give timely warning to approaching vessels, fixed upon it a large bell which was rung by the motion of the waves. At low water of spring-tides this reef is seen extending 2000 feet by 250, the highest part being about 10 feet above the sea-level; but at high-water this part is 12 feet below the surface. In consequence of the dreadful storm in 1799, when 70 vessels were wrecked along this coast, it was determined to erect upon this reef a light-house and fog-signal. The light is visible 16 miles, and the fog-signal is heard 12 miles. The height of the tower is 42 feet. The lantern is of cast-iron, 12 feet in diameter, 15 feet high, and roofed with copper. The keeper's apartments, 50 feet above the base, are said to be as dry and comfortable as any house in Edinburgh, though, in some respects, more subject to the weather. The lighthouse is the property of the Board of Trade, and is under the charge of a member of parliament; one is returned for Dundee, and one jointly for the burghs of Montrose, Forfar, Brechin, and Aberbrothick. The population of the county in 1831 was 129,066. The annual value of the real property at this time was 361,341L.

Education.—Every parish is provided with a school-house and a schoolmaster, who resides in the same building, to which is attached a garden and sometimes a field for a cow. In Dundee an academy is established, for teaching the foreign languages and the most useful departments of science; and in all the towns the parochial schoolmasters have classes for the elements of mathematics, mensuration, geography, astronomy, navigation, and drawing; besides the English, Latin, and French languages. The religious remarks of the Rev. Mr. Headrick, in speaking of the schools of this county, are worthy of transcription:—The establishment of parochial schools was carried by our zealous reformers, who strenuously impugned the maxim that ignorance is the father of devotion. An approach towards public instruction was made by the bishops who established the first Scotch universities, but their object was to inculcate the nonsense of Aristotle's logic, in which the clergy might find weapons to defend their tenets against infidels. It was of no avail, however, to make the plan by the poor as well as the rich might be instructed. The parochial schools have diffused a taste for learning among the whole body of the people. Even the meanest cottager thinks it a sacred duty to have his children taught reading, writing, and arithmetic, and to give them higher degrees of education. Our Scottish aristocracy long looked with a jealous eye on the parochial schools, and forebode the subversion of all order, and the extinction of all industry, from instructing the lower classes of society; but the fact has turned out to be the very reverse of their predictions; for since knowledge has been generally diffused the people have become much more orderly and industrious; agricultural improvements have advanced with unprecedented rapidity; great numbers of ingenious farmers have improved their farms; numerous improvements have been made in every species of machinery; well qualified persons have been abundantly found for naval and military service; and the numerous Scotchmen appointed to fill places in public office, owe their promotion to the education they received at our parochial schools." Lending libraries are numerous, not only in the larger towns, as Montrose, but in the villages. One of those in the parish of Craig contains 600 volumes. In the same parish a free library society of about 200L. per annum was established in 1803. Several savings' banks are also well appreciated and beneficially used by the labouring population.

According to the Parliamentary Return of 1818, there were 10 parishes in this county at that time 78 parochial schools, containing 3511 children, with a revenue of 2430L. 148 day-schools, unendowed, were attended by 3995 scholars; and 79 Sunday-schools, attended by 3902 children.
The poor are relieved by voluntary donations, church collections, and interest arising from funded legacies bequeathed by charitable persons.

Towns—Besides Dunfermline, the principal towns are Arbroath, Fife, Kirremuir, and Montrose. Montrose is a royal burgh and seaport, having separate jurisdiction. It is situated at the mouth of the South Esk river, between the large lake or basin of Montrose and the sea. In ancient times it was a place of considerable strength, protected by walls. The shore of the town and the adjacent northern shore are dry and sandy. One principal street, which is wide and regular, extends from north to south, and is crossed by several smaller streets and lanes. Many of the old houses present features foreign to the south. The town, which contains 7000 men, is well supplied with water. Well water is supplied in pipes from the parish of Dun, three miles distant on the western side. The town is lighted with gas, and is well paved and cleansed. The river is crossed by a handsome chain suspension bridge, which was built by Captain Brown, and contains 20,000l. A pontoon is levied amounting to about 1300l. a year. The church, in the middle of the town, is a large plain building capable of containing 3000 persons. A steeple, 200 feet in height, has been newly erected. An episcopal chapel, and a chapel of ease, are each commodious and neat places of worship; the same remark is applicable to several Dissenting chapels.

There are three banking establishments, a custom-house, a town-house, prison, theatre, and post-office. The annual revenue is about 25,000l. There are two lending libraries, one religious and friendly societies, a savings bank, a lunatic asylum, hospital, infirmary, and dispensary. Numerous bequests of benevolent persons form a poor's fund, amounting to 10,600l. Besides this, some large sums for the churches are derived from the established church, hospital, and occasional donations. In a public academy are taught mathematics, arithmetic, Latin, Greek, French, geography, writing, history, &c. There are two free-schools, one for 42 boys and 32 girls; the other is for 100 scholars of both sexes. A school established by the trades teaches writing and arithmetic to 240 children; an infant school has 130, and 20 private schools, male and female, are attended by about 700 children. The total number of children is 1534. Three public libraries are established, one of 7000 volumes. The principal manufacturer is flax-spinning and weaving. Four flax-mills in the town, moved by steam of 120 horse-power, produce annually 554,569 spinners of yarn. Three other large flax-mills on the river North Esk, belong to the town and parish of Montrose.

There are manufactories for soap, candles, starch, ropes, sails, and steam-machinery; besides five breweries, two tanworks, a foundry, and a steam flour-mill. Ship-building is well executed, and 100 vessels of 120 tons burthen are built every year. The foreign import of flax in 1834 was 2500 tons, of whale-oil 400 tons, fir timber 1330 loads. The exports coastwise to London, Leith, and other ports, were—

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Weight (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barley</td>
<td>23,700</td>
</tr>
<tr>
<td>Oats</td>
<td>3,350</td>
</tr>
<tr>
<td>Wheat</td>
<td>1,130</td>
</tr>
<tr>
<td>Peas and beans</td>
<td>3,460</td>
</tr>
<tr>
<td>Potatoes</td>
<td>114,560</td>
</tr>
<tr>
<td>Salmon</td>
<td>1,890 boxes</td>
</tr>
<tr>
<td>Cod</td>
<td>920 barrels</td>
</tr>
<tr>
<td>Herrings</td>
<td>4,970</td>
</tr>
</tbody>
</table>

The harbour is formed by a breastwork at the mouth of the river, within which vessels of 400 tons can anchor, the water being 35 feet in depth at high tide, but no vessels enter the basin.

Lino, slates, flax, and numerous other articles are largely exported. Four regular tractors go to and from London, and two to Leith. There is a weekly market on Tuesday, at which corn is sold by sample, and all kinds of farm and garden produce. The population of the burgh in 1831 was 12,033, besides 800 sailors, but there has since been a considerable increase. James Graham, marquis of Montrose, the champion of the Covenant, was born in the town in 1612. Andrew Melville, the father of the Scottish Presbytery, was educated here; and here a Frenchman, named Marilliers, first taught the Greek language in Scotland, in a private school, in the year 1347. In 1560, by a new street through an eminence called Fort Hill, on which an ancient castle once stood, a stratum of human bones was discovered, nearly six feet in thickness.

Kirkcudbright is a burgh of barony and market-town, situated five miles north-west of Forfar, on the north bank of the river Strath. It consists of several irregular but handsome streets, and has an elegant church and episcopal chapel, each with a spire, a town-hall, and several other public buildings of modern date. The market is well attended with provo- culls, and is annually executed by the farmers and farmers of the Garmouth mountains. Coarse canvas and various other brown linens are manufactured very extensively. Three or four millions of yards are annually manufactured and sold. The town is situated on the rivulet called the Gaire. There are several schools, one of which is endowed with 1760l. The population in 1831 was 5066.

Cupar-Angus, so called in contradistinction from Cupar, a town of Fife, is a burgh of barony, consisting of a large market-town, and a burgh of barony, on the Perth boundary line of the county, about eight miles south-west of Forfar. A magnificent Cistercian abbey, founded here in 1164, by Malcolm IV., on the site of a Roman camp formed by Agricola, is in a ruinous state. The abbey is surrounded by a large park, which was at one time used as a military training-ground, but is now a market-town. The population in 1831 was 2922.

Antiquities. Religious Buildings.—The first monastic buildings in this and other countries in Scotland were erected on the sites of the religious schools and cells of the Celts or Cubiles, that is, the primitive Christians who having been banished beyond the Roman empire in the persecutions of the early emperors, sought refuge in the recesses of the Galloway mountains, where they were consecrated by the solemn rites of the Druids, they taught the doctrines and morality of the Christian gospel together with the sciences, so called, of that period. Their name is perpetuated in the names of the halls, and cells, the ruins of which are still to be seen. The ruins of the abbey of Cupar, at Dunfermline, are the most interesting in Scotland, and the ruins of other abbeys are of great historical interest. The site of the abbey of Cupar, at Dunfermline, is now the site of a small town, and the ruins of the abbey are the site of a large town, and the ruins of the abbey are the site of a large village.
Rest tenet. The magnificent monastic church of Dundee has been elsewhere noticed. Many smaller monasteries stood in various other parts of the county.

Military Structures. — Of the antient vitrified forts, which occur in continuous chains along the high grounds of the north-eastern parts of this county, there are three principal remains in this county. The fort, called the Castle of Finhaven, is on a hill of the same name in the parish of Oathlaw, 1500 feet above the surrounding country. It is quadrangular, 476 feet by 83 feet and 125 feet and constructed on the edge of a precipitous rock. The remains of another of these forts is on the summit of a mount in Drumstury Muir, parish of Monymeth. The third is on the top of the Law of Dundee, a remarkably high conical hill on the north of the town. This vitiﬁed fort is a series of towers, ramparts, and outworks evidently superadded at some subsequent period. Much has been written by learned and scientiﬁc antiquaries on the origin and use of these remarkable structures. By some they have been held to be the effect of volcanic eruptions. Others contend that they were the walls which surrounded the great beacon ﬁres antiently lighted on mountain tops to alarm and assemble the people against the invading armies of their enemies, and that the vitriﬁcation of these large masses of stones was produced by the continued action of such prodigious ﬁres. But the fact that these thick walls are found vitiﬁed on the exterior as well as on their interior side, and often not in the middle, is one proof, besides many others, that the masonry was artiﬁcially composed, and not accumulated as the result of the repeated action of such prodigious ﬁres.

At the base of a small hill lying near this fort is an embankment which is supposed to have been used by the early inhabitants for the purpose of raising the water of a spring, but it is not known for what purpose. The art of squaring stones and cementing them with lime-mortar appears to have been known not only in the Roman invasion. (Calmor’s “Caledonia; Vitiﬁed Forts in the Encyc. Brit.”; Headrick’s “Survey of Hill-Fort in Scotland,” p. 162, 1828; there are many in this county. The most important one is on the summit of a very steep conical hill in the parish of Menmuir, north-west of Brechin. The area of the fortress within the walls, which are of great thickness, is oval, 134 yards, and the outer circuit 615 yards. The rampart, or wall 12 feet high, is here only by a deep ravine, is another of these forts formed entirely of earth. Two miles south-west of Glamis, on the Sidlaw Hills, there is one of a semicircular form with a wall 335 feet in circuit, 27 feet high, and 30 feet in thickness. Much of the wall is well or excavated basin for collecting rain-water, and their situation is always on the top of an insolated and precipitous rock, or hill encircled with deep entrenchments. There are remains of several extensive Roman camps which formed a network cutting through the whole of the ﬁelds. Many of these are to the north-east sides of the county, including the towns of Forfar and Brechin. The Roman conquests were here first extended by Lollius Urbicus, in the reign of Antonius Pius, A.D. 140. The encampment at HarFAulds, north of Carluke, is replete with remains, and well or excavated basin for collecting rain-water, and their situation is always on the top of an insolated and precipitous rock, or hill encircled with deep entrenchments. 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FORTEUR, the punishment by loss of lands, estates, rights, offices, or personal effects, annexed by law to certain crimes, and also to certain illegal acts or negligence in the holder of lands or offices.

In criminal law, a forfeiture is threefold: 1. Of real estates absolutely, as for high treason; if freehold, to the king; if copyhold, to the lord. 2. Of the profits of the real estate, if freehold, to the crown during the life of the offender, and a year after his death; if copyhold, to the lord. 3. Of goods and chattels, in felonies of all sorts. Some other cases of forfeiture of laws and custom, both are established by different statutes, as the statutes of preannum, etc.

Lands are forfeited upon attainder, and not before. [Attainder]: goods and chattels, upon conviction. The forfeiture of lands has relation to the time of the offence committed, and the forfeiture of goods, to the time of the conviction, and those only are forfeited which the offender has at the time of his conviction. A bonâ fide alienation of his goods and chattels made by a felon or traitor between the commission of the offence and his conviction, is therefore valid.

Forfeiture, in civil cases, takes place where a tenant of a limited, or, as it is called, a particular estate, grants a larger estate than his own, where a tenant for life or years assumes to convey the fee-simple. So, if a copyholder commits waste, or refuses to do suit or service, or a lessee improperly uses the land for which he is lessee, in cases where there is a renunciation of the connexion and dependence, which constitute the tenure, and which are an implied condition annexed to every limited estate.

Forfeiture may also be the consequence of the breach of covenant, or other covenants between landlord and tenant, or persons connected in tenures; but in cases of forfeiture where compensation can be made for the breach of the condition, a court of equity will compel the party entitled to the forfeiture to accept compensation. The right to the forfeiture may also be waived by any act of the person entitled which recognizes the continuance of the title in the particular tenancy, as, for instance, the receipt of rent by a landlord in respect of a time subsequent to the act by which the forfeiture is incurred. The right may also be forfeited by alienation contrary to law, as by alienation in mortmain without licence, or to an alien: in the former instance, if the immediate lord of the fee, or the lord paramount, neglect to enter, the king may; and in the latter, though the conveyance is effectual, yet as an alien, the king enters, and the king enters, upon officce found. [Office Found].

Offices are forfeited by the neglect or misbehaviour of the holders; and the right to the next presentation to ecclesiastical benefices is forfeited, or in the case of the corrupt presentation, or any one to the presentation, ecclesiastical benefices for money, gift, or reward. Lapse is where the patron neglects to present to a benefice within six months after it has become vacant, in which case the right to present the benefice by the ordinary is given to the king. [Benefice].

FORCIFULIDE: a family of insects belonging to the order Orthoptera, and, according to some authors, constituting the order Dermaptera.

To this family belong the various species of earwigs. They are distinguished from the orthopterous insects (excepting the Blattae and the Mantida tribe, which, with the Forficula, constitute Latreille's family Carabidae) by having the wings folded, or otherwise, and by their posterior appendages. To the latter are added, in the Forficulidae, a large number of joints in the wings, when folded, are almost always disposed horizontally on the body: the females have no corneous ovipositor; both sexes however are furnished with two corneous forceps-like appendages at the hinder extremity of the body: the antennae are very long, consisting of from 13 to 17 joints; the legs, considerably as to the number of their joints: the thorax is generally of a rounded form, and but slightly convex.

The family Forficulidae is divided by Dr. Leach into three genera, the principal characters of which are taken from the number of joints to the antennae. In this first genus, that to which he restricted the name of Forficula, is distinguished by having fourteen joints to the antennae. In the next genus (Labdourea) the antennae have thirty joints; and in the last, the genus Labia, the antennae are twelve-jointed.

To the first of these genera belongs our common earwig (Forficula auricularia, Linnaus), an insect too well known to require a description.

Wings. In order to escape damp situations, are found under stones, and under the bark of trees, frequently in great abundance. They are also found in flowers, which they destroy by eating the leaves, etc.

A remarkable fact connected with the habits of the earwig, is the manner in which the eggs are deposited on the underside of a leaf or other object: in the manner of the hen; and the young (which resemble the parent, except in being of a paler colour and having neither wings nor elytra), as soon as they are hatched, creep under the belly of the mother for protection.

The wings of the earwigs are transparent, of large size, and when expanded are shaded like a fan; the principal nerves radiate from one point near the anterior margin. These organs, when not in use, are folded beneath two small wing-cases; and hence to the common observer they appear wingless.

The male and female common earwig differ considerably in their anal forceps, those of the female being less curved and destitute of a tooth-like process which is observed on the inner side at the base of the forceps of the male.

There is in this country another species of earwig, almost equally common with that we have just noticed, but which is of a much smaller size. It is found about hot-beds and dunghills, and differs from the common earwig somewhat in its habits as well as in its structure. This belongs to the genus Labidoura, etc.

One species of the genus Labidoura is also found in England, but is of rare occurrence. It is of a much larger size than the common earwig.

FORGERY is the false making, counterfeiting, altering, or disposing of instruments or writing with a fraudulent intent, whereby another may be defrauded. The offence is complete by the making the forged instrument with a fraudulent intent though it be not published or uttered, and the publishing or uttering of the instrument, knowing it to be false or forged, is punished in the same manner as the making or counterfeiting.

It is by no means necessary to bring the offence within the legal meaning of the term forgery, that the name of any person should be counterfeited, though this is the most common mode in which the crime is committed; thus a man is guilty of forgery who antedates a deed for the purpose of defrauding other parties, though he signs his own name to the instrument; and the offence is equally complete, if a man being instructed to make the will of another, inserts the instructions of the supposed author. In truth the offence consists in the fraud and deceit.

At common law the crime of forgery was only a misdemeanour, but as the commerce of the country increased and paper credit became proportionally extended. many frauds were committed by the use of false instruments, which in most cases made the offence a capital felony.

The extreme severity of these laws tended to defeat their object, and parties very frequently chose rather quietly to be defrauded and be contented with a fraudulent impression upon them by the commission of the offence, than by a prosecution to subject the offender to the loss of life. This feeling, and the diffusion of the truth, that the object of all laws is to prevent crime and not merely to punish, has caused successive mitigations in the laws relating to forgery, and now by the statute 1 Geo. IV. and 1 W. IV. c. 66, 67, W. IV. c. 19, and 1 Vict. c. 84, the punishment of death is abolished in cases of forgery, and a punishment varying between transportation for life and imprisonment for two years, is substituted.

F. Hawk, P. C.; Russell on Crime; Donau's Criminal Law.

FORK (Anglo-Saxon fore; the same as the Latin furca), an instrument divided at the end into two or more prongs for various uses, especially for the table. Addison describes it in his definition of "forks." A modern fork is similar to a modern"fork," and its use has been considerably extended. It is sometimes used for an arrow, and in old English for a pike. Butler, in his "Remains," ii. 195, says, "They had run through all punishments, and just 'scaped the fork.'

The agricultural, or dungey-fork, and a large fork for the fish-pot, were the complements of this name appositely in use among our early English. The introduction of table or eating forks is found in the "Chronicon Placentinum" of John de Musita (Muratorii, vol. vii. p. 84), a writer of the early part of the fifteenth century, who, when speaking of the luxuries of the people of Piacenti,
recently introduced, says, they use cups, and spoons, and little forks of silver ('et utuntur facies, cucugiae, et for- culae', ams. MSS., among others). His host, however, announces himself as the person who introduced this Italian fashion into England. He says, Here I will mention a thing that might have been spoken of before, in discourse of the first Italian town. I observed a custom in all those Italian towns, and in the court of ladies, which is now used in any other country that I saw in my travels, neither do I think that any other nation of Christendom doth use it, but only Italy. The Italian, and also most strangers that are commont in Italy, do always at their meals use a little fork when they cut their meat. For while with their knives, which they hold in one hand, they cut the meat out of the dish, they fasten their fork, which they hold in their other hand, upon the same dish, so that whatsoever be he that, sitting in the company of any others at meat, shall happen to take a fork from another man's hands, their fingers are not alike clean. Hereupon I myself thought good to imitate the Italian fashion by this forked cutting of meat, not only while I was in Italy, but also in Germany, and oftentimes in England also: so that I can say, of all my table. Now in using of my fork, by a certain learned gentleman, a familiar friend of mine, one M. Laurence Whitaker, who, in his merry humour, doubted not to call me at table furfurifer, only for using a fork at feeding, by which no other cause but my Coryate's testimony is confirmed by Fynes Moryson in his 'Italia,' where it is said, fol., 1617, who, speaking of his bargain with the patron of the vessel, which was conveyed by him from Venice to Constantinople, says, he gave us good diet, serving each man with his fork, a spoon, and a fork. (See also Ben Jonson's The Devil is an Ape, act v. sc. 3; and his Volpone, act iv. sc. 1.)

Even when Heylin published his 'Cosmography,' in 1652, forks for the table were still a novelty (see his third book); we, having spoken of the ivory sticks used by the Chinese, have a good proof of it, where our of our spurs gallant taken up of late, came hence from Italy, and thence from England.

FORLI, LEGAZIONE DI, a province of the papal state, situated on the north by the province of Ravenna, on the west by Tuscany, on the south by Pescara ed Urbino, and on the east by the Adriatic. Its area is reckoned at 1232 square miles, with a population of 188,000 inhabitants, distributed in 8 towns, 32 terres having a communal council, and 440 to the diocese (Calvelli). The province is watered by the Rabbi, Ronco, Savio, Marecchia, and other rivers which have their sources in the Tuscan Appenines and empty themselves into the Adriatic. The country is in part hilly, being occupied by offsets from the Apennine chain, which extend towards the Adriatic; the climate is healthier than that of the neighbouring flats of Ravenna. The principal productions are corn, oil, wine, flax, hemp, fruits, and silk. There are manufactories of silk, linen, and oil-cloth, and refineries of olive-oil. The principal cities and places in the chief towns are—1. Forli, the ancient Forum Livii, which is said to have been built after the victory of the Metaurus, and to have taken its name from M. Livius Salinator, one of the two consuls who defeated Hadrubal. The present town is divided into two boroughs; the one is the city, which has a fine square, several handsome palaces and churches with paintings by Carlo Maratti, Guido, Guercino, Cignani, and other masters, a Lyceum, and fine public walks. Forli is a bishop's seat and the residence of the legate. The population of Forli is 14,700. 2. Cesena, a pretty town in a fertile country near the foot of the Apennines, watered by the river Savio, over which is a fine bridge, has a hands- some town-house on the market-place, which is adorned by a colossal statue of Pius VII. (Chiaramonti), who, as well as his predecessor, Pius VI, was a native of this town. Cesena is a bishop's see, has a college for clerical students, and a valuable public library, collected by the Malatesti, who were lords of Romagna in the Middle Ages; it is rich in MSS., especially in those of the S. Lawrence, Bishop of Seville in the seventh century, entitled 'Rythochologium,' which is a kind of cyclopaedia. (Valery, Voyages littéraires en Italie.) The population of Cesena is 9460. On a hill outside of the town is the Benedectine nunnery of San Giudino. 3. Half way between Forli and Cesena is the little town of Forlitimpoli, the ancient Forum Popilii, with a collegiate church, a castle built by Cesare Borghis, and about 2000 inhabitants. 4. Savignano, on the road from Cesena to Rimini, near the site of the ancient Cosa, has some good buildings and about 3000 inhabitants. Near Savignano flows a small river, called Fiumicino, which is now generally believed to be the ancient Rubicon: it joins, below Savignano, another stream, called Pisatello, which flows nearer to Cesena, after which the united stream enters the Adriatic. A Roman bridge is thrown across the Fiumicino. Near it, on a pillar, is an apocryphal inscription, which has been mistaken by some for an ancient one, containing the senatus consultum, which forbade, under the heaviest penalties, any commander to cross the Rubicon in arms. 5. Rimini, the Roman Ariminum, a considerable town with 13,450 inhabitants, situated near the mouth of the river Marecchia, which is crossed by a handsome medieval bridge of five arches and 290 feet long, begun under Augustus and finished by Antoninus, and which is now being preserved. The sea having receded all along this coast, the ancient harbour of Ariminum is now choked up with sand; but there is a small harbour at the mouth of the river Marecchia which admits vessels of light burden, by which Rimini is now supplied with provisions. The entrance of the town, on the road to Rome, is a fine triumphal arch, raised to Augustus (Arch, Triumphal), of which an elaborate description has been recently published—Illustrazione dell' Arco di Augusto, con, olto Torro di Augusto, da' genti di Rimini (Rimini, 1902). There are also some remains of an amphitheatre, besides inscriptions and other marbles found on the site of the ancient harbour. Rimini, with its Roman monuments, appear as a fine entrance into the limits of the classical part of Italy. Travelling the modern town, it is seen, which Leon Battista Alberti raised by order of the Malatesti, lords of Rimini, and which is adorned with the mausoleum of that distinguished family of the Middle Ages; and the fortress, which was also erected by the Malatesti. Rimini, first appears to be defended by the advocate Alessandro Gambalunga, and which contains MSS. chiefly concerning the history of the town, and a museum of antiquities and a college or Lyceum. 6. Sarzana, at the foot of the Apennines, south-west of Rimini, most picturesque city of the Romagna, and the most fine city in Italy, is now a decayed town surrounded by walls, with only 325 inhabitants. 7. Cesenatico, on the sea-coast, north-east of Cesena, in a plain abounding with wheat, Indian corn, and hemp, has 4440 inhabitants, after which the united stream enters the Adriatic. The province of Forli is one of the most flourishing in the papal state; and the road from Rimini to Bologna is one of the pleasantest in Italy, leading through a succession of neat, considerable, and cheerful-looking towns, in a fine well-cultivated country, with a landscape heightened by a constant view of the Apennines of Tuscany.

FORM. Everything that exists may collectively be termed the 'something,' in opposition to the 'nothing.' This 'something' divides itself into four great divisions, namely things mental and things physical. The form is the manner and mode in which a thing is presented to our conceptions. Things are of two descriptions: immaterial, as faculties and intellect; and material, as matter and bodies. The forms of the immaterial things are called ideas; and the forms of the material things are called figures; the form of appearances retains the name of form and ideas are formless. The categories, according to the opinion of the writer (found upon those of Aristotle, Kant, and many others), are the following:—1. Categories of position, to be, not to be, and so on; 2. Categories of quality, substance, accident, and mode; 3. Categories of relation, cause, effect, and action and reaction; 4. Categories of quantity, universality, multiplicity, and unity. The logical categories are possibility, actuality, and necessity. (Carcny.) The figures, on account of their variety, do not admit of being classified, yet we may.
divided them according to the senses, into shapes, colours, sounds, smells, and tastes, and into the different modes of feeling.

Form is distinguished from the natural reality of things, and, considered in this point of view, the idea of form is practically useful in common speech and in science. Thus we speak of a form of anything more highly than the thing itself, or through narrow-mindedness confounds the one with the other, is a formalist, as many learned men and official persons are.

For a modern formalist. By the 11th Henry VII. c. 12, every poor person having cause of action or suit shall have, by the discretion of the chancellor, original writs or subpnonas, without paying for writing or sealing the same; and the judges of all courts of record, where such suit shall be carried on, are authorised to appoint such writs, and to write counsel and attorney to act for such person, without taking any reward. It is discretionary with the court to grant this indulgence, but it is rarely refused upon petition, supported by affidavit that the petitioners is not worth 5s. in the world, depriving him of the privilege of his wearing apparel, and the right to the matter in controversy, and by a certificate by a barrister that he has good cause of action or suit. This statute extends only to plaintiffs in civil suits at law, but then the common law has been extended to cover a party indicted to defend as a pauper, though without special cause shown the advantage is never given to a prosecutor. The Court of Chancery, to which the statute 11 Henry VII. does not apply, has, from an early period, the same discretion to sue and be sued by a pauper in the same conditions as the courts of law, though in that court, it seems, if the party be in possession of the subject matter in dispute, and that it be worth more than five pounds, he cannot except it in his affidavit, and therefore will not be regarded as a pauper. The privilege may be granted either at the commencement of the suit, or at any period of its progress, but if granted during the pendency of the suit, it has no retrospective effect, and the party is not relieved from the costs previously incurred.

A pauper in form has not to pay for costs, either for stamps, or fees to the officers of the court, but if he obtains a verdict with damages above 5s., the officers take the fees. In case of improper or vexatious conduct on the part of the pauper, the courts will sometimes, though rarely,^-declare him a pauper, which is called dispossuring him; but it seems that in such cases a pauper plaintiff is never ordered to pay costs to the defendant, though, according to Blackstone, a pauper, if non-suited in his action, formerly had his election either to be whipped or pay costs.

FORMEDON (a compound of the two Latin words forma done), one of the many writs in use under the old law for commencing a real action, before the more conven-iente writs were made necessary by want of precedents. [EJECTMENT.] It was the peculiar remedy of a tenant in tail, and the highest he could have, and was therefore called tenant in tail's writ of right. The writ of right was granted to such only as claimed the fee simple, for which reason the statute De Donis (Westm. 2. 13 Ed. I.) gave this writ to tenants in tail.

The writ was of three kinds: formedon in the descender, in the remainder, and in the reverter, according as the proper remainder of the tenant in tail was in the descender, the remainder, or in reversion. This writ, together with all the others used for the commencement of real actions, was abolished by 3 and 4 Will. IV. c. 27, s. 36.

FOMENTERA. [Balearic Islands] - Certain insects called termite and found as these insects are irritated emit a sour fluid which contains both formic and malic acids; and when repeated quantities of ants have been infused in boiling water, an acid as strong as vinegar is obtained, and has been used for the same purposes as vinegar. The formic acid liquor by adding carbonate of potash, precipitating the foreign matters by sulphate of iron, evaporating the solution to dryness, and distilling the residue with sulphuric acid, by which formic acid comes over and is condensed in the still, where it is always mixed with observations of the results. It has been since shown by Dobriner that formic acid may be prepared artificially: he heated in a retort 5 parts of sulphuric acid diluted with 15 of water, with 2 parts of crystallized tartaric acid and 5 of binoxide of manganese by the mutual action of these substances carbonic acid is obtained, which escapes in the gaseous state, and dilute formic acid is condensed in the receiver: this dilute acid is to be saturated with potash, and the resulting formate, when decomposed by sulphuric acid, yields concentrated formic acid. "H. Mag., vol. x. p. 399," has shown that formic acid may be obtained by the action of sulphuric acid and water upon rye or maize, when heated to the boiling point, with precautions mentioned.

For the use of formic acid are, that it is a colourless liquid; its smell is pungent, and its taste very acid; its specific gravity is 1.168, and, when anhydrous, it consists of

| Equivalent of hydrogen | 1 |
| Two, of carbon | 12 |
| Three, of oxygen | 24 |

These elements are equal to 1 equivalent of water and 2 equivalents of oxide of carbon, and by the action of sulphuric acid it is resolved into these compounds.

Concentrated formic acid contains 19.7 per cent. of water among other peculiarities of formic acid, serving to show that certain metals dissolved in it are precipitated by formic acid, which it produces in not precipitating protoxide of mercury from solution as acetic acid does, unless heated, and then metallic mercury is thrown down, with brisk effervescence. Oxide of lead is precipitated from a solution of the acid, which passes through the same effects in which it produces, as well as acetic acid, but not increased in amount or in effect, as it is free from water by distillation with chloride of calcium. This is Dubereire's process.

Formic ether is a colourless liquid, of a strong odour resembling that of peach kernels: its taste is very bitter. Its specific gravity is 0.915 at 65°, and it boils at 132° Fahr. It combines with alcohol in all proportions; but water unites with only 4t. of its weight; and after some time the solution is found to be converted into a mixture of formic acid and alcohol. By distilling the acid with water, and boiling the mixture with wine, and the addition of copper, and the addition of wine, it forms the quinine. Two parts of formic acid and alcohol; but it is much better procured by distilling a mixture of 10 parts of concentrated sulphuric acid, 7 of formate of soda, and 6 of alcohol. The distilled product should be mixed with water to separate the proportion of alcohol, and then dried in the open air. The acid and ether are used in the branches, into which the Quorra divides after entering its extensive delta.

FOMOSA, RIO, a river in Africa, flowing into the Bay of Benin, is also sometimes called Benin, from traversing the kingdom of that name. Its mouth, which alone is known to Europeans, is in about 5° 40' N. lat. and 5° 5' E. long. It traverses a flat alluvial country. Landers, in his desert of the Quorra, was told by the natives that the considerable branch which at the town of Kirees turns off to the westward runs down to Benin. Hence it is conjectured that Formosa is only the most northern of the branches, into which the Quorra divides after entering its extensive delta.

FOMOSUS, Bishop of Porto, was raised to the see of Rome, A.D. 691, after the death of Stephen V. He had been accused of perverting the papal crown, by living in opposition to John VIII., in the matter of the election of a new emperor, that pope had deposed him in 878, but Martin II., John's successor, honourably re-instated him in his see. His conduct, after his exaltation to the see, was no less contained and worthy of his station, he wrote his letters relative to the schism of Photius, as well as those which he wrote to Eudes, the competitor of Charles the Simple, and to the bishops of Gaul, exhorting them not to disturb Charles in the possession of the crown. In one matter of heresy, however, he has been accused of too much mag-
FOR

Roman see, Formosus wrote to Arnulf, king of Germany, inviting him to come to Italy and assume the crown. Arnulf came to Italy and was crowned there by Formosus in the beginning of the year 895, after the death of Guido. The history of that period and of the various competitors to the crown of Italy is extremely confused. Formosus died in April, 895, and was succeeded by Boniface VI, who, dying a few days after, passed the character of Stephen VI, by the style of the VII, who having taken the part of Lambert against Arnulf, instituted proceedings in a council against the memory of Formosus, and had his body disinterred. Romanus however, who succeeded Stephen, in a council held at Rome, in 898, restored the character of Formosus from this stigma, had his body honourably buried again, and declared the acts of his pontificate to be legal and valid.

Fornax (Constellation), the Chemist's Furnace, one of the southern constellations of Lacaille. It is situated immediately below Cetus.

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For the mind of Forskal, and is far in advance of the works of a similar kind published by the followers of Linneaus. It is clear that the relation of vegetation to climate is taken as a great object of common interest, and it may be justly quoted as one of the earliest steps made in geographical botany. We here find an attempt to show the existence of geographical parallels of vegetation, and the remarkable assemblage of plants of places, you may find the latitude of a country, the climate of its surface, and the zones of vegetation upon its mountains, from their foot to their highest peaks. The 'Flora Egyptiacae-Arabicae' is to this day the only good account we have of the plants, and it may be justly doubted whether we have upon the whole so satisfactory a view of the vegetation of any extra-European region. We have 'Floras' with more systematic learning; we have works much more complete in their details, more technical, more learned, more compared with other works, and more suited to the leisure, experience, and the resources of rich herbaria; but if the botanist is asked to point out one as philosophical, as well contrived, as useful, as rich in valuable observations upon climate, air, soil, native names, and similar important matters, we know not that he can with more reason select the name of Forskal to his own Cadizbeja adherents, a worthless Arabian weed, under the title of F. tenacissima; but we are assured by a panegyrist of the great Swedish botanist, that in doing so he intended to compliment rather the satireize the limits of the author's country.

Forster, John Reinhold, was born in 1729, at Dirschau in Western Prussia, of which town his father was burgomaster. Having studied at Halle, he was appointed in 1753 to the cure of Vassenloff near Danzig. In 1756 he accepted an offer from the Russian government to become a professor and teacher in a Dissenters' school at Warrington in Lancashire. Through Mr. Bank's interest he was appointed naturalist to the second expedition under Captain Cook, and he sailed, together with his son George, on board the Resolution, in July 1772. A sum of money was granted by the government for his expenses, besides which it was verbally understood between him and the Honourable Daines Barrington, in the name of Lord Sandwich, that Forster should be employed on his return to write the history of the voyage and receive the profits of the publication. In the course of the voyage repeated disagreements took place between Forster and the officers of the expedition, and Captain Cook himself appears to have censured Forster's indiscretion and want of temper. The account of the expedition in Histoire Naturelle, 1777, a very easy between Forster and Lord Sandwich about writing the narrative of the voyage. It was at last settled that Forster should write the philosophical, and Cook the nautical parts of the work. Forster's MSS. were to be subject to the approval of the Admiralty; but on his return to England, having finished his of his intended work, he was told that he must not write a connected narrative but only detached observations, and ultimately these were rejected. The consequence was that Cook's journal appeared alone. Meantime Forster, the son, published a separate account of the voyage in 1777; a circumstance which indisposed the Admiralty still more towards his father, who was believed to have had the principal share in the work, and who thus lost all hopes that he might have entertained of remuneration. Forster's account of the plants has been translated into English by George to Lord Sandwich, and to Mr. Wales, who had written strictures on Forster's narrative. In 1778 Forster returned to Germany, and was well received at Berlin by Frederic the Great, and was soon after made professor of natural history and miningology at Halle, where he remained till his death, in December, 1798.

Forster was a man of vast information both in the natural sciences and in philosophy, and general literature. His principal works are 1. De Byz. Antiquorum, 1767; 2. 'Characteres Generum Plantarum insulis insulis Australis collegit J. R. Forster,' 4to, 1776; 3. 'Observations faites dans un Voyage autour du Monde, sur la Geographie physique, l'Histoire Naturelle, et la Philosophie de la Navigation.' This work was written in French, translated into several languages, and forms a good supplement to Cook's journal, although the tone of Forster's observations is not always in
accompany with sound criticism. 4. 'Zoologia Indica,' 1741; 5. 'Histoire des Découvertes et Voyages faits dans le Nord, 1744; 6. 'Tableau de l'Angleterre pour l'année 1748' to satisfied works in the Church. Man's appointment and animosity, and consequently with little discrimination.

FORSTER, JOHN GEORGE, son of John Reinhold Forster, accompanied his father in the voyage with Captain Cook in 1768. He was a good companion in all, but he was not involved him and his father in an unpleasant controversy. This narrative does not differ materially in the facts from Cook's journal. Forster however has added to his work various observations, which are considered as philosophical, but which are of the same nature. He has translated his account into German, French, Swedish, and other languages. Forster having returned to the Continent, was made professor of natural history at Basel, and afterwards at Wilna, from which last place he returned to Germany about 1768, and soon after returned to England. In 1785, he was elected a fellow of the Royal Society. The French took Mayence in 1792, Forster, who had become enthusiastic in the cause of the Revolution, was chosen by the republicans of that city to proceed to Paris, as their representative, to request the incorporation of Mayence with the empire of France. While at Paris he was examining some other points of difference between the civil and the common law, he concludes with a short account of the society where the law of England was studied. This book, as well as the other Forster's works relating to English law of an early date, is written in a bold style, and is a valuable and trustworthy work. It was published in English, 1794, and in a Dutch translation in 1795.

FORSTER, GEORGE, a civil officer in the service of the East India Company, was employed in the year 1752 overland from India to Russia. He set off from Lucknow in December, 1782, and directed his route to the north by Ferahabad, Rampoor, and the pass of Lal Dong into the upper regions of the Punjab, avoiding the country of Lahore, which was possessed by the East India Company. He then proceeded by Bellaspur and Jomanto into the great alpine valley of Cashmere, which had not been visited by any European travellers before him, Bernard excepted. Forster's account however proved much more full and solid than that of Bernard. Forster crossed the Ganges at Allahabad, and proceeded to Kabul, crossing the Indus about twenty miles above Attuck. From Kabul he followed the caravans road to Candahar, and thence by Herat to the southern coast of the Caspian Sea. From Oujde to the Caspian he was employed in October on his journey, and arrived at the end of May, 1784. On his arrival in England he published some sketches of Hindoo mythology. He afterwards returned to India, and published in 1790 at Calcutta the first volume of his narrative—"Journey from Bengal to England, through the most northern parts of India, Kashmir, Afghanistan, and Persia, and into Russia by the Caspian Sea." On the commencement of hostilities with Tippoo Sultan. Forster was sent as envoy to the Maharrta coast of Nagore in Deccan, where he died in 1792. The MS. of his journal is preserved, and where it was published by a bookseller in a second volume, but was edited without much care. The whole work was translated into French by Langlois: 'Voyage de Bengal à Petersbourg,' 3 vols. 4to, Paris, 1802. Forster added to his narrative two interesting notices of the Soiks and the Ruhillas.

FORSTERITE, a crystallized mineral, the primary form of which is a right rhombohedron. The crystals are colourless, translucent, bright, and small; they are harder than quartz. This substance occurs at Vesvius accompanied by pleonaste and pyroxene. It has not been accurately analyzed, but contains silica and magnesia.

FORT, L. [LIFE.] FORTE [ITALIAN} [ITALIAN]

Forte (Italian strong, loud), a musical term, denoting the performer to sing or play loudly, with strength.

Fortissimo is the superlative of Forte.

FORTESCUE, SIR JOHN, Knt., an eminent lawyer, was born at Rugby, in the county of Northampton, in the year of Henry VI. 1428, and afterwards chancellor. He was the author of a treatise "De Laudibus Legum Angliae," a work which has been several times quoted with the highest approbation from the bench, illustrated by the notes of Selden, and recommended by both Sir John and Sir William Trumbull, Raleigh, in former times, and by every writer who has given directions for the study of the law. It has been several times translated into English. It is in the form of a dialogue between himself and the young prince famous country north of Lothian. Fortesque for all law in the country. The author undertakes to show that the common law was the most reasonable and the most ancient in Europe, and superior to the civil law and the laws of other countries. He considers at length, in particular, the mode of trial by ordeal. While examining some other points of difference between the civil and the common law, he concludes with a short account of the society where the law of England was studied. This book, as well as the other Forster's works relating to English law of an early date, is written in a bold style, and is a valuable and trustworthy work. It was published in English, 1794, and in a Dutch translation in 1795.

FORT, a river in Scotland, which rises in the mountains separating the western extremity of the Southern Uplands from the Lothian Lowlands. It is formed by two branches, which after a course of sixteen and twelve miles respectively, unite at Aberfoyle: this united river receives the name of the Forth at Bridge of Earn. The Aray, a stream which flows between the mountains, enters a wide valley, which is surrounded by hills rising to a moderate elevation and generally with a gentle slope. From the north it is joined by three tributaries of some note, the Teith, which drains the mountain country north of Lothian, and the Lomond Hills. The Teith runs through Strathmore, and the Devan, which brings down the water collected in the greater portion of the Ochil Hills. No considerable river joins it from the south. At the place where it unites with the Teith, the river, on that side which is called the Forth, is already wide, and gradually assumes the appearance of a gulf, especially after having passed Kincardine. This gulf, called the Firth of Forth, increases in width in its progress to the east, and joins the North Sea between Fife and the Forth. The Firth of Forth is about fifty miles. The Forth is by no means a rapid river below Aberfoyle, and may be navigated by vessels of seventy tons burden as far as Stirling; but as its course is extremely tortuous between Stirling and Alloa, it is not much navigated above this point. To Alloa is the principal port, ships of 300 tons burden may ascend. On the southern shores of the firth, near the mouth of the river Carron at Grangemouth, the canal commences, which joins the Forth and the Clyde; and contiguous to it on the east, between Grangemouth and Queenferry, is good and
secure anchoring ground in the bay. The countries along the northern and southern shores of the Frith comprehended the most fertile and best cultivated parts of Scotland. (Mac-
Culloch's Highlands, &c.; Sinclair's Stat. Account.)

FORTIFICATION is the art of constructing works for the purpose of defence or military position.

The principle which the collateral and the general plan of the works constituting the fortifications of a town or great military post, have at all times been nearly the same. Among the ancients, with scarcely any exception, the polygonal wall surrounding a place was provided with towers projecting from it at intervals toward the front; the inner or outer wall, consisting of two or more towers, connected by walls like those of the fortress itself, was generally constructed on the exterior side of the ditch and opposite a tower or bastion, or the bridge leading to it. The towers and walls about a small town correspond to the bastions and curtains forming the enceinte of a modern fortress, and the barbican may be considered as the counterpart of its ravelin, or principal outerwork. The necessity which the nations of Europe were under of remodelling their fortified towns in consequence of the change produced in the art of war by the invention of gunpowder, gave occasions for the engineers of Italy, France, and the Netherlands to emulate each other in devising the most advantageous methods of disposing the works for the purposes of defence with relation to the arms then newly introduced; and the result of their labours was the construction of numerous strong fortresses on the frontiers of those countries. In these the bastion system, as it is called, and the system of fortification; and a number of very numerous projects which have been since offered to the world for fortifying places, so few should have been of a different kind. The variations however which occurred in the details of the plans gave rise to the denominations of the various forms of the work. In speaking of the works proposed or executed at the end of the sixteenth and the beginning of the seventeenth centuries; but it must be observed that these variations consisted chiefly in the magnitude of the angles which the walls of the bastions, as they were called, made with the在外．

The length of an angle is measured from the point of the bastion to the point of the curtain opposite it. This length of an angle, therefore, is the same as the diameter of the circle described about one of the angles of the bastion, which is 103 yards, or two-sevenths of E of F, in order that, in the inferior polygons, the bastion may have sufficient capacity, we obtain about 360 yards for the distance between the sides of the bastions; and it may be observed, that a few yards more or less in the dimensions need not be regarded.

The directions of the faces of the bastions on each front coincide with lines drawn from the angles of E and F of the polygon, through the extremity of a perpendicular let fall from the middle of the line E F and made equal to one-sixth of that line; and each flank is the chord of an arc, described either from the opposite angle E or F of the polygon, or from the nearest shoulder of the collateral bastions, and this can be done more conveniently rather than in the enemy's counter-battery, which is necessarily limited by the angle of the glacis and the prolonged face of the nearest bastion; and it is nearly perpendicular to the direction of the curtain. By so doing, it is evident that, on the flank, placing his musket perpendicularly to the line of parapet, will thus be able to fire into and defend a breach which may be made in the face of the collateral bastion. The curtain is determined by the line joining the interior extremity of the angles of the polygons, and the line which Vauban assigned to the rampart of the enceinte, this line will permit the fire of musketry from each flank to defend the opposite half of the ditch both on the front and on the flank of the rampart. The line which on the plan shows the directions of the angles of the faces, flanks, &c., of the works, is called the magistral line; it forms the exterior side of the ramparts in fig. 1 (BASTION), and coincides with the cordon, or projection, at the top of the revetment N, fig. 2.
The dimensions of the ditch are determined by the necessity of obtaining from it the earth for the formation of the ramparts and parapets, care being taken that it be not so wide as to allow the enemy, from a battery situated at K, to fire both the centers lines of fire of the ramparts and consequently to batter the escarp wall near the foot of the latter. [BEACH.] The counterscarp wall is rounded opposite the flanked angles at E and F, and from thence tends towards the shoulder of the collateral bastions, and is made by Vauban in the ravelin are described under that word: Q represents one-half of that work; and it will be necessary here to say, merely, that its plan is determined by using the angular points near e and f, formed by the oblique central lines of fire of the ramparts and escarp walls, and with radii equal to the distances from thence to points taken on the faces of the collateral bastions, at 10 yards from their shoulders, describing arcs; the intersection of these arcs determines the salient angle of the radius of the escarp wall at the point of intersection to the points just mentioned, and terminate on the counterscarp of the main ditch.

The traverses in the covered way were proposed by Vauban, in order to diminish the effect of the ricochet; and he vents a 's F. Nevertheless, walls, as they are called, in the re-entering parts of the covered-way, in order to obtain room for assembling troops, and to afford a good crossing fire of musketry from their faces for the defence of the glacis in front of the batteries.

With the view, therefore, of preserving the former untouched till some time after the ravelins may have been taken, the French engineer Cormontaigne proposed, about 30 years after the death of Vauban, to advance the salient points of the ravelins as much as possible, and by increasing the depth of the escarp wall to the utmost limit which a regard to the due magnitude of the flanked angle will admit. Thus the magistral line of his ravelin is determined by the sides of a triangle whose base is a line joining two points on the faces of the collateral bastions, and the angle at the top equal to the increased angle is equal to about 70 degrees. By this construction it would become impossible for an enemy to crown the glacis of a bastion till he had got possession of the two collateral ravelins, on account of the fire which, from these, might be made on the corsairs lying on the ground, and the place would be delayed by the time spent in conducting the approaches from the ravelins to the intermediate bastions.

In order that this benefit might be obtained in the highest degree, Cormontaigne suggested the propriety of fortifying places on polygons of the superior kind, and even, when possible, of constructing two or more fronts of fortification on one single line; this practice would have the additional advantage of rendering the flank more obtuse, by which, not only would the increased capacity of those works permit stronger retracements to be formed in them, but the faces being produced outwards, would tend to points on the faces of the ravelins, and thus would be completely out of reach of the enemy.

Besides the above general modifications, Cormontaigne made several improvements in the details of the works. He made the flanks exactly perpendicular to the prolonged faces of the collateral bastions, for the sake of a more complete flanking defence from the enemy. He made the ravelins wide enough to contain the artillery of the defenders; in order to increase the capacity of the redoubt in the ravelin, and to deprive the enemy of the space necessary for a battery on the ravelin, by which he might break the line. He also gave large casemated flanks to the latter work, in order that a powerful fire might be directed from them against the enemy, if he should attempt to mount the breach in the face of either bastion before he had got possession of the redoubts as well as of the ravelins themselves. A further improvement was the system of the engineer in adding to each of the re-entering places of arms a spacious redoubt, which would render the defence of that place more obstinate, and cover the passage between the enaille and the flank of the bastion.

As in the case of Diliches, a work published at Frankfort, proposed a method of fortifying places, which consist in surrounding them by lines of rampart forming with each other a series of angles alternately salient and re-entering; and, subsequently to the time of Vauban, a few other projects of a like nature have been suggested. Among these, the most remarkable of these is that which was published in 1776 by the French General Montalembert, who entitles his method "Fortification Perpendiculaire." Its outline on the plan is a series of the sides of equalilateral triangles formed on those of a deodecagon inclosing the place; the re-entering angles
being consequently right angles: and, as the general has
developed some useful ideas concerning the interior defense
of a place, though no existing fortification affords an ex-
ample of the method, a short description of it may with pro-
priety be given.

Three parallel ramparts of earth, of the form above indi-
cated, and separated from one another by wet ditches, sur-
round the place: the berme at the foot of the first and
third is protected by a simple wall, and that at the foot of
the middle rampart is covered by a loop-holed gallery on
its whole length. Beyond the outer ditch is the covered-
way, whose re-entering angles are fortified by strong re-
doubts. In the re-entering angles of the two interior ramp-
parts are formed casemated batteries, the fires from which
would sweep the surfaces of the ditches in front, in the
directions of their lengths; and, within the enceinte of the
place, a circular redoubt, or tower, of brick-work, carrying
cveral tiers of guns, is intended to defend the interior ramp-
part, if, at length, it should be forced. The merit of this
system is supposed to consist chiefly in the powerful fire
which the casemates would afford, as from their situation,
they would scarcely be injured by the enemy; in the diffi-
culty which the latter would experience in getting over the
detached walls; and in the great force which the defenders,
by means of the spacious communications, might bring up
to oppose the assailants.

During the existence of the French empire, the cele-
brated Carnot proposed to restore the balance between the
attack and defense of fortresses, which the inventions of
Vauban had made to preponderate greatly in favor of the
former, by means of powerful sorties from the place and an
abundant discharge of stones and balls from mortars fired
at considerable angles of elevation; thus annoying the be-
siegers in their trenches, and either putting great numbers
of their men hors de combat, or compelling them to recur
to the slow process of building their approaches. Adopting,
in his method of fortifying places, the proportions of Cor-
montaingue for the plan of his bastions, but making the
whole length of his front of fortification equal to 480 yards,
he detached the bastions from the enceinte, which he made
to consist of a simple polygonal rampart of earth. In rear
of the tenaille between the bastions he placed a fausse-
bras, whose exterior side was to be protected by a case-
mated tower at each extremity; and, behind the gorge of
each bastion, he formed a row of casemate vaults, in which
the mortars were to be placed for throwing stones, &c., into
that work when gained by the enemy. Adopting also the
ideas of Montalembert respecting detached walls, he pro-
spected to surround the enceinte by one, which was to be
loop-holed in order that a fire of musketry might be made
from it, and to construct a similar wall before the flanks and
flanks of the bastions. The bastions were to be covered by
narrow counterguards; a cavalier, or lofty redoubt, in front
of the tenaille, was to defend the collateral faces of both
bastions and counterguards; large ravelins were to cover
the central parts of the fronts of fortification and afford
crossing fires on the ground before the bastions; while
mortars placed on the faces of the work and on the bar-
ettes at the angles were to discharge their missiles over
the parapets. A ditch surrounds the whole, and its ex-
terior side is made with a gentle slope from the bottom to
the level of the natural ground in front, for the purpose of
facilitating the sorties; the corresponding facility which the
enemy might have for descending into the ditch being dis-
regarded on account of the supposed impossibility of main-
taining himself there under the hail of stones and shot from
the works.

It was supposed that the detached wall, being covered as
before mentioned, would present an impassable obstacle to
the assailants; but an experiment made at Woolwich in
1824 has proved the possibility of breaching it by a fire of
shot and shells, directed over the parapet of the counter-
guard, from artillery of great calibre, at the distance of 400
yards from the latter work. The efficiency of the vertical
fire, as it is called, of stones and shot from the works has
also been controverted; and experiments have been made
which seem to prove that the momentum acquired by the
missiles in their descent would not be sufficient to do serious
injury to a man on whom they might fall, if he were pro-
ected by a proper head-piece.

Plan of a Front of Fortification according to the Method of Cormontaingue.

80 yards to an inch.


P. C., No. 642.
Soon after the commencement of the revolution, Boussard, a French officer, who had entered the service of the king of Prussia, proposed to curve the faces of bastions on the plan, in order to diminish or prevent the effect of the ravelin, and to build batteries in the faces of the enceinte, and in placing the ravelin with its proper mudrums, which were to stretch out beyond the corners, the disposition of which would be impossible for the besiegers to reach the bastion by firing along the ditch of the ravelin, while the latter would possess all the advantages attending the greatest possible obliquity. The ideas of Boussard were adopted, and for the purpose of more effectually defending the main ditch. But his principal improvement consisted in extending the covered way and glacis along the whole of the enceinte, and in placing the ravelin with its proper mudrums, which were also extended beyond the corners, the face of which was to be constructed at an inclination at the extremity of which the glacis would be impossible for the besiegers to breach the bastion by firing along the ditch of the ravelin, while the latter would possess all the advantages attending the greatest possible obliquity. The ideas of Boussard were executed, and the disposition of the ravelin were adopted by General Chasseleure de Labat, in the works which he executed, by order of Napoleon, to strengthen the fortifications of Alessandria; and the same engineer constructed a strong polygonal work in each of the places of arms before the flanked angles of the bastions and ravelins, in order to increase the quantity of crossing and reverse fires in front of the works.

The last modification of the bastion system which it will be necessary to mention, is that proposed by Choumaras, who, partly to diminish the pressure of the parapets on the escarp revetment, and render the formation of a practicable breach more difficult, and partly to procure a close fire of musketry into the covered-way, suggests that a terreplein, little more than the width of a road, should be made, with a slander, being the work to protect the defenders, should be left on the exterior of the parapets. The same engineer recommends that the flanks of the bastions should be lengthened by continuing them within the line of the curtain, and that they should be strengthened by both sides. In order to prevent a fire of artillery might be directed over it against the works of the enemy: he proposes also that a glacis of earth should be raised in the main ditch, high enough to mask the foot of the escarp revetment, and prevent it from being battered by a fire of artillery on the crest of the covered-way.

It is scarcely probable that any existing fortresses will be demolished for the sake of the advantages which would result from a re-construction according to any of the methods which have been proposed since the time of Vauban; but, in any future occasion which may present itself for fortifying a town or military post of importance, it may be found convenient to adopt some improvements in the construction of the works. Thus, the general system of Vauban, with the modifications proposed by Cormontaigne, being retained to the distances of casemates, and batteries, might be formed in the re-entering angles of the enceinte or tenaille; and detached walls or galleries for musketry in some of the dry ditches: detached ravelins, as proposed by Boussard, may be placed beyond the face of the enceinte, in order to prevent the enceinte from being breached at the first crowning of the glacis; and a direct defense of the covered-way may be obtained from galleries formed within, or on the exterior of the parapets along the lines of works.

In the open attack of a fortified place it is evident that the loss of life would be so much the greater as the defensive works are stronger and better combined; and, in consequence, the necessity of making the approaches under cover at the last moment of the siege would become more urgent.

For the works occasionally constructed beyond the glacis of a fortress, see Flech, Horn-work, Lunettes, and Tenailleons.

Redan, Redoubts, and Star-forts are described under those words; and the combinations of works which serve for the protection of armies, under Lines of Enceintes. The works without being considered as field-fortifications: their plan is similar to that of the enceinte of a fortress; but they differ from the latter in their size, in having low relief, and in the sides of the enceinte being oblique, or only faced with sods.

FORTIGUERRA, NICOLAUS, an Italian prelate, whose writings display little of the austerity or seriousness of a churchman, was born at Pistoi, November 7th, 1674. In his youth he studied jurisprudence, and afterwards distinguishing himself by his attainments in Greek. Having published a funeral discourse in honour of Innocent XII., he was appointed secretary to the papal nuncio in Spain, and on his return to Rome, in consequence of his ill-health, had a situation as one of his chamberlains bestowed upon him by Clement XI. He died, 1717. The church of the San Maria Maggiore. By another pope (Clement XII.) he expected to be raised to the dignity of cardinal; but although an encourager of both poetry and poets, that pontiff evaded from time to time the fulfilment of the promise. Since his death, the magnificent funerary monument of Fortiguerra was lying on his death-bed, when he rejected the honour then proffered him in terms the reverse of courtly.

Monsignor Fortiguerra's lyric poetry, in which he showed himself an imitator of Petrarch, is now forgotten; for some time, his talents afterwards having been invested in a heroic-epic poem in thirty cantos. This production, which was first published with its author's name Grecianized into Carternac, was begun by him without any plan, merely by way of proving with what facility he could imitate Ariosto, Pulci, and Berni, both in regard to their style and their invention of incidents; when, at the instance of some friends for whom the first canto was hit off as a specimen, he was induced to proceed till he completed the whole, at the rate, we are assured, of a canto per day. Little, therefore, is it to be wondered at that the plot should be so desultory and the incidents so extravagant. Yet, notwithstanding the grotesqueness of the characters and events, and likewise the occasional carelessness of the style, this long imitative poem abounds with so much comic humour, that it may well be considered a novelty in its place as a classical work of its kind, and has gone through numerous editions. There are two French translations of it; and a German one by Gries, the translator of Ariosto and Tasso, was published 1831-3. In English we have the following: the introductory part, and introduction and notes, by the late Lord Glenburnie (1821). 'Ricciardetto' was not published till after the author's death, which happened in 1735, the date of the first edition being 1738. Fortiguerra was probably aware that his work might contribute to the success of his fellow-countrymen as a poet. It was not likely to advance him in the church, since many of the descriptions are more spirited than decorous; nor has he been at all sparing of his satire on the monks.

FORTIS, ABBATE, an Italian, born in 1740, died in 1806, was a writer of works on the history of natural philosophy; but his reputation was established by his travels in Dalmatia, 'Viaggio in Dalmazia': they have been translated into many languages, but the English translation, published at London, in 1778, is not only the earliest, but probably the best. An appendix of various plates, and several other additions, which appeared for the first time with this translation.

FORTUNATE ISLANDS. [Canaries.]

FORTUNE, in the Roman mythology, was a goddess who was not disposed to disburse the favours of the destinies of men. She was represented as blind, with winged feet, resting on a wheel. This deity did not figure in the more ancient systems of theosophy; Homer does not mention her in the Iliad, but refers the events of this world to the crosses of Jupiter and of Fate. Fortune however was war- shipped in Italy of old; by the Etruscans at Volusia, under the name of Nuria; by the Latins at Pranno; and by the Volsci at Antium, where a splendid temple was dedicated to her, in which a sort of oracles were delivered. She also had temples at Rome. (Horace, Od. ii. 35; Martial, v. ep. 1.)

FORUM, a large open space in ancient Roman cities (corresponding to the Agora of the Greeks), usually surrounded with public buildings, where the citizens met to transact business, and where, previous to the erection of Basilic, causes were tried. From this last circumstance the word forum is used metaphorically for a place of justice. Nardini is of opinion, though without any show of probability, that in the Forum, or Forum Romanum, at Rome, was placed on the Palatine Hill. The Greeks made their Agora square, with a double colonnade, or ambulatory, above and below, but in Italy the width of the forum was made less than the length by a third; and the columns were assigned to different uses in the forum. (Vitruvius, lib. v. 1.) The Roman fora were of two kinds, Fora Civilia and Venalicia: the former were for law and political affairs, the latter for the purposes of trade. Rome contained nineteen fora of importance—the Forum Antonius, Archichorum, Aquarial, Av.
gusti, Boarium, Casaea, Cupidinis, Nervae, Olitorium, Piscarium, Piscatorium, Pistorium, Romanum, Sallustii, Saurium, Trajani, Traianum, Transitorium, and Vespasianum. Of these the Forum Romanum, Nervae, Trajani, Boarium, and Piscatorium, alone retain any traces of the splendid edifices with which they were once adorned. The Forum Romanum is situated in a narrow valley, not far from the Tiber, between the Palatine and Capitoline hills. It sweeps round towards the Forum of Caesar and Augustus, which are between it and the larger Forum of Nerane and Trajan, all which, looking at their relative situations, were, no doubt, connected with it on the north. On the south it extended nearly to the Fora Boarium and Piscatorium, which were near the Pons Palatinus, now called Ponte Rotto. The exact limits of the Forum Romanum are very uncertain; Nardini (vol. ii., p.139) endeavours to point out its boundaries. It was decorated with temples, statues, basliene, curia, rostra, triumphal columns and arches, which usurped the place of shops, schools, and even private houses, that originally stood in this forum. In the forum were the rostra, or pulpits, decorated with the beaks of ships, whence the orators harangued. According to Appian the rostra were placed in the middle of the forum, and he states that Sulla caused the head of young Marius to be hung up before the rostra in the middle of the forum. Varro, in his fourth book, "De Lingua Latina," places the rostra before the curia, which was near the Comitum, so that the orators would stand with their faces towards the capitol; but Plutarch, in speaking of the Gracchi, states the reverse to be the case.

For the Plan of the Forum at Pompeii.

\[\text{Plan of the Forum at Pompeii.}\]

The Comitum was placed near the Curia; three columns of the former, commonly called the Temple of Jupiter Stator, still remain. Nardini places on the side of the Palatine hill, in succession, the Fabian arch, Gracostasis, Senatum, Basilica Opima, Aedilica of Concord, Temple of Romulus, Temple of the Div Deae Matres, Curia Ostilia, near which was the Comitum, Basilica Porta, Temples of Julius Cæsar, and Castor and Pollux. On the side towards the Tiber stood the Temples of Jupiter Stator, Temple and Atrium of Vesta, Basilica Julia, house of Lucius Tarquinus, and the Temple of Victory. On the side of the capitol was the arch of Tiberius, the temple of Saturn, of Concord, and of Vespasian, the school of Xanthus, the arch of Severus, which still remains, and the Tullian prisons. On the north side of the forum was the office of the secretary to the senate, and the Basilica of Paulus Emilius. There are however but few remains existing of a small number of these numerous buildings, and the greater part have entirely disappeared. A single monumental column stands near the Comitum, called the Column of Phoas. Besides these buildings there are remains of the temples of Fortune, Jupiter Tonans, Jupiter Capitolinus, and the Temple of Venus and the Basilica (Basilica); and on the narrow side, opposite the Temple of Jupiter, are three buildings generally considered to be the Curia and Abriarian: on the east side is an enclosure, the use of which has not been determined, the Chalcidicum (Chalicodium), the Temple of Mars, and a building supposed to be a large eating-house, generally known by the name of the Pantheon, in front of which are the Tabernae Argentinariorum. The enclosed area of the forum was paved with large square pieces of marble, and the sides of the area were adorned with statues opposite the curia and a short way from them is a small triumphal arch. The forum was closed at night with iron-barred gates, and it does not appear that chariots were admitted into it, as the pavement of the streets terminates at the back of the colonnade. The plan of the forum is that of the Greek Doric order, and were being restored in the same style, though with better materials, at the time the city was destroyed. The columns were armistyle, and the architraves were most probably of wood, as we may infer from their being destroyed, while the frise...
main. The frontispiece to the first volume of the 'Pompei' is a restored view of the forum, which gives an idea of the double colonnade, or upper and upper ambulatory meanders, with which it was characterized. A Greek Agora.

FOSCOLO, Ugo, was born at Zante about the year 1777, of a Venetian family settled in the Ionian Islands. When yet a boy he lost his father, who was a physician and inspector of the hospitals at Spalatro in Dalmatia, and he returned with his mother to Venice, where he was sent to study at Padua. Having left that university without having made up his mind to any particular profession, he returned to Venice, and wrote a tragedy, 'Il Tiesto,' which was performed in the düker of the Patria, the income of which was afterwards devoted to the benefit of the Patria and the city of Venice by the benefaction of Ugo's mother. Foscolo, who, like many of his countrymen, had expected the establishment of a new and popular republic, felt bitterly disappointed at the conqueror giving up Venice to Austria. His home at Milan and his name had excited the feeling in the 'Lettere di due Amanti,' afterwards published under the name of 'Lettere di Ortis.' This work, of little value as a novel, possesses a higher sort of interest from the political allusions, the bursts of invective, and the picture of society in those times. The language is beautiful and the tone affecting, though perhaps a little querulous and desponding; but as such it was in harmony with the then prevailing feeling. The 'Lettere di Ortis' had a prodigious success in Italy; but all the editions were except a few pirated at Venice in 1802, and that of 1814, which Foscolo himself published at Zürich with the date of London, which alone contains, among several passages left out in the other editions, the letter dated 17th of March, 1798, in which Foscolo clearly expressed his opinion of Bonaparte: 'If Bonaparte served as a volunteer in the Lombard Legion through the disastrous campaign of 1799, and followed the French in their retreat to Genoa, where he remained during the siege of that city till June, 1800, when the garrison capitulated, and was taken prisoner, and held as an Englishman at the Castello, and the time the battle of Marengo took place, Lombardy was reconquered, and Foscolo repaired to Milan: peace being concluded soon after, he returned to private life and to his literary labours. In 1802, Bonaparte having called together at Lyon a meeting of Italian deputies in order to devise a new constitution for the Cisalpine republic, Foscolo was requested by some individuals then in office, to write an address to the First Consul, with an expression of the state of the country, and the wishes of the people. He did write it, but in a very different strain from what they expected: he wrote it in the style of the Philippi, or the Verrine Orations of Cicero; he drew an eloquent but fearful retrospect of the opposite trials of the states of every nation, and one of the problems of which the people of Italy had suffered at the hands of the various military and civil authorities appointed by the French since 1796; the disgraceful persecution of the clergy and the so-called aristocrats, and other abuses of public order. The oration was prefixed to the First Consul, but it was published some time after at Milan—"Orazione a Buonaparte pel Congresso di Lione:' it forms an important memorial of the times, and an honourable testimonial of the uncompromising spirit of Foscolo, who seems to have taken Dante and Ariosto for his models. Foscolo remained for some years quietly at Milan under the mild administration of the vice-president Melzi. He published an Italian version of Callimachus 'De Coma Beata,' with interesting notes and glosses. In 1805 we find him again serving in an Italian regiment which formed part of the army assembled near the coast of the British Channel for the intended invasion of England. Being stationed at St. Omer he there attempted an Italian translation of the 'Somnus deo parvulis' of the 'Sentimenti di Dorsay,' in which he was most successful. When a few months after the camp of Boulogne was broken up, Foscolo went back to Milan, and did not return into active service. He lived for some time near Brecon, where he wrote his poem, 'Dei Sepolcri,' 1807, depreciating certain harsh regulations which forbade any monument or memorial being raised over the tombs of the dead. 'This beautiful little poem, full of lofty thoughts and lyric power, was dedicated by the author to a monument of Pavoncello in Pino Marzio, and it appeared in the daily gazette of the Italian Republic on October 17th, 1827, in Latin hexameters.

It was commented on, imitated, and even trans

In 1808, Foscolo being appointed professor of Italian eloquence at Pavia, was privately urged by some official persons to begin his course by some ode of tribute to the memory of Napoleon; but not seeing in the deposed emperor any tincture of the decorum of the Legion of Honour would be the reward of his compliance. Foscolo remained unmoved: he took as the subject of his inaugural oration the origin and the objects of letters. 'Il Origine del' Ufficio della Letteratura,' and deprecated the love of fame and the civil duties of literary men; on the nobleness of their calling when conscientiously exercised; and he exhorted the Italian youth to devote themselves to literature for the honor of their country, and the lives and works of Dante, Machiavel, Galileo, and Tasso; to bend over their tombs and learn from those illustrious dead how they fed the sacred fire of genius through persecutions, torments, and exile, in the gloom of dungeons, and the obscure atonement of poverty, and how they were supported in their trials by the love of their country, of truth, and of fame, which enabled them to leave to posterity the rich legacy of their works and the benefit of their example. This address, delivered to a numerous audience, produced a thrilling sensation, and was followed by busts of applause. Not a word had Foscolo said about emperor or prince, government or minister. A few months after the departure of Italian eloquence was suppressed in all the universities of the States of the Papacy, Foscolo was elected to the university of Como, where he enjoyed the society of Count Gasparri and his family. He there wrote his tragedy of 'Aps,' which was performed at Milan, and not only proved a failure, but involved him in a sort of ministerial position, though not of the character. Foscolo sailed for England on the play to Napoleon's ambition. At the same time certain academicians whose pedantry he had ridiculed in another work, expressed their opinion in the Poligrafo, a literary journal, that whoever sneers at the labours of professors is at all events an ignorant monarch who protects them, and becomes, by so doing, guilty of treason.' Foscolo however had some influential friends, and he was merely banished from Milan. At Rome he fixed his residence, and the publication of 'Stermite,' 'Viaggio Sentimentale di Torricelli lungo la Francia, traduzione di Didimo Chierici,' and wrote another tragedy entitled 'Ricciarda,' a Hymn to the Grecians, and other compositions.

In 1813 he was enabled to return to Milan, and in the following year, when the French abandoned the country and a provisional government was formed, Foscolo was appointed major on the staff, and endavored, though ineffectually, to save the ex-minister Prima from the fury of the populace. In 1814, Foscolo drew up a protest in the name of the inhabitants of Lombardy addressed to the Allied Powers. He remained however still at Milan, and had the offer from some of the Austrian authorities of the editorship of a new Polish journal, but perceiving he was not severe enough to the more rigid patriots of being a turncoat, he, all on a sudden, appeared from Milan towards the end of 1814, and repaid to Switzerland, where he resided for almost two years and a half. At Neuchâtel, near Zürich, where he published a correct edition of his 'Lettere di Ortis,' and also a satire in Latin prose, entitled 'Didymi Clerici Propinentes Minius Hypercyclizes,' in which he lashed his Milan enemics of the literary and courtly coteries who had annoyed him about finding sufficient occasion in Switzerland for his literary labours. In 1816, he came to England about a new edition of Dante, with ample commentaries, but he did not live to finish this work. Want of order and of judgment in money matters involved him in embarrassments which, just at his fruitful temper and assiduous application, had begun to show its enervating effect. He died at Turnham Green, near London, being about fifty years of age, and was buried in Chiaicchury churchyard, with a plain marble
slab and inscription over his tomb. Notwithstanding his eccentrics, he secured wherever he lived some warm and lasting friends, who felt his death as a loss. The life of Fuscofolo derives a peculiar importance from the times he lived in, and the political scenes in which he mixed. He had the reputation of standing aloof from the false and general prostration of mankind before the shrine of Napoleon. 'His uncontroulerable silence,' observes a by no means partial biographer, 'amidst the strains of vulgur adulation, deserves to be recorded in history. If amidst the Asiatic idolatry, Tyburn's Roman down of the pavement be said to have existed in Italy, Fuscofolo must be considered as the leader of it. Among a crowd of literati who prostituted their character, he alone succeeded Alferi in gathering around him those youths who felt the love of study and independence of mind. His compositions are innumerable, and possess a marvellous power, he tempered with his principles and his example their souls for present dignity and future resistance.' (Peecho, Vida di Ugo Fuscofolo.) When the reaction came he refused likewise to associate with those who would not renounce their national independence. His sentiments, as expressed in his works, are never those of a partizan; he deals out with an impartial hand to all; his thoughts are generous and pure, his learning is real and unaffected, and he has added a fresh vigour to Italian prose. His compositions already mentioned, may be added an Italian version of some cantos of the Iliad, 'Alunni scriveti e trat- tati inediti,' Lugano, 1829, including some of his lectures at Pavia and Senago. Uni Fuscofolo,' 2 vols. 8vo; Fuscofolo, 1833, and an article on A Fuscofolo and his Times, in No. XVIII. of the Foreign Quarterly Review, May, 1832.)

FOSSA, or FOSS-WAY, an ancient Roman road in Britain, one of the best ascertained of any. It extended from the coast of Lincolnshire, on the north-east, to the coast of Devonshire on the south-west. It is supposed to have derived its name from the circumstance of its having had a ditch ( fossa) on each side (Gadmen; Pointer's Britannia Romana, and appears on the same side of the street formed by its side near Leicester, and now set up in a public place in that town, to have been formed or at least improved by the Romans in the reign of Hadrian, and probably at or about the time of that emperor's visit to Britain. It has retained its name among all classes of people better than any of the Roman roads.

This road first shows itself between Lincoln and the sea. It commenced probably from a Roman station somewhere on the coast between Saltfleet and Grimsby, and ran to Lincoln. The remains of it extend but a short distance, where it crossed another Roman or British road, the Ermine-street. Near its intersection with Ermine-street some pavement remained in Stukeley's time of flag-stones set edgeways. From Lindum the Foss runs south-south-west through the heart of the country. The sixth Iter of Antoninus partly coinsides with this road, on which appear to have been the stations Crocolana (Brough or Burgh, on the border of Lincolnshire and Notts, not far from Newark-on-Trent, and on the present road from Lincoln to that town), Ad Pontemum (Farnham or Thorpe on the Trent above Newark), Margadunum (at or near East Bridgeford, Notts, on the road from Newark to Leicester), Veromunum (near Willoughby, Notts, near the border of Leicestershire), and Vindolanda and Vercovicium (at Hadrian's Wall, near the border of Leicestershire and Warwickshire, at the junction of the Watling-street and the Foss-way); the remainder of the road to Aquae Sulis (Bath) does not coincide with any Iter of Antoninus. In one part, between Nottingham and Leicestershire, the pavement is visible, composed of great blue flag-stones, and edgewise very carefully, taken from quarries by the side of the hill: the breadth of it one hundred feet or more. In other parts the way has been entirely paved with red road-stones. Near Verdonum (High Cross) part of the road lies open, like a ditch, either never having been filled with stones or gravel, or else owing to these having been removed for the repair of more modern roads, or some other purpose. Between Verdonum and Aquae Sulis the road passes over the Antonine Wall (Cirencester), where it crossed the road from London (London) to Glevum (Gloucester). From Aquae Sulis the Foss-way continued its course in a pretty direct line to Isealchis (Lichester), of which town it forms the principal street: from Isealchis, Stukeley supposed that it ran to Moridunum, now Seaton, in Devonshire: but others have conjectured that the Roman road between the river Ax and Honiton, of which there are plain vestiges to be discerned, is a continuation of the Foss; and that it ran through Milton Abbas (Edington) across the Teign to Totnes, which, according to some early accounts of this road, stood at one extremity of it. Beyond Ilechester some of the original pavement may yet be traced, composed of flat stones laid edgewise, and so close as to look like a wall of flat stone paving the usual form along some parts of the foss. The branches of this road, if any, are not ascertained. (Reynolds's Iter Britanniorum.)

FOSSANO, a town and bishop's see of Piedmont, in the province of Coni, is situated in a fine plain on the right bank of the Tiber. As the native of this country the leading figures in the town, and on the road from Mondovi to Savigliano. A canal, called Naviglio Nuovo, which leaves the Stirn at Coni, and joins the Po at Carmagnola, passes by Fossano. The town carried on a considerable trade in corn, silk, hemp, and other exports. In the district, a noted place of worship, is the cathedral, with a fine bell-tower, 12 north-west of Mondovi, and 33 south of Turin. (Coni.)

FOSSIL COPAL was first found in the blue clay at Highgate, near London; it occurs also at Wochlow in Surrey.

It occurs in irregular pieces or small nodular masses. Its colour is yellowish or dull brown; nearly opaque; lustre resinous; fracture conchoidal; specific gravity 1.046. When heated it yields an aromatic oil, and melts into a liquid yellow, honey-scented. When cold, and when strongly heated in contact with the air, it is totally disintegrated. It does not appear to have been analysed.

FOSSILS. The term 'Fossil,' in its general acceptation, signifies that which may be dug out of the earth. In a more precise, antient, and restricted sense, it is applied to PETRIFICATIONS, the mineral bodies, may be said to be fossils. But the word is generally used among geologists and mineralogists to designate, sometimes, simple and compound mineral bodies, such as earths, salts, bitumens, and metals, but, more generally, cases where petrified forms of plants or animals, which occur on the strata that compose the surface of our globe. Most of these fossil species, many of the genera, and some of the families, are extinct; and all of them were considered in the darker ages to owe their origin to the plastic power of the earth, the so-called Lithographia, and Lithographus, or figurali, and as their organic nature began to be suspected, Lapidies dilucians. Superstition was, in old times, busy with some of them, the Bocunumites and Ammonites, for example.

The appellation Petrifacta, petrifactions, soon became common in books and catalogues of cabinets, and then Sir John Hill's proposition to denominate such petrified bodies extraneans, or aduentitious fossils, was adopted by many naturalists. Parkinson objected to 'Petrifications' as a general and in distinction, 'Fossils' by employing the expression 'Primary Fossils' to denote those mineral substances which are supposed to have been native, or in other words, to have existed primitively in the earth; and by applying the designation 'Secondary Fossils' to the petrified exuvi of plants and animals. Though the terms of this last-mentioned writer are now no longer adopted, he must always be considered as one of the fathers of this branch of geology, a branch which William Smith first opened the way to the study of the geological history of the earth. The study of the Organic Remains, by which name the animal and vegetable bodies penetrated or converted into mineral substances are now known as a whole, has become one of the most important branches of the geological structure of the earth's crust. The well-known Eocene, Miocene, and Pliocene periods of Ley's, for instance, depend in a great degree upon the proportionate abundance or absence of living species among the organic remains which offer as evidence of long groups of strata of comparatively modern origin.

Some notices of the fossil plants and animals, when such are known, are given in the articles which relate to existing families, genera, or species; and extinct families.
genera, and species, are treated of under their respective heads.

FOSSUM, in the bailiwick of Christiania in Norway, a mining town and district, about 40 miles west of Christiania, near the Houg-Foss, the largest fall in Norway, over which 50 tons of water are dashed in perpetuity. Here is iron and copper works and a cannon foundry, and at Molodem, near it, a large manufactory of smalts, raffia, &c., which are made from the superior kind of cobalt, found in the neighboring mine at Stutlerd.

FOTHERGILL, JOHN, was born of a Quaker family, on the 5th of March, 1712, at Carr-End, near Richmond, in Yorkshire. After obtaining the elements of education in the school of Sedbergh, in the same county, he learned pharmacy from an eminent apothecary named Barlott, and then proceeded to Edinburgh. For a time he attended to his studies in order to be made M.D. in 1737, the thesis which he published on this occasion being on the use of emetics. (De Emeticorum Usu in variis Morbis tractandis.) In order to become a physician in practice as well as theory, he now diligently attended St. Thomas's Hospital, in London. In 1740 he travelled into Holland, France, and Germany, and then settled in London. In 1748, an ulcerated or gangrenous sore throat, which had prevailed epidemically, gave Fothergill an opportunity of displaying his great practical talents. This kind of sore throat is not now believed to be related to scarlet fever, and indeed to be the essential and dangerous part of that disease, of which the eruption is merely the outward and harmless indication. In Fothergill's time, however, this malady was confounded with the ordinary or intermittent fever, and brought on with bleeding and purgatives, was very fatal. Fothergill, on the contrary, used emetics, mineral acids, bitters, and a little wine, and lost but few cases.

The two most prominent points in the life of Dr. Fothergill are: the success which he practised his profession and the unwearyed benevolence with which he distributed the fruits of his labors. It is supposed that he gave away at least 200,000l.

Dr. Fothergill published several papers in the 'Philosophical Transactions' on the origin of ambergris, the rupture of the diaphragm, &c.; and he is also the author of essays on the plant producing Alopec scabrony; on the use of bark combined with small doses of calomel in scrofula, and calomel alone in lepers; on the growth of hemlock in cancer; on the botanical, chemical, and medical history of the cortex Winteranus and catechu; on the treatment of hoop-cough by very small doses of tartar emetic combined with an absorbent earth; on dropy, and the dangers of putting too long an chronic ulcer of the legs; on phthisis, and the abuse of balsams and bark in this disease; on febrile rheumatism of the face; on angina pectoris; on the ulcerous sore throat; on hydrocephalus internus, an essay thought by Vceg-d'Azur to be perfect and to be founded on medicinal medicine; and advice to women between forty and forty-five years of age, or rules to be observed on the cessation of the catamenia.

Fothergill improved the art of recovering the drowned; showed the necessity of prohibiting burials in towns, and the means of diminishing the frequency of fires. The editions of his works are those of London, 1781; 1783, 3 vols. 8vo.; 1784, 4to. Fothergill died on the 26th of December, 1788, in the sixty-ninth year of his age. (Biographia Literaria."

FOTHERINGAY. [HAMPTONSHIRE.]

FOUCHE', JOSEPH, duke of Otranto, was born in 1763, at Nantes, and educated in the college of the Pères de l'Ossature. Being unable, on account of his delicate constitution, to follow the profession of his father, who was captain of a vessel, he applied himself to study, and after having completed his course at Paris, he lectured in different towns of France on various philosophical subjects, till his marriage he finally settled in his native town and was an advocate as an advokat. In 1792 he was turned by the department of the Loin Infricure as a member of the national convention, in which capacity he voted for the death of the king, and against the appeal to the nation. In 1793 he was sent with Collet d'Héricourt in that mission which deluged Lyon with blood; and in 1822 he had the courage to oppose some measures of his infamous colleague. On his return to Paris, he was elected (1794) president of the Jacobin club, but he was soon expelled from it by the enmity of Robespierre. After the fall of Robespierre, Fouche being considered as a dangerous terrorist, was arrested, but afterwards liberated under the proclamation for a general amnesty, on the 26th October, 1795. He remained in private life till 1798, when he was appointed minister of police at Paris in the Directory, nominated him minister of the police of the republic. It was in this capacity that he displayed his great talents, which were united with an extraordinary degree of courage, firmness, and activity. He had the boldness to adopt very severe measures for the suppression of popular assemblies. Having supported Bonaparte after his return from Egypt, he was confirmed in his office upon the establishment of the consulate. He had the address to render himself necessary to all parties by tormenting Bonaparte on the one hand, and by his moderation and lenity in screening from his vengeance many royalists. Bonaparte however dismissed Fouche in 1802 from his office, but on his accession to the throne, he restored him to his former post. Fouche's vigilance maintained the tranquility of the capital, and having the duties of minister of the interior added to those of his office, he greatly contributed by his arrangements to prevent the success of the English expedition against Holland in 1809. In the last-mentioned year he was created duke of Otranto, and was immediately elected a senator, which having refused to do, he was sent to Aix. He was again recalled; but as his views did not coincide with those of the emperor, Fouche retired into the country. In 1813 Fouche was made governor of the Illyrian provinces and the progress of the allied troops to relieve Paris, and an order was given to this effect, but he contrived to make his escape. Napoleon again nominated Fouche minister of police, but he accepted the office only on the understanding that Austria and England secretly complied with the capitulation of Paris, and Napoleon resumed his post and retired to Italy. After the abdication of Napoleon, Fouche again retired to his estates in the country, and refused to take any part in political intrigues. In 1816 he was recalled from exile in these, he was arrested by Bourbons, and an order was given to have him executed as he was the chief of Napoleon's second reign, and strongly urged the emperor to abdicate after the battle of Waterloo. Fouche being put at the head of the provisional government by the first chamber, promoted the departure of Napoleon, removed the court of Orleans, and put into practice the scheme of Carnot and other patriots to defend Paris. At the beginning of the negotiation he was not inclined to promote the second restoration of Louis XVIII., but notwithstanding this he was called by the king, immediately after the capitulation of Paris, and nominated minister of police. This circumstance gave rise to a general belief that he had deceived Napoleon all the time after his return from Elba, and that he constantly maintained a secret correspondence with the allied powers and the Bourbons. In his capacity of minister, he promulgated two important laws, and also two reports on the state of France, which by their boldness excited the hatred of all parties. His advice to grant a general amnesty was not followed; and he signed with his own hand as minister of police the ordinance of Louis XVIII. of the 24th July, 1815, by which many persons were excepted from the amnesty. Being driven by the hatred of the royalists to resign his office of minister of police, the king on the 12th January, 1816, by which all those who had voted for the 18th of May had been banished from France and deprived of the estates which had been granted to them, was extended to Fouche also, who from that time lived in different parts of Austria. He died at Trieste in 1826. The Mémoires of Joseph Antoine Fouche, Duke of Otranto, were published in 1826, in which he declared himself to be a spurious production; but there are many reasons for believing them to be authentic, and it is a known fact that he dictated his memoirs to his secretary Demareau.
A curious work was published at Paris in 1833, which through the light on Fouquier's character, and the system of the imperial administration in France, 'Témoignages historiques, ou quinz' Années de police sous Napoléon, par Desmaret.'

FOUGASS, a small military mine, formed by sinking in the earth, to two or three feet deep, filled with powder, or one containing two or more loaded shells. The train of powder by which it is to be fired is contained in a linen tube, and this is frequently protected by being placed in a case of wood. A trench is cut in the ground to receive the 'fouga,' but it is subsequently filled up. The mine was sometimes employed in the defence of fortlets, and then they are formed under the glacis of the latter at the points where the assault is expected: in this case generally the train of powder is conveyed underground to the mine by means of the long apparatus, called a gallery; but occasionally this is done in the interior of the work, the train being then made to pass under the bottom of the ditch.

Sometimes a fouaga is used to destroy a small work, in which case it is sunk within the mass of the rampart or parapet.

FOUGÈRES, a town in France, capital of an arrondissement, in the department of Ille et Vilaine. It is on the left bank of the river Cousseon, 100 miles in a direct line north of Nantes. The city was founded in the twelfth century on the site of an old Roman town. The town is built on a hill, 120 feet above the river, and is surrounded by walls 15 feet thick and 30 feet high. The church of St. Pierre is a fine example of Gothic architecture.

The population of Fougeres in 1832 was 10,846 for the town, or 7677 for the whole commune. The principal manufactures are flax, wool, and leather. There are many dye-houses, and the scarlet dye is particularly famous for its brilliance, which is supposed to owe its quality to the quality of the water of the Nançon, a little stream that falls into the Cousseon a short distance below the town. Trade is carried on in corn, cattle, linens, woollens, butter, honey, and wax. The market is considerable, and there are nine fairs in the year. In the neighbourhood of the town, which is fertile in wheat, oats, buckwheat, and potatoes, there are many sheep and goats, and several paper-mills. The town is at the convergence of several roads. There are in it subordinate courts of justice and some other public offices, a high school, and public baths. In the forest of Fougeres, about half a mile northeasterly of the town, there are three large hunting lodges, one of them with its upper stone about 16 feet long, 6 feet wide, and nearly 4 thick; the other nearly destroyed; and a suite of subterranean apartments, built with freestone and vaulted, called 'Les Celliers de Londres.' The principal kingdom of Fougeres (mentioned above) is in order to conceal his own treasures and those of the people of Fougeres from the avidity of Henry II. of England.

Their precautions were, however, in vain, that king having taken his effects before they could be placed in any security.

The arrondissement of Fougeres comprehends 6 cantons and 57 communes; it had, in 1832, 81,788 inhabitants.

Paper and glass are manufactured by them.

FOULAH or FOULAH, a nation widely spread along the western coasts of Africa, occupying the countries north of Cape Palmas as far as the banks of the river Senegal. Some of the tribe are found 400 or 500 miles from the coast. They do not however occupy this tract alone, but together with three other nations, the Mandingoes, Ser- rawelles, and Jallofis or Yallofis. The principal kingdoms of the Foulahs are Fouta-Toro, Bondou, Casson, Ludamo, Kaarta, and Fooladu, on both sides of the Senegal; and south of the sources of the Gambia, the great kingdom of Fouta-Jallore. The countries east of the Senegal, though little known, but it would appear that the Foulahs extend to the very boundary of the kingdom of the Ashaninca.

Major Grey describes the Foulahs of Bondou as being of the middle size, well made, and very active. Their skins is of a light copper colour, and their faces of a form approaching nearer to those of Europe than any of the other tribes of Western Africa, the Moors excepted. Their hair too is not so short or woolly as that of the black, and their eye are, with the advantage of being larger and rounder, of a better colour and more expressive. Mungo Park observes, that at Bondou and in other parts in the vicinity of the Moorish territories, their complexion is more yellow than in the countries farther south. In speaking of the two negro nations, he remarks they are always among the white people. Their principal occupations are the rearing of cattle, and agriculture. Even on the banks of the Gambia, in the territories of the Jallofs, and other tribes, the greater part of the corn is raised by them, and their huts and flocks are numerous. In a number of the countries there have been embraced the Mohammedan faith, and send their children to schools, in which they learn to read and write. In the southern countries they are still heathens. They speak a peculiar language, different from all the other negro languages by which they are settled. (Mungo Park; Goldberg; Gray.)

FOULIS, ROBERT and ANDREW, two learned printers of Scotland, were, it is supposed, natives of Glasgow, and passed their early days in obscurity. Robert is asserted to have been a harlot, or poor printer, which reducere however enabled them to establish a press, from which have issued some of the finest specimens of correct and elegant printing which the eighteenth century has produced. Even Bodou of Parma, and Barbou of Paris, have not gone beyond his productions. Robert Foulis began printing about 1740, and one of his first essays was a good edition of 'Demetrius Phalerus,' in 4to., published in 1743. In 1744 he brought out his celebrated innumerable edition of 'Horace,' 12mo., and soon afterwards was called by Horace 'The great and excellent Printer.' Of this edition of 'Horace,' the sheets as they were printed were hung up in the college at Glasgow, and a reward was offered to those who should discover an inaccuracy. It has been several times reprinted at Glasgow, but not probably in the same fidelity. The two brothers continued to produce for thirty years a series of correct and well printed books, particularly classics, which, whether in Greek or Latin, are as remarkable for their beauty and exactness as any in the Athenian series. Among the most celebrated were 'Horace,' 12mo., and 'Thucydides,' Greek and Latin, 8 vols. 12mo., 1759; 'Herodotus,' Greek and Latin, 9 vols. 12mo., 1761; 'Xenophon,' Greek and Latin, 12 vols. 12mo., 1782-67; with small editions of 'Seneca,' 'Horace,' 'Virgil,' 'Terence,' 'Plautus,' 'Tacitus,' Juvenal and Persius, and Lucerat. To these may be added a beautiful edition of the Greek Testament, in small 4to.; Gray's Poems, Pope's Works, &c. &c.

It is a melancholy reflection that the taste of these worthy men has been brought to disaster, having engaged in the establishment of an academy for the instruction of youth in painting and sculpture in Scotland, the enormous expense of sending pupils to Italy to study and copy the antients, gradually brought on their decline in the printing business, and they found the city of Glasgow no fit soil to transplant the imitative arts, although their success in printing the Greek and Latin Classics had already produced them ample fortunes. Andrew Foulis died September 15th, 1773, and Robert in 1776 exhibited his will at Christie's, with this remarkable inscription: 'I direct the residue of my fortune to my nephew, the son of Mr. Mungo Foulis, a scion of one of the brothers, continued to print at Glasgow as late as 1866. His 'Virgil' of 1778, and his 'Aeschylus,' printed in 1795, are considered beautiful productions. (Lemon's Hist. of Lit. Anaec., iii. pp. 691, 692, 475; Chalmers, Biog. Dict.)

FOUNDATION, the lower part or cores of the basement walls or piers of a building. In foundations it is the utmost importance to prevent the settlement of the walls from unequal sets in the foundation, the strength of which the foundation is set equally solid throughout its whole extent.

If the earth, when excavated to a sufficient depth to form...
This is to prevent the wall from sinking with its own weight into the earth, or raking with the wind. In foundations from two to four courses of footings are usually employed. Involved or inverted arches are often used under the foundations of piers, to distribute the weight more equally along the whole line excavated for the foundation. When the ground is very soft, the wall should be supported on narrow piers, a piece of timber is sometimes split in half and laid at the bottom or on the lower course of the brickwork or masonry.

The breadth of a superstructure should be proportioned to the depth of the superstructure. Nicholson, in his architectural dictionary, says, "if the texture of the ground is supposed to be constant, and the materials of the same specific gravity, the breadth of the foundation will be as the area of the vertical section passing through the line on which the whole is measured; thus, for example, suppose a wall 10 feet high 2 feet thick to have a sufficient foundation of 3 feet in breadth, what should be the breadth of a wall 10 feet high 25 feet thick? By proportion it will be 60 feet 25 feet = 25 feet. This calculation will give the breadth of the foundation of the required wall, equal to the breadth of the insetting wall itself, when the height of the required wall is equal to the ratio, which is the first term (40 × 2 = 80) divided by the second term (3) = 26 2/3 feet. Thus a wall of 26 2/3 feet would have the breadth of its foundation equal to its thickness above the foundation, and less than 26 2/3 feet would have a thinner foundation than even the superstructure. But though the calculation in this case gives the true breadth of the foundation of the superstructure, it must be considered that it only calculates the true breadth of the surface that should be opposed to the ground, in order to prevent the wall from penetrating by its weight: though the rule gives all the weight that is necessary to render the foundation of the insetting wall, yet the breadth of the footing should always be greater than that of the superstructure, as it will stand more firmly on its base when affected by lateral pressure, and be less liable to rock by the blowing of heavy winds."

Concrete composed of gravel or shingle and hot lime is often used to form a solid bearing for the footings of foundations. The greatest care and judgment are required in making these concrete or brick footings, for if the piles should be of bad quality and the ground in which they are driven are of a very loose and boggy nature, the catastrophe which occurred at the new customs-house in London may be expected to take place. In this building it was found necessary to reinforce the piles and loose earth and form a solid concrete foundation.

In brick foundations the footings have sets off, or projections of about an inch and sometimes more. In stone walls the footings are at least six inches in projection on each side of the wall which is to be carried on the footings. FOUNDING, one of the mechanical arts which embraces all the operations of driving oars, and of polling and erecting metals. There are various branches of the art, and some difference prevails in the minor details of the processes, as in iron, brass, and bronze founding; casting guns and cannon, types for printing, and bell founding. The finishing operations of chasing, burnishing, plating, &c. are also parts of the founder's art. In this country, where metal-working is of so great importance in a commercial point of view, improvements are constantly being made in the operations of the foundry. The practice on the continent differs also in many respects from that pursued in our foundries; this but applies chiefly to details, as there is of course a general resemblance in the principles upon which the several processes are performed, and the objects of the founders.

Before entering upon the practical part of the subject a few preliminary remarks respecting the knowledge that existed of these arts in the earliest ages, may not be out of place; to hear, at least, that founding is of very high antiquity. We have just seen that an artier, a foundry, is accounted divinely instructed. (Gen. xxvii. 2; Exod. xxv., &c.) There can be no doubt that the Egyptians were well acquainted with some very refined processes of founding long prior to any written historical record, and it is not incredible that the Phoenicians may have had as skillful instructors of the Foundries as those who were so long resident in this country. The Phenicians, who possessed considerable knowledge in these arts, as may be judged from the fact stated in the sacred history, that when Solomon required for his father's foundation of buildings, &c., he was instructed in the art of metal-working, and to the Smiths, &c., of Tyre. Whether the assistance of a native of Tyre, "who was cunning to work all works in brass and iron," would be said, "to work and make instruments of brass and iron." Homer also bears evidence to the well-known ability of this people in an epistle addressed to the Smiths of Greece, and to the Smiths of Phoenicia, metal-working was employed by the Greeks, Etruscans, and Romans, and the excellence to which it was occasionally carried, in the fine arts, are too well known to need further observation in this place; a general history of it, as a branch of sculpture, has already been given in the article BRONZE, which also contains some notices from the ancient writers on the different methods adopted of solid hammer-working, hammer-work in plates, and in casting; as well as on the varieties and composition of metals. It is not the province of this treatise to discuss the points of ancient founding our information is very limited, the writers of antiquity having confined themselves, generally, to a description of finished productions, and leaving little or nothing by which we can judge of the mode of working.

It appears that furnaces of considerable size, and producing a great tonnage of metal, were constructed in this country as early as the reign of Queen Elizabeth; but it was not till the beginning of the seventeenth century that the art of metal-working attains, in the construction of the furnaces, quality and importance of founding. Prior to that date all the operations of melting, &c., had been performed by means of wood fuel; but the demand for various objects in metal was so great that the consumption of wood for the purposes of the trade was made to bring coal into use, and it is curious at this time to know how much difficulty, first from ignorance of its real value in the operations of metallurgy, and then from prejudice against such an innovation upon the old habit of burning wood only, to which many also looked on as an interference with the interests of wood monopolists,) was thrown in the way of its introduction. One of the earliest and most zealous advocates for its use, Dudley, had all his works destroyed, and was nearly ruined by the violence of his rivals, or rather opponents; but at length its employment was fully established, and from that time the rapid...
advance of the iron and other metal works of this country may be dated.

We have stated the chief reason for having recourse to the coal mines for fuel to have been the apprehension that the supply of wood was on the subject to be acquired, and groundwood or charcoal would always have been preferred for many of the operations of metallurgy, from its being less objectionable, as regards its chemical composition, than coal. The iron that is smelted in Sweden by wood charcoal, and placed in the blast furnace, is not sought after; and the smellers in this country find it necessary to cast the pit and sea-coal which they use, in order to adapt it to the purposes required. There are various ways of making this charred wood, which is called coke or coal.

There are different ways of casting this state in which it is obtained from the natural coal dust in a kiln heated with large coal: the small coal then runs together and forms a large mass which, when it is completely red, is pulled or drawn out in lumps with iron rakes and laid on the ground. It is spongy and porous in its nature, but it has nothing of its valuable qualities, as it is only deprived by this process of its volatile parts, and nothing remains but the carbon and earthy impurities. Sometimes coke is made in the open air; ashes being thrown upon the mass which, after it has lost its volatile parts, becomes red hot; this object of this covering is to prevent the access of air. Some years ago a plan was discovered and carried into effect for saving the volatile products of the coal which were lost by the processes hitherto adopted for making coke, by running a coal in a range of stoves, with as little air as possible at the bottom, and conducting the smoke to a capacious close tunnel, the bitumen is condensed in the form of tar. This improvement upon the former method was discovered by Lord Darnold. It is a process of which a certain number of the niceties attendant on the methods employed for reducing the ores of different metals. Many of these details would be useless, except to the operative smelter; while others can only be known to those experienced in the several processes necessary for the reduction of the ores of metal; for, before the iron: it is then well washed till the earthy particles are carried off, and the tin is fit for the smelting house. After being roasted in a reverberatory furnace, and again washed, it is a second time subjected to the furnace, being now mixed with carbon, and some small amount of lime. The melted tin thus produced is placed in a small furnace and exposed to a very gentle heat, when the purest portion melts at first and is drawn off. This is called common grain tin, and the inferior, which still contains the impurities of common tin, is thrown into cast into pigs called block tin. The finest grain tin is procured from the stream works of Cornwall. Good stream tin affords from 65 to 75 per cent of the best grain.

The reduction of copper is made by two or three consecutive processes. The first is by calcining it, and when the ore is sufficiently roasted to oxidize the iron which it contains, it is melted. The melted metal is after a time suffered to flow into a pit filled with water, by which it becomes granulated. It then drops from the surface further heating, and what is called technically its slag (or scoria) is taken off, and it is again allowed to run off into water. After other nearly similar processes it is cast in sand, when it becomes solid, and in this state is called blistered copper. It is now fit for what is termed the refinery, and undergoes an operation called refining or toughening. This is considered to be an operation of delicacy, and requires great skill and care in the workmen. It is conducted in a furnace similar to the melting furnace, and the object is thoroughly to purify the metal from all impurities, and render it fit for casting. The whole operation is one of skill and practice, and it is essential that the operator should have a thorough understanding of the art. The greater part of the British copper is refined in this manner, and is produced from a substance called galena, in which it is found.

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FOU

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combined with sulphur. There are, however, other ores of lead. The galena, being freed by hammering it and by the hand, from whatever impurities can be separated from it by those means, is broken up into small pieces, and after repeated washings is placed in a reverberatory furnace, but only sufficiently heated to drive off certain ingredients without melting the lead itself. The roasting being finished charcoal is added till the reduction is completed. The lead, after the slag has been removed from it, is allowed to settle to the bottom of the pan, and the first skimmed is ladled out into moulds and left to cool. There are various methods adopted in different places and under different circumstances for procuring metals from their ores.

The furnaces that are used in furnacemen and smiths speaking both are air furnaces, yet they are distinguished as air or fired furnaces and blast furnaces. The first acts by a draught through a chimney. In the other the air is forced into the body of the furnace by the action of a bellows, or a couple of blast furnaces of the different parts of the furnace, and particularly the size, elevation, and direction of the chimneys, and the dimensions and space of the flues when these are required, are of great importance; the volume and intensity of heat and current of air are thus determined. The form of the bellows, the manner of heating and stoppage, of the knowledge and science displayed in adapting the parts to each other. The blast furnace was most probably known at a very early period. The old mode of working the bellows was by hand, or by cattle, or more usually by a machine of which the power of the engine is increased and the current of air regulated by the action of the engineer. The furnace, and the certainty and regularity of its action, have rendered its employment almost universal, at least in works of any extent. There is another variety of furnace to which allusion has been made in describing certain processes, known as a copper, and some of the objects of a reverberatory furnace. It is used for many operations in foundling, and is often preferred for special application of heat different from those before mentioned. In this furnace the ore and fuel, or the metal and fuel, if it is used for casting, are placed in an antecuit, but the charge only shall pass the material to be acted on. The reverberatory furnace is generally employed for smelting lead and copper ores, and for refining some of the finer metals.

The weight of brass is a unit of measurement in which the quantity of metal in the solid, or with a core (by means of which the metal is preserved of a determined thickness or substance), or in plan casting. Before any object can be cast in metal it is necessary that a model of it be prepared. The model must be made of various substances, such as wax, sand, or clay, and are thus usually employed, but they may also be of wood, stone, or any other material. Upon those models moulds must be made; these are commonly composed of plaster of Paris mixed with brick dust, sometimes sand, or sand and water of cow-hair, and the mixture is prepared for pouring or casting in the same way as metal. Upon this mixture of plaster and clay, or sand and a little water, the metal may be cast in two pieces; these two parts are then carefully joined together, and the edges or seams carefully cleaned. This doubling is an easy and cheap mode of execution, and only requires care to be successful. For the smaller class of work instead of melting, and running the metal at once from a large furnace, earthen crucibles are used, into which the metal is thrown in small pieces; the crucible is placed in a strong heat in a close stove, and as the metal is melted a sufficient current of air is directed till it is perfectly melted. Then the crucible is lifted out by means of iron instruments adapted to the work, and the metal is poured into the moulds, in which channels or ducts for receiving it have been previously made. There is one great advantage in using crucibles, viz., that they may be transported to any part of the foundry, whereas in general it is essential to have the moulds and the furnace close together. It is obvious however that melting metal in crucibles can only be practised where the casting is on a comparatively small scale.

Brass is a walking metal. The name of brass has been made of one in which a core is used, and which may require some explanation. The core, as its name denotes, is a part or portion situated within the body of the cast; and its purpose in founding is to form a centre to the work by which the hardness or substance of the metal may be regulated. In coring, the mould must first be made complete; into this, clay or wax, or any other fit substance or material, is then squeezed or pressed in a layer of uniform thickness; in large works it is usually from half an inch to an inch thick. This layer represents the metal. The mould, in full parts, is to be kept together, and the coring being then being left within it, and into the open space in the centre a composition (usually of plaster of Paris with other substances mixed with it) is introduced, and made to adhere to the metal. The core is then hardened or rammed into the core, and it is often made to occupy the whole interior of the mould. When this is set, or dry, the mould is taken to pieces and the material which has been made to represent the metal removed. The mould is then again carefully put together, and the metal secured from contact by stop and keys properly arranged for that purpose. It is now obvious that when the mould is placed, with its channels and ducts, to receive the metal, this latter can only enter the interstice or space between the runners and the various pieces of the casting by the narrow passage provided. It is seen that in this way the gases, pre-
great care and skill to insure its being true, is effected by a machine adapted to the purpose. Wood fuel is used for this branch of founding, but the furnace is a reverberatory, and the flame, and not the fuel, comes in contact with the metal. The composition for brass ordnance is 30 copper and 10 tin in 100 parts. In ordnance-casting in France the proportion of copper is greater, being stated at 100 copper to 11 of tin, which is about the composition of the bronze of which metals are found in Egypt, providing a process for melting the bronze over after they are freed from the mould; this depends however upon the quality of the object, and also on the degree of success in the casting. These operations are casting, burnishing, lacquering, plating, gilding, &c. The methods of the builders of those great vessels and by filing till any portions of the work which may have become heavy or indistinct in the casting, or were not highly finished in the model, are rendered sharp and clear. Many patterns for ornamental work, as foliages, flowers, and such devices, are cast roughly, and afterwards placed in the chaser's hands, who completes them for use. Burnishing consists in making the raised parts of the design complete. It is effected by rubbing rather than turning. The usual mode of operating by fastening the object down in a vice, and working with a file upon the surface of various sizes formed of a shaft of steel fixed in a wooden handle. These tools are slightly turned up at the end. This operation is also called heightening. The workman occupies himself with this for a long time, and it is said that the operation of producing embossed or vitreous work by pressure from behind is called punching; the term smarling is also used for a branch of this work.

Lacquering is employed both for use and ornament. It gives to brass the brightness of silver, and is seen in articles of general use, as door-plates, handles, hinges, &c.; and it also preserves metal from tarnishing or turning black by exposure to the air. The lacquer is made of alcohol and seed or shell lac, with spirits of saffron, arnatto, or turmeric, and when its color is bright and glossy, and ready for use. One small brush is laid on the metal and the surface is brushed over with a soft brush, the object to be lacquered being first warmed; when perfectly dry, the surface is rubbed.

Soldering is the operation of uniting metallic bodies with each other, which can only be done by means of simple or mixed metals. The parts to be soldered are divided into two kinds, viz. hard and soft. Hard solders are dull, and will bear hammering; that used for brass is made of brass with one-sixth, one-eighth, or even one half of zinc; this may also be used for the hard solder of copper. It is called and sold as 'hard solder,' but containing the last named metal, and is brittle and will not bear hammering. These are made of tin and lead in equal parts; or bismuth, tin, and lead in like proportions. Iron is often soldered with copper, and copper and brass with tin, especially in large works. The solder joining the parts must be perfectly clean and applied closely to each other. The solder is then laid upon the joint, with a small quantity of sal ammoniac or borax or common glass; these additions prevent the metal from oxidising. For the like see that article. FOUNDLING HOSPITALS are charitable institutions, which exist in most large towns of Europe, for taking care of infants forsaken by their parents, such being generally the offspring of illegitimate unions. These institutions date from the Middle Ages, and were established for the purpose of preventing the destruction of children either by actual violence or by being exposed in the streets or highways. Among the Romans and other nations of antiquity, the exposure of children was considered as a frequent practice, and was not punished by the laws. After Christianity became the religion of the empire, it was forbidden by the Emperors Valentinian and Gratian. At the same time, the greater strictness of the laws concerning murder and infanticide led to frequent denunciations against unwedded intercourse, and afterwards the obligatory celibacy introduced among the clergy, and the severe penalties attending its infraction, all tended to increase the danger to which illegitimate infants were exposed from the sentiments of fear and shame in their parents. Child-murder and the exposure of children became nearly as frequent in Christian countries as they had been in Heathen times, only the parents took greater care to conceal themselves; and human individuals in various countries began to devise means to collect and provide for the forsaken infants found in the streets. In this, as in other acts of charity, ecclesiastics stood foremost. At Rome, Innocent III., in 1198, when rebuilding and enlarging the great hospital of S. Spirito, allotted a part of it for the reception of foundlings; several infants having been found drowned in the Tiber about that time. This asylum for the 'esposti,' or foundlings, was afterwards enlarged and endowed by subsequent popes, and the institution was adopted by degrees in other cities. It was thought that the charity would be more motherly if these illegitimate children in safety without being subject to any inquiry or exposure, the frequent recurrence of the crime of child-murder would be prevented. For this purpose a turning box was fixed in an opening of the wall in a retired part of the villa of the mother of S. Spirito in the mother in the night and a bell being rung at the same time, the watch inside turned the box and took the infant, which from that moment was placed under the protection of the institution, was nursed and educated, and afterwards apprenticed to some trade or profession for those parents who were in hopes of being able to acknowledge their child at some future time, placed a mark or note with it, by which it was afterwards known when they came to claim it, and it was then restored to them on their paying the expense incurred for its maintenance.

In France the philanthropist Vincent de Paul, the founder of the Society of the Missions in the first half of the eighteenth century, exerted himself to found an asylum for foundling children, where they might be构件 in the streets of Paris. It was at first supported by private subscriptions, but afterwards was made a national establishment—Hôpital des Enfants trouvés. Similar institutions were founded in other great French cities. In 1831 the number of illegimate children was 56 out of every 100 are abandoned and taken into foundling asylums and hospitals, where nearly two-thirds of them die before they are a year old. (Guerry, Statistique Morale de la France.) Mortality appears to be very great in most founding hospitals of the continent, owing to carelessness, sickness, overcrowding, or want of the necessary appliances. The number of illegitimate births in Paris has greatly increased over all Europe, and the foundling hospitals fill up every year about one-thirteenth of the whole number of births; but in Paris the proportion is much greater, being one illegitimate child in every three births. Of the whole number of illegitimate children, about 56 out of every 100 are abandoned and taken into foundling asylums and hospitals, where nearly two-thirds of them die before they are a year old. (Guerry, Statistique Morale de la France.) Mortality appears to be very great in most founding hospitals of the continent, owing to carelessness, sickness, overcrowding, or want of the necessary appliances.

The principal objection that has been raised against founding hospitals is, that they tend to encourage profligacy and immorality. On the other side, the foundlings are supposed to have the effect of preventing in a great measure child-murder. The whole of this question, in all its bearings, is extremely difficult to solve. One distinction ought to be made, namely, that certain countries like the United States, in which there is no legal provision for the poor, founding hospitals appear to be more necessary, or at least less objectionable, than in those where the mothers of illegitimate children, if unable to support them, have, like other destitute persons, the resources of the parish poor-house. It must also be observed that mothers of illegitimate children often neglect their unfortunate offspring, and are ill calculated by their habits to rear them up so as to make of them useful and honest members of society.

Mountaints are jets or jets of water, flowing either naturally out of the earth, or from structures formed by art. Artificial fountains consist of water flowing from statues, vases, or architectural buildings combined with sculptured figures and other ornamental decors. Many fountains are decorated with fountains. Pausianus informs us that Corinth was adorned with several fountains, and he mentions one in particular which stood near the statue of Dana, representing Pegasus, with the water flowing through his feet (ii. 2, 5). He mentions another as consisting of a large basin from which a stream descended into a dolphin, from the mouth of which the water issued (ii. 2, 8). Francius, who lived in the reign of Nerva and Trajan, was superintendent of the fountains at Rome, and wrote a work, "De Aqueducibus Urbis Romae," which dealt with the subject. Another work, "De Aqueductibus," was written in the same period by a different author. 3D2
waters of fountains. The public fountains of Pompeii, some of which are almost perfect, evince the knowledge which the ancients possessed of the property of water to rise to its level, and their practical application of the principle.

Not only were the streets, but even the private houses of the Pompeians, decorated with fountains; and it appears that the ancients were acquainted with that law by which fluids may be made to ascend in a vertical jet to a height proportionate to the pressure which actuates them.

One of the domestic fountains of the Pompeians is enriched with coloured glass and shells. The fountain of water flowed from a large mask set on steps, placed within a large niche.

At Rome, the proper distribution of the rivers which flowed through her aqueducts was a matter of great importance, entrusted to the care of an officer of very high rank. It appears from Frontoinus, who filled that office under the Emperor Nerva, that the letting out of the public Waters to private persons was a source of revenue; and from his numerous complaints of fraud, and directions to prevent it, we learn something of the manner of distribution. The aqueducts were each charged with a certain number of pipes of supply; and no new pipe could be inserted without a special application to the emperor. Permission being obtained, the overseer assigned to the applicant a calix, as it was called, of the assigned dimensions. This was a brass measure (modulus) fixed in the castellum or reservoir, the diameter of which regulated of course the quantity of water which passed through it. It was ordered to be made of brass, that it might not easily bend, and that there must be less room for fraud, either on the public or the individual, by enlarging or diminishing the prescribed aperture.

Beyond the calix the pipe was private property; but more effectually to prevent fraud, it was encased, that for fifty feet from the calix the pipe and it were to be of the same dimensions; and to prevent the breaking up of the public pipes, it was expressly provided that every person should draw his water direct from one of the castella, or reservoirs in which the aqueducts terminated. The right to a supply of water was strictly personal, not attached to houses, so that the supply was cut off at every change of ownership. The waters which had once been granted were sold by the superintendents, as they fell in, to the highest bidders.

Those whose means or interest were insufficient to obtain a private pipe, were obliged to fetch water from the public fountains. (Pompeii, vol. ii. pp. 73, 74.)

The number of leaden pipes found in Pompeii leads us to conclude that they were universally employed in fitting up the fountains of that city. Some fountains flowed through bronze figures, of which several are preserved in the Museum at Naples.

Some of the cities of Italy and the East are adorned with fountains, which are not so agreeable to the eye than useful to the inhabitants. Of all places in the world none appear to be so handsomely furnished with fountains as the convenience as modern Rome, though this profusion is most probably only a tithe of the luxury with which the ancient city was supplied. Many of the fountains of Rome are highly decorated, of great magnitude, and very varied in their form. Many of them supplied the water of the existing aqueducts. The fountains of Trevi, and the Pauline fountain at San Pietro in Montorio, are immense piles of architecture, the former highly decorated with sculpture. In Italy, almost every species of design with which imagination can form has been adopted by their ingenious artists in the construction of fountains.

The city of Paris is well supplied with fountains, many of which are elegantly designed. The fountains of Versailles and St. Cloud in France, and the fountain of the hotel of Richelieu near Cassel, are the largest in Europe. London, though well supplied with water, is almost destitute of fountains.

FOURCROY, ANTOINE-FRANCOIS DE, an eminent French chemist, councillor of state, commander of the legion of honour, member of the Institute, and of most of the academies and scientific societies of Europe, professor of chemistry at the Museum of Natural History, at the Faculty of Medicine of Paris, and at the Polytechnic School, was born at Paris, on the 1st of June, 1735, and was the son of Jean-Michel de Fourcroy and Jeanne Lauzier.

His family had long resided in the capital, and several of his ancestors had distinguished themselves at the bar. Antoine-Francois de Fourcroy sprang from a family that had gradually sunk into poverty; and his son, the subject of the present article, grew up in the midst of it. When seven years old, he lost his mother, and his sister preserved him with difficulty till he went to college; and in consequence of the ill treatment which he left at fourteen years of age, somewhat less informed than when he went to it.

He entertained various projects for obtaining a livelihood. While uncertain what plan to follow, the advice of M. D'Arver, who was a celebrated lawyer, and a friend of his father's, induced him to commence the study of medicine; and after successfully struggling against every kind of difficulty, he at last obtained the necessary qualification to practise in Paris.

The life of Fourcroy did not evince any peculiar predilection for any particular branch of science; he wrote upon natural history, anatomy, and chemistry; he published an 'Abridgment of the History of Insects,' and a Description of the Bourse Museum of the Tendons; and in consequence of the celebrity which he acquired by the last-mentioned performance, he was admitted as an anatomist into the Academy of Sciences in 1785.

After the death of Mecquere, which happened in 1784, he succeeded to the chair of professor of chemistry at the Jardin du Roi, which he continued to fill for nine years such took place 25 years afterwards. He was greatly admired for the eloquence with which he delivered his lectures, and the writer of this article was a witness of his great flow of language and the fluency of his discourses. He was of the highest estimate by his contemporaries.

In 1795 he was elected a member of the National Convention, but notwithstanding his reputation for eloquence he never opened his mouth in the Convention till after the death of Robespierre: prudential motives induced him to remain silent, and it was not till the last days of the tyrant's reign that he ceased to speak. In this period he was well known to be a determined enemy to the old order of things, from which indeed his father and himself also had severely suffered.

After the 9th Thermidor, when the nation was wearied with destruction, and efforts were made to re-establish institutions which had been overturned, Fourcroy began to acquire influence, and he took an active part in whatever related to the establishment of schools, whether of me-
phosphate of magnesia in the bones, of phosphorus in the brain, and in the milks of flies, and a considerable quantity of saccharine matter in the bulb of the common onion, which, by undergoing a kind of spontaneous fermentation, was converted into manure.

In these and most other similar discoveries which we think it unnecessary to notice, we do not know what fell to the share of Fourcroy and what to Vaquelin; but there is one merit at least to which Fourcroy is certainly entitled, and it is no other than that he was the first to have shown to the world that the iron which is formed from the rust of iron is not iron in the same state as that found upon the surface of the metal, but an iron more oxidised, and he thus proved to him ever after a most steady and indefatigable friend. This is bestowing no small panegyric on his character; for it would have been impossible to have retained such a friend through all the horrors of the French revolution, if his own talents had not been such as to merit so steady an attachment.

In concluding, we may remark that this circumstance, coupled with the well-known fact of his having saved the lives of some men of merit, and among others, of Darel, and to a great extent Fourcroy of the Academy of Sciences which has been made against him of having contributed to the death of the illustrious Lavoisier. This acquittal is rendered complete by the annexed declaration of Cuvier in his Eloge of Fourcroy, in which, in the rigorous researches which we have made, he had found that the man had had the courage to visit that city so horrible, no human power could have induced us to sully our mouths with his Eloge, or to have pronounced it within the walls of this temple, which ought to be no less sacred to honour than to knowledge.

FOURIER, JOSEPH. The biographical part of this article rests on the authority of M. Cousin's notes to his Eloge of Fourier (Paris, 1831).

Joseph Fourier was born at Auxerre in 1768; he was the son of a tailor in that town, and received his education at a school directed by the Benedictines. Into this order he was about to enter, and had passed a part of his novice, when the Revolution commenced. He had applied himself very early to the mathematics, and had gained such a reputation that he was appointed professor at the school which he had formerly studied. He had not confined himself to one branch of learning, as appears from his giving courses of history, rhetoric, and philosophy. Before this time, in 1787, he had sent to Paris a memoir on the theory of equations to be communicated to the Academy of Sciences. This memoir contained the first steps of the theory which was afterwards published: it was lost during the Revolution, but a sufficiently authenticated copy exists.

Fourier took some part in the civil troubles, at the commencement, and was chosen to be one of the Committee of Public Safety at Auxerre. He was more than once the object of proscription, having been twice either saved or delivered from prison by his follow-townsmen of Auxerre, once saved from the guillotine by the death of Rochefort, and his interference, the interference of the Revolutionary Committee of Public Safety. Having previously been a pupil of the École Normale, he was appointed a sub-professor of the Polytechnical School in 1794, and remained in that post till 1798. In the latter year Monge proposed to him to accompany him, on the expedition to Egypt. These expeditions in that country were various: he was secretary of the Institute which was formed at Cairo, he superintended the commission which was employed in collecting materials for the great work on Egypt, and was employed at the same time to make his diplomatic capacities. At his return from Egypt he was appointed by the first consul prefect of the department of Isère, which place he continued to fill till 1815, his situation having been preserved to him at the fall of Napoleon in 1814, by the high estimation in which he was held, and the good name of the family of the man whom he had served. When Napoleon, in 1815, passed through Grenoble (a town of Fourier's prefecture), Fourier, who had hesitated much, issued a moderate Bourbonist proclamation, and left the town by one gate as Napoleon entered by another. No orders were given to either; Naples was engaged at this step, and causing Fourier to be brought into his presence, reminded him in strong terms of former benefits, and telling him that, after the proclamation, he could not remain at Grenoble, appointed him prefect of the department of the Rhône. Fourier was not very well softened by the matter, or subdued by the manner, of Napoleon's address to him, and went quietly to his new post. He resigned it however on the 1st of May, in consequence of his determination not to execute the orders of Carole, which required him to make numerous arrests among the Bour-
bonites; and he was in Paris when the news of the battle of Waterloo arrived. Here he remained for some time, entirely neglected, and with very moderate funds, until his former pupil, M. de Chabrol, gave him the superintendence of a bureau de statistique. In 1816 he was chosen a member of the Academy; but Louis XVIII. confined him to the election, and it was not till a year after that this king could be induced to allow it. On the death of Delambre he was chosen secretary of the Academy, and on that of Laplace president of the council of the Polytechnic School. Fourier died at Paris in May, 1839.

The character of Fourier was in every point of view respectable. His appearance and manners were decidedly good, and his address, united with the respect which he created, enabled him to manage the prejudices and passions of the people, and to lead them, as he wished, in the direction of his own. His whole life was a long and continuous series of successes. In several instances. He knew how, says the last-named gentleman, 'prendre chaux par où il était pénable'; and his own explanation of this faculty was 'je prends l'épine dans mon sein, au lieu de la prendre à rebours.' The influence of Fourier was no less extraordinary in its way than the rare and remarkable effects: it was he who first gave a taste for Egyptian antiquities to the Champs-Élysées.

The writings of Fourier consist of papers in the Memoirs of the Academy of Sciences, the Annales de Physique, and the Revue Scientifique; as well as of two separate works, namely, the Théorie de la Chaleur, Paris, 1822, and the Analyse des Équations déterminées, Paris, 1831. The last work is posthumous, and was completed under the supervision of his son.

In Fourier's second works, the object of which is the deduction of the mathematical laws of the propagation of heat through solids, Fourier extended the solution of partial differential equations, gave some remarkable views on the solution of equations with an infinite number of terms, expressed by means of a function by means of a definite integral containing its general value (which is called Fourier's Theorem), &c.

This work is full of interesting details, and is one of the highest productions of analysis of our age.

The latter of the two works contains an extension of Descartes' well-known rule of signs, by means of which the number of the real roots of an equation may be determined. Considered with respect to results merely, the method of Fourier may perhaps be considered as unappreciated by the remarkable theorem of M. Sturm; but there is nevertheless much in the course marked out by Fourier, which it would be worth while to examine. The work also contains a method of solving equations by determination of the successive roots, and one which is not to be overlooked. Mr. Horner and others.

The preface of M. Navier contains attestations to the time at which the several parts of the work were written, which it is well to be while the whole of those to consult, who think that 'all which has been done by Fourier is done by others long before.'

The treatise of Fourier, published by M. Navier, is only the first part of the work: the remainder has not yet appeared, to our knowledge. A full account of its principal points will be found in Mr. Peacock's report on Analysis to the British Association.

FOURMONT, ETIENNE, born at Hesbaye, near Paris, in 1663, was the son of a surgeon: he studied in several colleges at Paris, and showed an early and extraordinary facility for learning languages. He made himself master of the Hebrew, Ethiopic, and Arabic, and was appointed professor of the last-mentioned language in the College Royal of Paris. In 1715 he was a member of the Academy of Inscriptions and Belles Lettres, and afterwards of the royal society.

A young Chinese named Hoan-ji having been brought to Paris by the missionaries, Fourier was appointed to assist and direct him in the compilation of a Chinese grammar and dictionary. After a few years Hoan-ji died, and left to Fourier a notable inscription, which he had cost him twenty years of study: 'Lingue Sinaram Mandarinum Grammatica duplex, Latine et eun Caracteres Sinencens,' fol. 1742. Fourier availed himself of the suggestions of several Jesuits, and he is said to have borrowed from Father Vario's Arte de la Lengua Mandarina,' printed at Canton in 1703, which was little known in Europe. He also compiled a catalogue of the Chinese MSS. in the king's library at Paris. Peter the Great having forwarded to the Academy of Inscriptions some fragments of a Tibetan MS. found by the Russian traveller, Fourier doubtless discovered it, and his version of it is in Boyer's 'Museum Sinicum.' His Reflections sur l'Origine, l'Histoire, et la Succession des Anciens Peuples, Chaldeens, Hebreus, Phéniciens, Egyptiens, Grecs, &c., jusqu'aux tems de Cyrus,' were published after his death in 1776, both in Latin and in French, Paris, 1745.

FOURMONT, MICHEL DE, was a French Jesuit, born in 1699, exhibited also a facility for learning languages; he assisted his brother in his philological labours, was made professor of Syriac in the College Royal in 1729, and he gave also from his chair lectures on the Ethique language. In 1737, being sent to Greece for the education of the young king of that country, he purchased MSS. and copy inscriptions, he gathered a rich harvest of both. He boasted of having copied more than 1000 inscriptions, chiefly in Attica and the Peloponnesus, and had their copies sent to France. He was a constant companion of the young king. His letters to Freret and Count Malpeaux, Fourier boasts of having defaced or destroyed the remains of antiquity of several cities of Greece, and among others those of the temple of Jupiter at Anyaeas, a boast as unmanly as it is false, or at least absurdly exaggerated. (Dowell, Four through Greece, vol. ii. ch. 11.) He died in 1746, having published only some detached papers in the 'Memoirs of the Academy of Inscriptions,' of which he was a member. His nephew, Claude Louis Fourier, who had accompanied him to Greece, returned to the Levant, and remained several years in Egypt. On his return to France, he published a 'Description historique et géographique des Plaines d'Heliopolis et de Memphis,' 12mo. 1755. It is a sensible, unperturbing little work, and gives a satisfactory account of the condition of Egypt at that time. It is a valuable work for its time.

FOURNIER. [CREEKER, Vol. viii. p. 149.]

FOURTH, an interval in music, and to be enumerated among the discords; though it seems to have puzzled many writers on music, some of whom are much inclined to view it as the true interval of a fourth. (Gower.) There are three kinds: the Diminished Fourth, the Perfect Fourth, and the Extreme Sharp, or Superfluous Fourth (called also the Tritonus, from being composed of three whole tones). The first (c e) is composed of a whole tone and two semitones: the second (c e) of two whole tones and a semitone; and the third (c e) of three whole tones.

Example:---

FOVOLIA. [MEDUSA.]

FOVOLIA, PITTORE, of Cremona and Bologna, is famous for his 'Imitation of Insects,' and his work on falconry. 'In Latin this his treatise is named Avium Aureum, liber i, ad Franciæ Medici Florent. et S. Pauli Ex cinpsm, 4to. Flor. 1686. Olima's Velicellia, 4to. Rom. 1684, is another work on falconry, the plates of which, representing the different modes of following the sport, are extremely curious. Of Gentlemen's Recreation, fol. Lond. 1666 and 1716; and The Experienced Falconer, or the Gentleman's Recreation, 15mo. Lond. 1704.

FOX, Fulper,Brasson, the generic name for a species of
that subdivision of the great genus Canis which has the pupils of the eyes elliptical or almost linear by day, though they become round by night of the hours of darkness.

Genus Vulpes. Although the dental formula and general osteological character of the Foxes agree with that of the true Dogs, the lengthened and sharp-pointed muzzle, the round head, the erect and triangular ears, the form of the pupil, the long, short limbs and elongated, thick, and bushy brush, constitute differences which separate the former from the latter, at least sub-generically.

European Foxes. The Common Fox, Vulpes Vulpes, of Hay, vulpes vulpes (the latter variety, if variety it may be called, with the tip of the tail black) of Linnaeus, Vulpes vulpes vulgaris of Brissol, Vulpes of the Italians, Rapaio of the Spanish, Rapoao of the Portuguese, Fuchs of the Germans, Fox of the Dutch, Rah of the Swedes, Ren of the Danes, Tod of the Scotch, Linyogn, fam. Linyonges of the Welsh, is too well known to require description. The time of gestation may be taken at from sixty to sixty-five days, and the birth of the young takes place in April. In a year and a half they are full size, and may have been hewn to live thirteen or fourteen years; but as this can only have been ascertained, observes Mr. Bell, of individuals in confinement, it is very probable that, in state of nature, it considerably exceeds that period. Of its cunning much has been said, and as it is a species possessing a field of importance, we shall find some interesting remarks on the habits and economy of the common fox by Dr. Weissenborn in the number of London’s Magazine, (N. S.) for October, 1837.

Geography. — The common Fox inhabits, according to Linnaeus, Europe, Asia, and Africa. * Cuvier mentions it as reaching from Sweden to Egypt, both inclusive. Mr. Strickland notes it as occurring near Smyrna. The fox named Melanogaster by the Prince of Musignano in his Flora Italica is probably a variety only. The strong smell proceeding from the anal glands and urine of the common fox is very offensive.

American Foxes. The American Fox, Vulpes fulva, which is, according to Dr. Richardson, very plentiful in the wooded districts of the far countries, about eight thousand (skunks) being annually imported from England from thence, bears a strong resemblance to the common European fox, and, until De Beauvois pointed out its peculiarities, was considered identical with it. Thus it is the European Fox of Pennant. Dr. Richardson observes that the American or Red Fox does not possess the wise and sagacious character, its strength being exhausted by the first short burst, though it runs and sprints with a great deal of speed, with yards great with swiftness, and is soon overtaken by a wolf or a mounted huntsman. He gives the following synonyms:—European Fox of Pennant; Red or Large Fox of Hudson’s Bay Company’s lists; Beislachki of the American; Renard de Virginie of Palsot de Beausou; Canis fulus of Desmarées; Red Fox of Sabine (Franklin’s Journal), and Makkeeshew of the Cree Indians.

Dr. Richardson is inclined to adhere to the opinion of the Indians in considering the Cross Fox of the fur traders (Renard barb) or Trinantontone of Sagard Theodat; European Fox, var. b. Cross Fox of Pennant; Canis decussatus of Geoffroy, Sabine, and Harlan; Cross Fox of the Hudson’s Bay Company’s lists; Beislachki of the American; Renard de Virginie of Palsot de Beausou; Black or Silver Fox of Godman; Tschernoburi of the Russians to be another variety of the same. F. Cuvier doubts the identity of the American species with the Black Fox of the north of Europe.

Our limits will not permit us to give more than a few examples of the genus, and we select the Arctic Fox, Vulpes Lagopus, as the American species of whose manners the most interesting accounts have been given.

Description. — The Arctic Fox, as described by Dr. Richardson to be identical with the Pied Foxes of James; Canis * With regard to its inhabiting America, see the concluding paragraph of the section relating to American Foxes.

Lagopus of Linnaeus and Forster, Captain Sabine, Mr. Sabine, Dr. Richardson, and Dr. Harlan; Arctic Fox of Pennant and Hearne; Greenland Dog of several authors a young individual; Isatis and Arctic Fox of Godman; Stone Fox of authors; Terranova-Arico of the Esquimaux of Melville Peninsula; Terniark of the Greenlanders; Wapppesheeko- makwasehow of the Cree Indians, and Pusin of the Innuians.

Winter Dress. — The winter dress of the Arctic Fox, which when full grown measures about 3 feet 3 inches from the point of the nose to the tip of the tail, is entirely pure white, or with a slight tinge of yellow, except at the tips of the tail, which are a dark brown. Before the eyes and on the lower jaw, the hair is short and sleek; on the forehead and posterior part of the cheeks considerably longer; and on the occiput and neck it is as long as the ears, and intermixed with a soft wool or down. There is a purple spot on the body that it gives the fur the character of that of the Polar hare. The ears are rounded and covered with shorter hairs than the neighbouring parts; the shortest hair is on their edges, and terminal heads on the back and front of the ear, to give the appearance of having been cut with a pair of scissors and make the ear look thicker than it is. The long fur on the back part of the cheeks is directed backwards and contributes to give a peculiar cast to the face, and a snout very much like that of the Polar hare. The vibrissae about the mouth are very strong, and in some specimens nearly white, in others dusky-brown. The hair on the body, particularly on the sides, is long; it is rather longer on the belly than on the back, but not so close and woolly, and more denser and longer still on the hairy pads of the shoulders and thighs long; but the foreparts of the legs are covered with short hair, and that on the hind-legs is shortest and smoothest; on the hinder surface of the legs the hair is longer, and the soles of the feet are clothed with some dirty-white hair, long and shaggy like that of the hair which is on the Linnaean name. Claws long, compressed, slightly arched, and of a light brown-colour. (Dr. Richardson.)

Summer Dress. — The long white hair which formed the winter clothing falls off in April or May, when the snow begins to disappear; it is replaced by shorter hair which is more or less coloured.

Head and chin brown, having some fine white hairs scattered through the fur; ears, externally, coloured like the head; within white; on the lower colour extends along the back to the tail, and from the back is carried around the outside of all the legs, but, on the latter, a few white hairs are intermixed; the whole under parts and the insides of the legs are dingy-white; the tail is brownish above, being tinged with white; and the base of the hair is black; the lower part of the hair is yellow-white, and the Linnaean name. Claws long, compressed, slightly arched, and of a light brown-colour. (Dr. Richardson.)

Food. — Eggs, young birds, blubber, and carrion of any kind; but their principal food seems to be a variety of different species. (Dr. Richardson.)

Habits. — Extremely cleanly. It never soils its habitation, nor has it any unpleasant smell. Breeds on the sea-coast, chiefly within the Arctic Circle, the most unsuspicious and easily taken by traps, even, as it is stated, the most wary in its presence. Captain Lyon, R.N., received fifteen from one trap in four hours. It is gregarious, forming burrows in sandy spots, twenty or thirty together. Dr. Richardson saw two of these fox villages on one like those of the Canadian hare. Soon becomes tame in confinement, and is eager to hide its food as soon as it obtains it, even when there seems no danger of losing it. Snow is the material generally used for this purpose, and when piled over the food is forthwith covered with snow to a depth of 6 to 8 inches. 'The Arctic fox,' writes Captain Lyon, 'when no snow was attainable, gather his chin into his mouth, and in that manner carefully coil it so as to hide the meat. On moving away, satis-
afterwards receive remunerations from the northward and their numbers almost exceed credulity. Many are captured there by the hunters, and the greater part of the survivors cross the Churchill River as soon as it is frozen over, and thence proceed to the Northern and Severn Rivers. In like manner they extend their migrations along the whole Labrador coast to the Gulf of St. Lawrence.

**Utility to Man.**—The fur is considered to be of as much value in summer as in winter, but the flesh is said to be good for particular purposes when young. Captain Franklin and his party compared the flavour of the young animal to that of the American hare. Captain Lyon thought it resembled the flesh of a kid. Captain Sir John Ross's party that taken from their own equation, I could notfail to kill him, but confined on deck in a small hutch with a scope of chain. During the first day, finding himself much tormented by being drawn out repeatedly by his chain, he at length, whenever he retreated to his hut, took this carefully up in his mouth, and drew it so completely at after him, that no one who valued his fingers would ever at take hold of the end attached to the staple.'

Captain James Ross, in his Appendix to Captain Sir John Ross's last voyage, gives the following account of the Arctic Fox (Canis lagopus, var. fuliginosus). In the outer cell, and in several passages leading to it, we found great numbers of the two species of lemming, several ermine, and the bones of hares, fish, and ducks in great quantities. Four of the young foxes were kept alive till the end of the following winter, and were a great amusement to our crew by their frolicking, as they soon became very tame. They never attained the pure white of the old fox, a dusky lead-colour remaining about the face and sides of the body. There is a remarkable difference in the disposition of these animals, some being easily tamed, others remaining savage and untractable, without the kindest treatment. The females are much more vicious than the males. A dog-fox that lived several months became so tame in a short time that he regularly attended our dinner-table like a dog, and was always allowed to come large about the cabin. A pair, kept for the purpose of watching the changes of their fur, threw off their winter dress during the first week in June; the female a few days earlier than the male. Towards the end of September the brown fur of summer gradually became of a more ashy colour, and by the middle of October was so feebly white: from that period it continued rapidly to increase in thickness until the end of November, when the last of the two died, having lived in confinement nearly ten months.

**Geographical Distribution.**—The highest northern latitudes throughout the winter. The young generally migrate to the southward late in the autumn and collect in vast multitudes on the shores of Hudson's Bay: they return early the following spring along the coast to the northward, and seldom again leave the spot they select as a breeding-place.' (Captain James Ross.) 'Their southern limit in North America appears to be about lat. 50°. They are numerous on the shores of Hudson's Bay, north of Churchill, and are found at Bering's Straits; but the brown variety (fuliginosus) is the more common in the latter quarter.' (Dr. Richardson.)

The Doctor continues thus:—Towards the middle of winter they retire to the southward, evidently in search of food, keeping as much as possible near the coast; and, passing by the mouth of the river, they are seen in winter, and then not in numbers; they are very scarce in lat. 61°, and at Carlton House, in lat. 53°, only two were seen in forty years. On the coast of Hudson's Bay, however, according to Hearne, they arrive at Churchill, lat. 59°, about the middle of October, and

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*Zoologists generally agree that the Sooty Fox, or Arctic Fox (Canis fuliginosus), is only a variety of the same animal described and figured.*

Dr. Richardson remarks that M. F. Cuvier and M. Borel de Marsens, who admit and describe the American red fox (Vulpes fulva) as a distinct species, state the Common Red Fox of Europe to be also an inhabitant of North America. Dr. Richardson remarks that it does not exist in the central north of Canada lying to the eastward of the Rocky Mountains, and consequently did not come under his notice in the expeditions to which he was attached; but he admits into 'Fauna Boreali Americana,' as being most probably an inhabitant of New Caledonia; and Dr. Kalm remarks that he had two different accounts of their coming over. Mr. Barrows and several others, were told by the Indians that these had come into America soon after the arrival of the Europeans after an extraordinary cold winter, when all the foxes were frozen and frozen. But Mr. Evans and some other persons, assured Kalm that it was still known by the people that a gentleman of fortune in New England who had much inclination for the chase, brought over a great number of foxes from Europe, and let them loose in his terraces at New York, but that they were entirely the same with the European sort, considers neither of these accounts trustworthy. Dr. Godman remarks that these red foxes were numerous in the middle and southern States of the Union, and were to be found near the depredations of poultry-yards. Dr. Richardson thinks it probably
that an investigation into the characters of the American foxes will show that the reddish fox of the Atlantic States is a variety of the Canis cinereus, which has been mistaken for the European fox.

**African Foxes.**

The species are numerous, but our limits not permitting us to enter at large into a history of them, we select as an example the Caama, *Canis (Vulpes) Caama*, the smallest of the South African foxes. Dr. Smith, in his Catalogue to the South African Museum, from a specimen in which our figure is taken, observes, that some few individuals are to be met with within the limits of the colony, but that the favourite residence of the species seems to be to the northward; though there it is daily becoming less and less numerous, owing to the skins being much in request among the natives as a covering in the cold season. Many of the Bushmen, it is stated, find their sole employment in hunting these animals with dogs or snaring them. Like other foxes, it is a great enemy to birds which lay their eggs on the ground; and it is suspiciously watched by the ostrich in particular during the laying season. The Caama, when he succeeds in obtaining the eggs, pushes them forcibly along the ground till they come in contact with some substance hard enough to break them. The ostrich approaches to drive away the supposed fox, and is shot by the concealed hunter. (Catalogue of the South African Museum.)

**Canis Caama.**

**Asiatic Foxes.**

As examples of the Asiatic foxes we select the small Indian insectivorous fox (*Canis Bengalensis* of Shaw), which Mr. Hodgson notes among the mammalia of Nepaul, as occurring in the Tarsi. It is brown above, with a longitudinal black band. The space round the eyes is white, and the tail is terminated with black.

The *Fox* of the Dukhan (Decuan), *Kobree of the Mahrattas*, *Canis Kobree of Sykes*, which the Colonel considers to be new to science, although it much resembles the descriptions of the *Corac*, is described by him (Zool. Proc., 1851) as a very pretty animal, but much smaller than the European *Fox*. Head short; muzzle very sharp. Eyes oblique; trider nut-brown. Legs very slender. Tail trailing on the ground; very bushy. Along the back and on the forehead fawn colour, with hair having a white ring near to its tip. Back, neck, between the eyes, along the sides, and half way down the tail, reddish-grey, each hair being banded with black and reddish-white. All the legs reddish outside, reddish-white inside. Chin and throat dirty-white. Along the belly reddish-white. Ears externally dark-brown, and with the fur so short as to be scarcely discoverable. Underparts of the eyelid black. Mustard red. Length 22 and 22½ inches; of the tail 1½ to 12 inches (Sykes).

The *Canis Himalucus*, *Hill Fox* of the Europeans in the Oon, in Kumaon, and the more western and elevated parts of the mountains, described by Mr. Ogilby in the *zooloical* part of Mr. Royle's 'Flora Himalica,' is greatly admired for the beauty of its form and the brilliancy and variety of its colours. The whole length to the origin of the tail is 2 feet 6 inches; that of the tail 1 foot 6 inches; that of the ears 4 inches; and the height is stated at about 1 foot 4 or 5 inches. The former agrees with the common European, and American foxes (*C. vulpes* and *C. fulves*), in the black marks on the backs of the ears, and in front of the hind and fore-legs. The coat consists of long, close, rich fur, as fine as that of any of the American varieties, and of infinitely more brilliancy and varied colours, with M. Royle's note at Mussooree in its winter dress. Mr. Hodgson notes it as a large *Fox* N. S.? peculiar to the Kachar. For details we refer the reader to the interesting work above mentioned, and the Zool. Proc. for 1836, p. 103.

**Fennec.**

This animal, which has given rise to much controversy, is generally placed by the French zoologists among the *Foxes*; but the observation of Mr. Tarroll, to which we shall presently allude, lead him to pronounce decidedly that the Fennec appears to him to belong to the genus *Canis* properly so called; the osteological part of the structure closely resembling that of the dog, and the pupil of the eye being circular. We observe the description of the first good figure of the animal, and in the Appendix to his travels is a very luminous history and description of it, as far as the information went at the time of its publication.

The *Fennec* obtained by Bruce when he was consul-general at Algiers, and brought to me, was described by him as being in the territories of Beni Mezzab and Wergal, where the date grows. In these districts the Fennecs are hunted for their skins, for which there is a market at Mecca, whence they are exported to India. Bruce, after leaving Algiers, bought two more Fennecs, one at Casablanca, the latter being somewhat redder than the former, and is brought by the Fezzan caravan to the island of Gerba, and thence to the place where Bruce procured it; the other at Sennaar, and he knew not whence this last came. Both these resembled the first, and were called Fennecs. The Fennec which Bruce had at Algiers lived for several months, and when he left that place he gave the animal to Captain Cleveland, R.N., who presented it to Mr. Brandeis, the Swedish consul. His favourite food consisted of dates or any sweet fruit; but he was also very fond of eggs. He would eat bread when hungry, more especially if it was rendered palatable by honey or sugar. The sight of a bird aroused him to eager watchfulness as long as it was present; and a cat was his aversion. He would endeavour to bite from the hand by which he was held, and has a disposition to resist or defend himself. The animal was not very fond of water by day, but as night came on it became restless to excess. Bruce never heard it utter any sound. He says that the animal is described in many Arabic books under the name of "El Fennec," which appellation is known all over Africa; and he conceives that the word is derived from the Greek *phennikos*, a palm or date-tree, adding that the animal builds his nest on trees, and does not burrow in the earth.

**Description of Bruce's Fennec.—Length about 10 inches; tail 5½ inches, near an inch at the tip being black. From the point of the fore-shoulder to that of the fore-toe 2½ inches; from the occiput to the point of nose 2½ inches. Ears erect, 3 inches in length, 1½ inch in breadth, with a rounded tip or fold at the inner part, thick and soft, covered with black and white hair, the inner borders of the ears being of a silver tone. The hair on the top of the ears was thickly covered with soft white hair, but the inner part was bare, and of a pink or rose-colour; interior cavity very large. Pupil of the eye large and black; iris deep blue. Whiskers strong and thick. Nose sharp at the tip, black and polished, with the superior border, and between the cutting teeth in each jaw; those in the under jaw smallest; two long, large, and exceedingly pointed canines in each jaw; molars four on each side above and below. Legs small; feet very broad, with five toes, armed with crooked, black, and sharp claws on each; the tail not more crooked and sharp than those behind. Colour of the body dirty-white, bordering on cream-colour; the hair on the belly rather whiter, softer, and longer than that of the rest of the body; look, sly, and wild.**

*Lacépéde* is said to have given the animal the generic name of *Fennecus*. Illiger describes it under the appellation of *Megalictis*, placing it in his order *Forcalata*, immediately before Canis and Hyena, and gives the number of molars in each jaw as six, but without quoting any authority.

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Spermian makes the Fennec the species he has called Zerda, and a little animal found in the sands of Cambèda, near the Cape of Good Hope: after him, Pennant and Gmelin named the animal Canis Cerda. Branden considered it as a kind of fox, but Blumenbach inclined to place it among the Viverma. Geoffroy St. Hilaire, holding Bruce's description to be inaccurate and imperfect, supposes the Fennec to be a Galago; but Desmarest, like Illiger, gave it a position in the Dietrigeades in the order Carnivora. Cuvier, in his 'Regnie Animal,' speaks of the animal doubtfully and loosely.

Mr. Griffith figures two animals, both, according to him, belonging to the genus. One from the Cape of Good Hope, and is in the Paris Museum; where Cuvier named it Canis Megalolotis: and Desmarest has described it in his Mammalogie. (Encyc. Meth. Supp., p. 538.) This is called by Col. Hamilton Smith, who made the drawings of both, Megalolotis Lutcheri, to distinguish it from Bruce's Fennec. The other is from the interior of Nubia, and is in the Frankfort Museum. The first of these is as large as the common fox, and differs altogether from Bruce's Fennec. Col. Smith considers the second to be Bruce's animal.

M. Leuckart, having figured it himself, saw the Frankfort animal which had been drawn by Col. Smith, and recognised it as the true Zerda; and M. Temminck, in the prospectus of his 'Monographies de Mammalogie,' announced it as belonging to the genus Canis. M. Leuckart, however, joined him, and would suppress the generic terms Megalolotis and Fennecus, because, in his opinion, the animal very obviously belongs to the genus Canis, and to the subgenus Vulpes, the number of teeth and their form being precisely the same as those of the dog, to which it bears in general resemblance in size, number of the toes, and form of the tail, and the principal difference lying in the great length of the ears and the general smallness of the animal.

**Description of Major Denham's Fennec (Fennecus Cerdo).**

Dental formula: - 6 In cisors | 6 Canines | 1 Molars.

7 7 Length of head from extremity of nose to occiput (inches) 3 inches; breadth between eyes 6 6; length of ears 3 inches; widest breadth 2; breadth of cranium between the ears 3; length from occiput to insertion of tail 11; tail 6 inches; height of head above the shoulder, 6 inches; height behind to top of back, above loins, 7 4; breadth of extremity of nose 1 1; length of middle claws of forefeet 0 4; external claws 0 4; middle and external claws of hind-feet 0 9. General colour white, slightly inclining to straw-yellow; the nose from the occiput to the insertion of the tail very light rufous-brown, delicately pencilled with fine black lines from thinly scattered hairs tipped with black; the external of the thigh lighter rufous-brown; chin, throat, belly, and inferior of the thighs and legs, white or cream-colour. Neck pointed and delicate at the point, covered, above and below, with very short white hair; inclining to rufous, with a small irregular rufous spot on each side beneath the eyes; whiskers black, rather short, and scanty; back of head pale rufous-brown. Ears very large, erect, and pointed, covered externally with short, pale, rufous-brown hair; in front very thickly fringed on the margins with long, greyish-white hairs, especially in front; the rest of the ears internally, bare; externally, folded or plated at the base. Tail very full, rufous-brown, pencilled with fine black lines on the back, deeper above than below, while on the upper side, a small dark brown spot at an inch below its insertion on the upper side; ends of the ears at the extremity of the tail black, forming a black tip about three quarters of an inch long. Anterior feet pentadactylous, posterior tetradactylous; both covered to the claws with moderately long, whitish hairs, slightly inclining to straw-yellow; claws moderately hooked, very much compressed, and very sharp, yellowish-white or light horn-colour; hinder claws most compressed, longest, and least arched. The fur very soft and fine; that on the back from the forehead to the insertion of the tail, as well as that on the upper part of the shoulder before, and nearly the whole of the hinder thigh, formed of tri-coloured hairs, the base of which is of a dark brown, the middle white, while the external is a very light rufous-brown. (Appendix to Major Dixon Denham's and Captain Clapperton's, R. N., Travels and Discoveries in Northern and Central Africa, 4to, London, John Murray, 1826.)

After the appearance of the account in the appendix to Col. Denham's Travels which had been drawn up by Mr. Children and Mr. Vigors conjointly, Mr. Cross, then of Exeter Change, presented a fine young specimen immediately after its death to the Zoological Society, by which means a complete skeleton, as well as a preserved skin, was set up. Mr. Barrell, to whom the skin was given at the inspection, found that the teeth agreed in every particular with the dentition of the genus Canis, in which it was originally placed by Bruce. The frontal sinus was somewhat less than the general proportion observed in the family, and the top of the head had no appearance of the central ridge for the insertion of the upper edge of the temporal muscle so conspicuous in the Canes Lupus and Lycaon, Vulpes, and Lagopus. There was a greater development of the lateral portions of the maxilla bone by which it obtains a larger volume of brain; the tympanic arch was more compressed, and the post orbital portion of the bones forming the arch was much weaker. The head, compared with those of the most perfect English breed of dogs, more closely resembled that of the terrier (Canis Britannicus of authors, Canis terrarius of Dr. Caius) than any other, but the musculature in the Fennec was more pointed. The form of the lower jaw and its condyle also agreed precisely with the same parts in the dog. The head of the Fennec differs from the other presented another peculiarity—those cells were larger than the same parts in the common fox, though the Fennec is two-thirds less than the fox in size. The ossicula auditus were as large in proportion, and equally perfect in form. The external conch was also large, and it is probable that the Fennec is more than most quadrupeds. The skeleton, generally, so closely resembled that of the dog as to make a particular description unnecessary: there was also one other point of similarity—the pupil of the eye was circular.

Mr. Vigors, recasting from the same skull that the teeth of the Fennec correspond almost precisely with those of the fox.

M. Ruppel has figured and described in his Atlas Zur Rete im nördlichen Afrika, together with six other species of Canis, the Fennec Canis Zerda, Zimm. Three specimens were transmitted to Frankfort, all perfectly alive in markings, and differing little from each other in size. They were found in the neighbourhood of Amlenka, and in the desert of Korti, where they inhabit holes made by themselves. They do not nestle on trees as Bruce asserted.

**Fennec**

**Fossil Foxes.**

Dr. Buckland, in his 'Bridge Water Treatise,' figures a fox as recent and fossil among the mammalia of the first period of the Tertiary series (Eocene of Lyell), and mentions the fox in his list of vertebrals animals found in the type of the Basin of Paris. The most complete fossil specimen is that which was found in the quarries of Grénoing, near Constance, overlaid by upwards of twenty feet of marl, limestone, and building stone, brought to England by Mr. Murchison, Esq., then president of the Geological Society of London, who describes the deposit in the 'Geological
Transactions' (vol. iii., 2nd Series), and gives excellent figures of the fox, which is accurately described in the same paper by Dr. Mantell. Mr. Murchison's observations lead him to think that the Oenoginus formation is exclusively of ancient lacustrine origin, but that it is entirely posterior to the deposits containing the cabinet of crustaceans, conchifera, molluscs, and plants, a leaf of one of the latter being scarcely distinguishable from the Aecor violetorum of Nepi, also in the Oenoginus beds. The other mammalia found there were Rodents, see Cyn., Oenom. Ross., tom., 1840, British Museum, and has been subsequently figured and named by Mr. König, Anamoa Brinigenis, and Professor Sedgwick brought one from the quarries which M. Lazzarini referred to the genus Lagnophase. It is worthy of notice that lemmings are said to be found there. After the death of Mr. Fox, the estate was restored to his fellowship; but he fell again into difficulties, and was taken into the house of Mary duchess of Richmond, to instruct the children of her brother the earl of Surrey, who was then confined on the charges for which he soon after suffered. After the death of Mary, in 1560, Mr. Fox was restored to his fellowship; but he fell again into difficulties, and was taken into the house of Mary, in consequence of which he went abroad, and after wandering through different parts of Germany was taken into employment as a corrector of the press by Oppen, the modernist, at Heidelberg. On the death of his son he returned to England, where his former pupil, the eldest son of the unfortunate earl of Surrey, who was now duke of Norfolk, received him with great kindness, and settled a pension on him for life. A prebend in the church of Canterbury, and by the former benefaction of his son, he was made dean of Lincoln. Mr. Fox died in 1587. He was the author of numerous works, a list of which is given in the Bibliography Britannica; but the only one that is now remembered is his History of the Acts and Monuments of the Church, commonly called the 'Book of Martyrs,' which was first printed in one volume, folio, in 1553, but was afterwards divided into three volumes, and has been repeatedly reprinted both entire, and in an abridged, modernized, and cut down form. The trustworthiness of this great record of the sufferings of the early English reformers has been bitterly assailed by many Catholic writers; but nothing beyond a few comparatively unimportant mistakes, arising from some degree of credulity and eagerness, it can be denied that it has been established against it; the veracity and honesty of the venerable author may be affirmed to be quite unimpeached. It has preserved many facts, some of greater, some of less importance, that are nowhere else to be found. It ought to be held in credit as the best and most comprehensive account of the times through which it was written, and which were supposed to have seemed to suggest that work. Daye's epitaph on his tombstone in the chancel of the church of Little Bradley, Juxta-Thurlow, Suffolk, says that he—

1. See a Fox to write how martyrs ran and how to be burned with fire. To give them light; Daye spied on his own father. (see the notes, vol. 50; also 672.)

There is also a French translation of the abovementioned comedy under the title of 'Le Triomphe de J. C,' by Jacques Bienville, citizen of Geneva, 1606, Geneva, 1592: a very scarce work.

In a letter of Dr. Samuel Knight (author of the Life of Erasmus) to Dr. Z. Grey, dated Blandsham, near St. Ives (see, p. 318).
24th of March, 1734, published by Nichols (v. 360), the writer says, "I visited the old father Strype, when in town last; he is turned ninety, yet very brisk, and with only a decay of sight and memory. ... Mr. Strype told me that he had great material towards the life of the old lord Bernegi, and Mr. Fox, the Martyrologist, who wished he could have finished, but most of his papers are in characters; his grandson is learning to decipher them."

FOX, GEORGE, founder of the sect of Quakers, an enthusiastic honest, zealous, illiterate, yet of no mean capacity and influence, was born at Drayton, in Leicestershire, in July, 1624. His origin and the beginning of his preaching are thus told shortly by Nale (Hist. of Puritans, n. c. 13). His father, being a humble shoemaker, sent him to an apprenticeship to a country shoemaker; but having a peculiar turn of mind for religion, he went away from his master, and wandered up and down the countries like an hermit, in a weathered doublet; at length, his friends hearing he was at London, proceeded to him to inquire and settle with him in regard to his strange regular course of employment; but after he had been some months in the country, he went from his friends a second time in the year 1646, and threw off all further attendance on the public service in the churches. The reasons he gave for this were, that he thought it necessary to him to pursue a learned education at the university, who had no qualification for a minister, but that all depended on the amount of the spirit; and that God made the world did not dwell in temples made with hands. In 1647 he travelled into Derbyshire, Leicestershire, Cheshire, and various parts of the country; and villages, which so overcast his mind turned, in a solitary manner. He fasted much, and walked often abroad in retired places, with no other companion but his Bible. He would sometimes sit in a hovel in the travelling day, and frequently was unwilling to return home in the night. He was noted with deep melancholy. Towards the latter end of this year he began first to set up as a teacher of others, the principal argument of his discourse being, that people should yield to divine teachings of the Lord, and take that for their rule.

From the beginning of his teaching he discontinued the use of outward marks of respect. He says, in his journal for 1614, "When the Lord sent me forth into the world, I feel it necessary for my part to lay no claim to respect required to thine and all men and women, without any respect to rich or poor, great or small; and as I travelled up and down, I was not to bid people good-morrow or good evening, neither might I bow or take my leave to any one of the sects and professions; for nothing probably conduced so much to the virulent persecution of the Quakers as their refusal of such tokens of respect, which persons of opinion considered into wilful contempt, except their consciences refused to take any other practices than their own in the schools and places attached to the refusal of the oaths of allegiance and supremacy."

We shall not enter on a detail of his religious tenets, labours, or sufferings; the latter are fully recorded in his journal, and noticed in most histories. It is necessary however, to state the result of Fox's secludism, his long hours, much of it devoted to study, and the effect it produced. In his journal for 1646, p. 26, that "it is not the scriptures, but the holy spirit, by which opinions and religions are to be tried." By this test, each convert might believe himself possessed of a peculiar infallible internal guide; and in fact, it proved a warrant of any wild fancies which entered the minds of his followers, and led some into extravagances which gave a colour for the civil treatment which all experienced. (Nal, i.e. v. 3.) Into such extravagances Fox himself does not appear to have been led; and from 1655 till the time of his death his life was made up of travel, disputations, imprisonment and imprisonment. He visited the continent of Europe several times, and in 1671 made a voyage to our American colonies. Wherever he went he seemed to have left permanent traces of Fox's spirit behind him at meeting places which were first established in Lancashire and the parts adjacent in 1662, and in 1665 the congregations were organized into one body for purposes of correspondence, charity, and the maintenance of uniform discipline. The term Quaker arose at Derby in 1659, on occasion of Fox being brought before one Justice Bennet, who was the first that called us Quakers, because I bid them Trouble at the Word of the Lord. In 1677, and again in 1681, he visited the Netherlands, where his tenets had taken deep root. After his return from the latter journey, his constitution being broken by the labours and hardships of near 40 years, he desisted from travelling, but continued to preach occasionally in London till within a few days of his death, which took place January 13, 1691.

To Fox, and others among his associates [Baskett Press, the printer of Locke,] accordance, self-denial, courage are amply due; and their sufferings under colour of law are a disgraceful evidence of the tyranny of the government and the intolerance of the people. But there was one part in Fox's character which justly entitled him to credit and punishment, his frequent interruption of divine service as performed by others. From this practice, in the late part of his ministry, he seems to have abstained. His moral excellence and the genuineness of his devotion are undoubtedly great. His manner seemed so sober, learned man, not likely to be caught by mere rant, has left an elaborate tribute to Fox's virtues in the preface to Fox's Journal, from which we extract the following detached passages.

Fox's extraordinary gift in opening the scriptures, but above all he excelled in prayer. The inwardness and weight of his speech, the reverence and solemnity of his location, and the trueness and faithfulness of his words, have often struck even strangers with admiration. The very system of Fox's study which he was to pursue. I must say was his in prayer. He was of an innate, no busy-body, nor self-seeker; * a most merciful man; a ready-to-forgive, as unmitigated, as an innocent lover; as unassuming as any servant of God. He never labour to be heard or feared. Fox's Journal: Nal. History of Puritans;owell's History of Quakers. Amos Gen. Biog. contains a better account of Fox than any other dictionary that we have seen.

Fox, BENJAMIN JAMES, was born on the 29th of January, 1749. He was the third son of the Rev. Henry Fox, who, in 1763, was created Lord Holland, and of Lady Georgiana Carolina, the eldest daughter of Charles, second duke of Richmond. He had received an education in a preparatory school at Wansford, Fox was sent at the age of, to Eton. Here his progress was very rapid; and while he thus gave unequivocal indications of the powers of mind which afterwards yielded so rich and abundant a harvest, he most astonishingly triumphed over his own inclinations. He was very much attached to the warmth of feeding and amiability of character which through life, served to make men his friends and keep their love.

His education was interrupted, before he was fifteen, by a three months' trip to Paris and to Spa, in which he was employed in the study of the liberal arts. His more than consequence than otherwise it could have been, it is true, as is represented, that to the misplaced indulgence of the father during this tour is to be traced the decision of the gaming table, which, after all, was the principal cause (Journal, 1693). He had left school a boy, says Mr. Allen, in his biographical sketch in the 'Encyclopedia Britannica'; he 'returned it to all the follies and errors of a young man.' He continued at Eton till December 1765, and in the autumn of 1767, entered Christ Church College, Oxford. Here, as at Eton, the latter part of his course at Eton, learning and pleasure were his principal study; he left Oxford in the autumn of 1768. He then went abroad, and having passed two years chiefly in Italy, returned to England in August, 1768. It is believed, before he was yet of age, he had been elected member of parliament for Midhurst.

Fox took his seat in parliament as a supporter of the duke of Grafton's ministry. His father, who was a member of Walpole's committee, in the progress of time became estranged from the Whig party; and it was from the opinions of the father at the period in favour of the court of the and of an administration of whose strength was in the court, that the young Fox was early introduced into politics. Fox made his first speech on the 15th of April, 1769, on the subject of the infamous Middlesex election, supporting the then, in favour of Colonel Luttrell and against Mr. Walpole. On February, 1770, when the duke of Grafton was succeeded by Lord North as premier, Fox was appointed a judge.
of the admiral. He resigned this situation two years after, in consequence of some misunderstanding with Lord North; but in less than twelve months he was brought back into the ministry, being appointed, in January, 1773, one of the lords of the Treasury. February of the same year he was again dismissed from his situation, and that somewhat unceremoniously. The immediate cause of the dismissal was the following. A motion had been made in the House of Commons that Mr. Woodhill, the printer of the News-Letter, which Fox was serjeant-at-arms, in consequence of some remarks on the Speaker which had appeared in that newspaper; when Fox, thinking this punishment insufficient, without consulting Lord North moved an amendment to the effect that the printer should be compelled to appear in being, or being compelled, or thinking himself compelled, to support the amendment against the original motion, was left in a minority on a division. There had previously been some confidence between Fox and the premier. The defeat which Lord North considered had been brought upon him by an act of insolent temerity on the part of Fox did not of course tend to diminish it; and a few days after, as Fox was sitting in the House of Commons on the ministerial bench, he received from the hands of one of the door-keepers the following note, which was properly to order a new commission of the Treasury to be made out, in which I do not perceive your name. North.’ In a very short time Fox was in opposition.

So in their situations, he had by no means concurred on all occasions in the opinions of his colleagues, nor, when he differed, had he abstained from expressing and acting upon his own. When he retired from office in 1772, one chief reason for the step was his opposition to the Royal Marriage. It was a question of the most vital interest to the condition of the nation, and to the measures arising out of which, he violently opposed Lord North’s administration, was never once brought under discussion during the time that he himself formed a part of it. Again, he had formed, since the time of his temporary retirement without declining, a combination with Mr. Burke; and if the influence exercised over him by this distinguished statesman—an influence to whose strength Fox frequently testified in after days, when their paths were diverged and a cloud had settled upon their friendship—now took place in Fox’s political position, neither is this surely any ground for reproach. Mr. Burke’s conversation, doubtless, as well as his speeches and writings, assisted to open Fox’s eyes to the evil of that system of court intrigue and corruption, to which he had been a party in the administration of Rockingham. Mr. Burke had allowed himself to be subjected. From those evils again he had now smelt in his own person; and while it would have been strange if any longer he had been blind to them, it would have been a disgraceful thing if the fear of men’s tongues, or the pride of an outward consistency, had prevented him from speaking and acting by the light of his newly-gotten wisdom. It should be borne in mind also that his father, who was mainly instrumental in con

On the 23rd of March, 1774, the House went into committee of the whole house, and received a bill. It was the object of which was to deprive that harbour of its privileges in consequence of the opposition made by the inhabitants of Boston to the tea duty. This was the first occasion on which Fox opposed the minister. But from this time forward he was unremittingly in his opposition. He took his stand first on the principle that the American colonies ought not to be taxed without being represented; and secondly, on the inexpediency of endeavouring to wring taxes from them by force and at the risk of rebellion. Thus condemning the war in which Lord North involved the nation as unjust and inept, he also took many opportunities to censure strongly the manner in which it was carried on. He denounced the heavy expenditure which ministers, in prosecution of a war unjust and inexpedient, and little likely to be successful, were unwearily expending upon the nation; and when he saw no prospect of their dismissing from the war, he zealously fought, in conjunction with his party, to effect by other means a diminution of the public burdens. In the beginning of 1780 Mr. Burke brought forward his plan of economical expenditure, which was very strongly supported by Fox. After having passed through its easier stages, it was finally rejected. But the people had now come to feel the weight of their burdens and to speak out. Petitions poured in from all parts of the kingdom for a reduction of the public expenditure; and when, in April of that year, resolutions were carried against the influence of the crown and in favor of an inquiry into the expenditure of the country and of a diminution thereof. A concurrence of favourable circumstances enabled the minister to stand up against this vote, and to recover his once lost majority. But with a dissolution of the parliament, which took place shortly after, enabled him to gain only a short respite. On the 22d of February, 1782, a motion of General Conway’s for an address to the crown against a continuance of the war was carried only by one vote. On the 3d of March of the former year, President took place, carried by a majority of 19. On the 19th of March, the ministers having shown for a short time a disposition still to cling to office, resigned them

It is needless to say how much Fox’s exertions had contributed to this result. He had indeed risen by this time to be considered the leading member of opposition, and to be, more than any other statesman of the time, conspicuous in the great question of general election, in the autumn of 1780, he had been solicited to stand for his county, and had been returned in the teeth of every court effort and every trick of private intrigue and intimidation. On the formation of the new ministry under Lord Rockingham, Fox was selected for the post of foreign secretary. He immediately set about negotiations for peace. For this purpose he instructed Mr. Grenville, the plenipotentiary at Paris, to propose in the outset the independence of the United States of America, not making it a condition of a general treaty. This he did in March, and his recommendation, that a separate convention should be laid on the table of the cabinet, and to which the king’s assent had been obtained. But the ministry contained within itself from the beginning the person of Lord Shelburne, who had been introduced by the Rockingham ministry, and was an element of disunion. This nobleman, between whom and Lord Rockingham’s friends there was no cordial cooperation, and who was naturally led to presume much on his fancied possession of the royal confidence, was now spending his best efforts in favor of peace. Fox moved the resolution that the cabinet ought to represent the offer of recognition of independence as a conditional one; and, after Lord Rockingham’s illness had rendered him unable to attend the deliberations of the cabinet, he succeeded in getting a majority to concur in this view. He was afterwards disappointed by Fox, who was carrying on a clandestine communication with Dr. Franklin. Fox now made up his mind to resign. He did so at once upon the death of Lord Rockingham, which took place in July, but four months after the formation of the ministry; and the same course was then taken by other friends of Lord Rockingham, by Lord John Cavendish, the Duke of Portland, and Lord Keppep. The Rockingham ministry was now broken up.

The Shelburne ministry, though, as regards its mode of formation, it was but a modification of the old one, was yet essentially different in character. Mr. Pitt, who had entered parliament on the occasion of the general election in 1770, and who, during the short time that he had been in office, had shown the spirit of an energetic and aggressive war and in favour of parliamentary reform, accepted the office of chancellor of the exchequer in the new ministry. Other vacant offices were filled up by old supporters of the war who had opposed, men who had held subordinate places in Lord North’s cabinet; and his usual charge, Lord North himself excluded from the new arrangements. Hence it came to pass that Fox and Lord North, who for the last eight years had been violent antagonists, were found by one another’s side in opposition; and that, at a time, the great question of peace or war with America
which had formerly divided them having been settled, and each being assured that he could place reliance upon the good faith of the other, the similarity of their political views done away with the necessity of a coalition. The coalition called forth at the time, and has called forth since, much disappointment. It may have been ill-judged; and the result indeed showed that the parties had not formed a correct estimate of the public opinion, which was an important element in the present situation. Rather, there was not a shade of dishonesty in the transaction. And inasmuch as it should be the object of every statesman to extract the greatest possible amount of good out of the political circumstances of the time, such a coalition would seem to be expedient in principle, and if approved, if only it be expedient and free from dishonour.

The question being now no longer whether there was to be peace or war with America, but in what way peace was to be brought about, the two parties in opposition united to pass a vote of censure on the terms of peace proposed by the ministers. This was in February, 1783. The ministers, unable to obtain the king’s consent to a dissolution, resigned; and after some difficulties a ministry was formed on the 7th of April, of which Mr. Pitt was the premier, and Lord North and Fox secretaries of state. This again was a short-lived administration; and, like that of Lord Rockingham, it fell by the influence of court intrigue. The principal measure which it attempted was that known by the name of the Act of Proclamation, which the government of the East Indies in a board consisting of seven members, who were to be appointed, the first time by parliament, but always afterwards by the crown, for a period either of three or five years. The objections to this bill were three, that it was a new and dangerous species of legislation, that it was a new breach of the constitution, and that it was dangerous, as was the view adopted by George III himself. Accordingly, when the bill was passed through the Commons, and came on for the second reading in the Lords, the king sent a message, through Lord Temple, the Lord Chancellor, in which he expressed his concern, that he should consider those who voted for the bill not only not his friends, but his enemies. The ministers were consequently left in a minority. The next day they were dismissed; and the ministry which had been formed in April, and was in power till December, of the same year. A new ministry was formed almost immediately under Mr. Pitt.

The new ministers very soon found themselves in a minority in the House of Commons. Two resolutions, one for the abolition of the office of treasurer, and the other for the abolition of all the offices of the crown, were moved by the government, but carried by the opposition. The crown office was to render an immediate dissolution impracticable. Resolutions against the ministers and against the mode of their appointment, together with addresses to the crown for their dismissal, followed. But the majority against ministers, which at first had been formidable, but dwindled down; and after the king had twice refused his assent to their dismissal, he dissolved the parliament. The last effort of the opposition had been the carrying of a representation to the crown, which, written in folio, at length the evils of an administration that was at variance with a majority of the representatives of the people.

Fox was again elected for Westminster; but Sir Cecil Wynn, one of the most popular candidates, having demanded scrutiny, the high bailiff took upon himself to make no return of representatives for this city. Fox was in consequence compelled to appear in parliament as member for a Scotch borough; but the conduct of the high bailiff was one of the first matters brought before the house on its meeting. The Westminster scrutiny was one of the chief questions agitated for some time. Mr. Pitt and his friends did all that party and personal animosity could suggest to prevent, or at any rate to delay, the announcement of the result. Mr. Pitt had insisted upon a scrutiny, and after a struggle of a year’s duration the scrutiny was stopped and the return ordered to be made. In the beginning of the subsequent year, 1786, the question of Mr. Hastings’s Indian administration was first brought forward, and the rage against the Indian administration was the talk of the regency. Fox now violently opposed the course proposed to be taken by Mr. Pitt; and while the latter contended that it was for the two houses of parliament to appoint the regent, Fox maintained that the regency belonged of right to the House of Commons. A motion was made in the first instance by the minister for a committee to inquire into proceedings, and subsequently a bill tending to limit the powers of the regent. It so happened that the king’s speedy recovery rendered it unnecessary to press further. Fox went to France, which was the legal one. And when both sides made it a question of expediency but of right, both sides were wrong; and it is difficult to say which was the more so. In the course of the summer of 1790 Fox, in a letter to the king, endeavored to support a motion, for the repeal of the Test and Corporation Acts. A year after he himself brought forward a motion for the same purpose. On the dissolution of parliament in 1790 he was again returned for Westminster, and at the head of Fox. On the meeting of the new parliament an attempt was made to get rid of the impeachment of Mr. Hastings, on the ground that it had abated by the dissolution, and that the new House of Commons could not proceed with what had been begun by the old one. Fox was asked to move for personal indulgence on the occasion; he had on this occasion the support of Mr. Pitt, and it was carried against the lawyers by a large majority.

The discussions arising out of the question of the French Revolution, replete as they are with public interest, are also important in a life of Fox, on account of his having led to a termination not merely of his political alliance, but also of his friendship with Mr. Burke. The differences of their opinions on that great question had been shown so early as in February, 1790, during a discussion on the army estimate. Burke moved a clause to be inserted in the estimates in terms of kindness and regard. But it was not always thus. When on the 6th of May, 1791, the Quebec Government Bill, or Bill for regulating the government of Upper and Lower Canada, came under discussion, Mr. Burke rose and opposed the measure, on the ground that it was the French Revolution, when, after he had been several times ineffectually called to order, it was moved by Lord Sheffield, and seconded by Fox, ‘that dissertations on the French constitutional, and narrations of transactions in France, are not regular nor orderly in the questions. In the course of the Quebec Bill be read a second time.’ The remarks made by Fox in seconding the motion, though there seems to have been but little in them calculated to irritate, irritated Mr. Burke; and, when he rose to reply, he did so under the influence of strong excitement, and complained bitterly that he had not been treated by Fox as one friend should be treated by another. He observed, towards the conclusion of his speech, that it certainly was indiscreet at a time like this for Burke to be too anxious on the occasion to desist him; yet if his firm and steady adherence to the British constitution placed him in such a dilemma, he would risk all; and, as public duty and public prudence taught him, with his last breath exclaimed, ‘Fly from the French constitution.’ Fox here whispered that there was no loss of friendship. ‘Yes, there is,’ Mr. Burke exclaimed, ‘I know the price of my conduct; I have done my duty at the price of my friend; our friendship is at an end.’ At the conclusion of Mr. Burke’s speech, Fox rose, but it was plain he was not in the best of spirits. He desired to be heard as soon as he could speak, he pressed upon Mr. Burke the claims of a friendship of five and twenty years duration,
but to no purpose. Mr. Burke remained relentless; and the breach was never made whole.

Fox distinguished himself during the same session of 1791 by his opposition to the ministerial project of an
armament against Russia, by his support of Mr. Wilber-
force's emancipation of the slave trade, and by the
introduction of a bill for the abolition of capital pun-
ishment in Ireland. From the latter part of 1792 to 1797 his efforts were unces-
sing, first to prevent a war with France, and after-
wards, when his warnings had been of no avail, and it had
been entered into, to modify the terms on which the
war with France was joined. During this period many of his friends, filled with alarm at the 12th of
October events in France, and their probable influence on their
own countrymen, left him to swell the majorities of the
minister; and pitiable indeed were the minorities by which
Fox was left. There were, one after another, those who
in no way daunted him. We must mention also the sup-
port which, in 1793, he gave to Mr. (now Earl) Grey's
famous motion for parliamentary reform, his eloquent ad-
covacy in 1794 of the cause of Muir and Palmer, the
Scottish martyrs, his indefatigable opposition to the treason
and sedition bills of 1795, and his attempt to procure
attention to the state of Ireland and to the grievances of
Irish Catholics, by a motion made in 1797, as additional
important incidents during that period of his career, the
principal one of which was opposition to the first French
revolutionary war.

On the 26th of May, 1797, Mr. Grey made a second mo-
tion on the subject of parliamentary reform. Fox took this
opportunity of announcing a resolution which he had formed
to introduce in Parliament, and which he declared to
friends and his friends were desirous of

It is perhaps a question whether such a step as
this can be taken by a member of the legislature without
desecration of duty, even though it may be a means of in-
fluencing the minister. But it is at all events
and though the consent of the member's special constitu-
ents may have been procured the

But, at the same time, it would be unjust to apply to the conduct of
individuals acting under a very defective system of
representation, actions which sprang from, and form part of,
a perfect theory. The five years then, from 1797

1802, were passed by Fox principally at St. Ann's
Hill, in retirement, and in the pursuits of literature.
It was during this period of retirement that he formed the
project of his 'History of the Reign of James II.' A disso-
lution of parliament took place in June, 1802, and Fox,
whose popularity with his constituents had not been a whit
diminished by his absenting himself from the house, was
again returned for Westminster. Almost immediately after his
return to parliament, he began to use his influence for the
purpose of collecting documents for his projected historical
work. During his stay in Paris it is said that he was
"treated with marked attention by Napoleon.

Fox took an active part in the debate of 1801, on finding
himself unable to procure the king's assent to the mea-
sures of Catholic emancipation; and he had been then suc-
ceded by Mr. Addington. The new ministers had almost
immediately set about negotiations for peace with France;
and when the preliminary articles signed at London on
the 1st October, 1801, had come under discussion in the
House of Commons, Fox had emerged from his retirement to
express his joy at the prospect now opened of a conclu-
sion of the war, and to give his best support to the ministry.
He was named a military officer, and, after the des-

administration, in the autumn of 1802, still hoping to con-
tribute to the bringing about of peace, but beginning by this
time to doubt the sincerity of the ministers. A message
from the crown, in May, 1803, announced that the negoti-
aions had broken down, and Fox resigned office, having completely shown his unfitness for the
discharge of its duties, and unable to stand against an
opposition which included both Fox and Pitt. It was now
expected that Mr. Pitt, to whom was intrusted the making of the
peace, would have the benefit of the services of Fox, by whose side, though not in recog-
nized conjunction, he had been now sitting for some time in
opposition. But the king would not hear of Fox being admitted to office. Lord Grenville, Lord Spencer, Mr.
Wright, and others, who, like Mr. Pitt, had been lately
co-operating with Fox, refused to take any part in an ad-
ministration from which Fox was excluded; and Mr. Pitt
was thus compelled to throw himself upon the scattered
subordinates of the Addisonian ministry. Peace came not
from this ministry. On the 23rd of January, 1806, Mr.
Pitt's death dissolved it; and in the next ministry which
was formed under Lord Grenville, Fox was appointed se-
cretary for foreign affairs. His life was spared but for
seven months longer; but during this short period he did
nothing that was calculated to convince the country that
he had ever been one of the objects that he most cared for, and
he entered zealously into negotiations for peace with France,
which it was a heavy misfortune to his country that his
death did not allow him to complete. He died on the 13th
March, 1806. At the age of 55, he was a most unhappy
man. The complaint which caused his death was water on the chest.

Such is a brief sketch of the public life of Fox. With
the exception of the first six years of it, in which he was
a supporter or a member of a court administration,
it was in substance consistent. From the beginning to
end it was honest. There are parts of his public life cer-
tainly which have led others to call his honesty into ques-
tion, and to deny to him the quality of consistency; and
of these parts, or any rate of some of them, there are those
among his friends and admirers who have professed disa-
probation. Such parts are his early connexion with the
court, his coalition with Lord North, and, shortly before his
decision, his coalition with Lord Grenville. Mr. Hazlitt has
said that he was a phenomenon in the three principal
points, the beginning, the middle, and the end, and he
was a violent toy, and became a flaming patriot out of private
pique; he afterwards coalesced with Lord North, and died
an accomplice with Lord Grenville.' (Political Essays of
Public Character, p. 272.) This backhanded charge that he was
actuated by private pique when, in 1774, he became a
opponent of Lord North's ministry, has been already met, so
far as it is possible to meet a charge which it is so very easy
to make. But in a case where no unworthy motives have
operated to produce the result of course, and which proceeds
from change of opinion, it is for a vulgar mind alone to
make this a ground of attack and abuse. And equally vulgar
is that view of a statesman's duty which would prevent him
from ever entering into alliance with one to whom at a
previous period, he had been a faithful, if not a violent, enemy, and which formed the
principle of their political

FOY: MAXIMILIAN SEBASTIAN, one of the best
if not the first, of the political orators that have appeared in
France since the establishment of a constitutional charter,
was born in 1775, at Ham, in Picardy. His father, an old
soldier, was not very famous at court, and the education of his five children devolved on their mother,
Elizabeth Wisbeek, who was a woman of English extraction, and of a superior character. Fox displayed from his earliest
boyhood remarkable talents and great application. He made considerable progress in Latin, and wrote well-written little compositions in his own language, when he
was only nine years old. At fourteen he completed his
course of studies at the college of Soissons, after which he passed
to the military school of Laffore, and, at the end of
September, 1790, entered a second military school.
He served with great credit in Flanders during the beginning of
the war of the Revolution. Having however frankly ex-
pressed his opinions about the horrors perpetrated at Paris, he
was imprisoned at Cambry, but was released from his
confinement by the events of the 9th Thermidor. He
then entered the army, made two campaigns under Moreau, and
rose to the rank of a chef d'escadron, when the treaty of
Campo Formio suspended his military career. He took


FOX ISLANDS [ALOTIAN ISLANDS.

FOXGLOVE (Digitalis.)

FOX, JOHN.
advantage of the short peace which followed that treaty to study public law under the celebrated Professor Koch at Strasburg. In 1798 he again joined the army, and served in Italy, Switzerland, and on the Rhine, till the peace of Amiens, when he returned to France with the rank of colonel. He returned to Paris during the trial of Moreau, and he expressed himself against that proceeding with so much animation, that he would have been arrested if he had not left the capital and joined the camp of Utrecht, where he refused to sign a congratulatory address to the first consul on his escape from St. Helena. He was very far from approving of any such schemes, but he gave no credit to the accusations against Moreau, under whom he had a long time served. Being a sincere republican, he voted against the election of Bonaparte to the imperium and the overthrowing the Directory. He employed Foy, but left him a long time without promotion. In 1807 Foy was commissioned by Napoleon to conduct 1200 French cannoniers to assist Sultan Selim II. against Russia, but the revolution which took place at Constantinople prevented their departure. Foy himself went however to Constantinople, where he assisted the Turks in making dispositions for the defence of the Dardanelles. From Constantinople he went to Portugal, discharged himself in many honours and rose to the rank of lieutenant-general, and continued to serve during all the peninsular war, till he received a severe wound at the battle of Orthes. He was employed at the Restoration by the Bourbons, but joined Napoleon after his landing at Elba, and formed bravely at Waterloo, where he was again wounded. From that time he retired from military service, and devoted himself entirely to the study of history, politico and military science, to which he had previously applied all his leisure time. In 1819 Foy was appointed a member of the department of talents which he displayed in the new career now opened to him surpassed the most sanguine expectations of his friends. His debut in the parliamentary field was an eloquent defence of the rights of the old constiutional charter against the imperial army, whom the organs of the Restoration sought to deprive of their well-earned rewards. He vigorously attacked the lavish expenditure of public money for the maintenance of useless establishments, and to his friends he is the inmost representations of that constitution. He was always a steady advocate of every expenditure which was requisite for the support of the power and dignity of a great nation. Foy had a hard battle to fight against the retrograde party, which sought to destroy the effects of the constitutional changes, by introducing the electoral body the privileges which had been abolished by the above-mentioned charter. Yet the noble efforts of Foy and of a patriotic minority were unavailing against the party, which, according to an expression of Foy himself, ruled in France the legislative chamber, which, and in the nation one individual in a thousand. Counter-revolutionary measures followed one another; the elective franchise was restricted, the liberty of the press curtailed, independent writers punished, and the government of Spain overthrown by a French expedition. Notwithstanding all these defeats of the liberal party, Foy never deserted the post where he was placed by the confidence of his countrymen, and he castigated the unprincipled proceedings above referred to with an eloquence worthy of Cicero exposing the exactions of a Verres or the plots of a Catiline. When provoked by his enemies, who never lost an opportunity to attack him in a most annoying manner, he sometimes burst out into the most eloquent but bitter invective. In a speech of occasion, being called upon in the course of a speech by a sneering question, what he meant by the expression aristocrates? he made an answer which has been perpetuated in the annals of the French parliamentary debates: The aristocracy of the nineteenth century, said he, is the same as all those who from being employers producing, to live without working, to occupy all situations without being able to discharge the duties attached to them, to possess all the honours without having deserved them— the rich. In November, 1825, Foy began to suffer from the symptoms of aneurism: he felt his end approaching, but remained calm and collected under the most severe sufferings, till his death on the 25th November. His death was considered in France as a national calamity; his funeral was attended not only by his political friends, but even by his opponents who no longer refused to pay the tribute of admiration to a deceased adversary. As he left a family in rather straitened circumstances, one million of francs was raised for them by a national subscription. Foy left two volumes of speeches, and a History of the Peninsular War, a work which is much esteemed, but unfortunately has not been completed. It is particularly characterized by the fairness with which it treats the opponents of France during that memorable struggle, and it has been warmly eulogized not only in France but even in England by writers professing political opinions completely opposed to those of General Foy and his conspirators.

FOYLE, LOUGH, a bay on the northern coast of Ireland, whose narrow entrance is 7° west of Greenwich. It extends from south-west to north-east about fifteen miles, and in the middle eight miles and three quarters wide, and has a very easy entrance. It falls between Magilligan Point on the east, and Green Castle on the west, is less than a mile across. The bay, being much cumbered with shoals, requires some attention in navigating it. The deepest part is at the east side, below the lake and its mouth. Near Green Castle there are four to eight fathoms water. In front of the entrance is a sand-bank called the Tuns, over which the sea sometimes breaks with great violence. Vessels of 400 tons and up are safe in a northerly gale, but even then receive some damage. A sea camel falls into its southern extremity, as far as Londonderry.

FRACASTORO, HIERONYMUS, one of the most learned men of his time, as well as one of the best modern Latin poets, was born at Verona, in 1493, of an ancient family, and received his education in the study of the sciences, particularly to medicine, and he became professor of logic at the university of Padua when he was only nineteen years old. Fracastoro died in 1553. He enjoyed during his lifetime the esteem and friendship of many of the most distinguished men of his time, and he was invited to Fracastoro the idea as well as many materials for his collection of the Navigazioni et Viaggi, erected a brass statue to his memory at Padua. Julius Caesar Scaliger was such an admirer of his verses in an ardent lover of his poetry, that he composed a poem in his praise, entitled 'Arte Fraecestro.' The principal works of Fracastoro are: 'Syphilides, sive Mortales Gallicae, libri tres,' published at Verona, 1530, in 8vo; at Padua, 1531 et 1539, in 8vo and 16mo; Busel, 1536, in 8vo; London, 1542, 1720, in 4to, and 1746 in 8vo; Padua, 1744 in 8vo. It has been translated into French by Mager et Lacome, Paris, 1733, in 12mo; into Italian by Antonio Tamborini, Verona, 1739, in 4to; by Pietro Bell, Naples, 1739, in 4to; by Charles Sauvage, London, 1738, in 4to; the best Italian translation is however that of Vintento Benini de Colonica, published, with the complete collection of Fracastoro's works, at Padua, 1739, in 4to. Fracastoro's reputation rests chiefly on this work, which is divided into two books and a third epistle, in a poetical epistle, of which Rosciani has given an English translation in his life of Leo X. In this poem Fracastoro rejects the commonly-received opinion that the disease which is the subject of his poem, was imported into Italy, and argues that it was in ancient times, and was generated by the corruption of the atmosphere, to which he attributes the origin of all diseases that attack the animal and vegetable creation. He recommends as a means of eradicating that fatal disease the use of mercury, and he describes the discovery of that remedy in a fiction full of the greatest poetical beauties. The hero of the poem is a young man called Syphilis, who is attacked by that disease, not in consequence of any pollution, but by a contagion proceeding by degrees from two menials, and flowing three times into the streams of quicksilver, which flow in the subterraneous regions. It is remarkable that the name of the hero from which the title of the poem is derived gave birth to the technical appelliation by which the same disease is called. It having been adopted such a subject for his poem Fracastoro wished to display to our work his extensive knowledge in the various branches of natural philosophy, his skill in medicine, and his admirable genius of poetical poetry. Many critics have compared the Syphilis to the Georgics of Virgil and Samoa, the contemporary of Fracastoro, declared it to be superior to his own Latin poem De partu Virginis, on which he lived twenty years. Besides the poem of 'Syphilis,' Fracastoro published the following works: 'De Vento Temperatura,' Venice, 1534, in 4to; 'Homoeocritorum sive de Sclito liber unus,' de Causis Criticerum dieurum, libellus, Venet.
being a number of feet (unknown), it is better to allow the word to imply a part of a foot, a foot itself, or a number of feet together with a part of a foot, than to repeat all those possible cases every time a number is to be mentioned. Again, when one particular phrase seems absurd, but another which is synonymous appears clear, we must either reject the forms altogether, or attribute to it the meaning of the latter, and the second course is generally the more convenient. We now observe that the direction to "divide one into 10 equal parts" is the same as "find a part such, that ten of them shall make a unit." Now there is no absurdity in requiring to "find a part such that 3$\frac{1}{3}$ of them shall make a unit," though it is inconsistent with our idiom to speak of "dividing 1 into 3 equal parts." The meaning of the phrase which is intelligible should then be extended to that which is not, or to "divide 1 into 3 equal parts" should mean that the part is to be found which repeated 3 times and $\frac{1}{3}$ of a time shall give the unit. And this must be extended even to the case in which the number or fraction thus obtained is greater than a unit. Thus in the fourth of the preceding fractions such a number or fraction must be found, that $\frac{4}{3}$ of it shall be a unit; that is,

$$\frac{1}{3}$$

stands for the number 7;

$$\frac{4}{3}$$

and this must be repeated 3 times. The preceding considerations show that fractions with fractional denominators may be explained (without reference to any rule of reduction) by an extension of the definition which applies to integer denominators. The use of such an extension is as follows:--at present, algebraical students learn results which are perfectly intelligible with regard to whole numbers, or to fractions with integer terms, but of which they do not see the meaning when fractional or mixed terms are employed. In the latter case they trust to what they see in the former that their results will remain true; but they can have no distinct perception on this point until they have learnt to include every possible form of $\frac{a}{b}$ under one definition.

The fundamental property of fractions on which all others depend, is this—that no fraction is changed in value by multiplying or dividing both its terms by the same number or fraction, that is—$\frac{a}{b} = \frac{ma}{mb}$, whatever may be the values of $a, b,$ and $m$. This result should be studied in all the variety of its cases, from such as $\frac{3}{5} \times \frac{\frac{3}{10}}{\frac{3}{5}} = \frac{21}{6} \div \frac{11}{4}$

There is another theorem which is much neglected in elementary works, but which is of considerable importance, namely, that if the numerators of two fractions be added for a numerator, and their denominators for a denominator, the resulting fraction must lie between the two from which it was derived. Thus of the three fractions,

$$\frac{2}{7 \div 11 \div 18}$$

the third is greater than the first, but less than the second.

In practice it is convenient to employ fractions having either the same numerator or denominator, or easily reducible to others of equal value having the same denominators. The numbers 10, 100, 1000, &c., suggest themselves for this purpose: indeed it may immediately be seen that the ordinary system of decimal notation may be extended so as to allow of this view of objections. If we consider the number 11111, we see that for every step which we make to the right, we find a unit which is only the tenth part of the preceding unit. Place a point after the unit's place (to mark its position), and let the same method of evaluation be carried further. Then in 11111111, the first 1 after the point should stand for one-tenth of the preceding, or one-tenth of a unit; the second, or one-tenth of a tenth, and so on. The fundamental theorem of decimal fractions can be extended to this view of the subject, is, that when whole, for example, that $\frac{122345}{10}$ (defined to mean 1 ten, 2 units, 3 tenths, 4 hundredths, 5 thousandths, and 6 ten-thousandths) is the same as $\frac{122345}{10}$ ten-thousandths; or that all the number, such as it would
be if the units' column were on the right, may be taken as a
umerator, and the denomination of the right hand figure as a
denominator. Thus—

\[
\begin{align*}
63 & \div 483 \\
& \div 60 + 5 + \frac{4}{10} + \frac{8}{100} + \frac{3}{1000} \\
& \div 5000 + 400 + 80 + 3 \\
& \div 1000 + 1000 + 1000 + 1000 + 1000 \\
& \div 64583 \\
\end{align*}
\]

or 64583

No fraction can be reduced to an equivalent decimal
fraction, if its denominator contain any prime factor except
5 or 2 (the divisors of ten). But this is of no consequence
in practice, since it may easily be shown that for any frac-
tion we can be reduced as near

To it as we please. For instance, suppose it required to
find a decimal fraction which shall differ from \(\frac{3}{41}\) by so
much as the hundred thousandth part of a unit. Then—

\[
\begin{align*}
3 \div 300000 \\
41 \div 4100000 = \frac{300000}{1000000} = \frac{7317.4}{1000000} \\
\end{align*}
\]

or 7317.4 hundred thousandths of a unit differs from \(\frac{3}{41}\) by

only \(\frac{3}{41}\) of the hundred thousandth of a unit, or by less than
the hundred thousandth part. It is from such a transfor-
mation that the common rule is derived.

It is common to say that a result is true to a certain
number of places of decimals when any alteration of any
place would make it further from the truth. Thus, the
diameter of a circle being unity, the circumference lies
between 3.1415 and 3.1416, but nearer to the latter:
whence the same circumference, true to four places of deci-
imals, is 3.1416. Similarly 62.13295, taken true to two
places, is 62.13; to three, 62.132; to four, 62.1320. Again,
625, taken true to two places, might be either 62 or 63;
but the latter is generally taken. When a decimal fraction
cannot be found exactly equal to a given common fraction, the
division by which the numerator is found, leads to what
is called a CIRCULATING DECIMAL.

For subjects closely connected with the theory of fractions, see RATIO; PROPORTION; INCOMMENSURABLE.

1. FRACTIONS, CONTINUED. A continued fraction is one which has a fraction in its denominator, which again
has a fraction in its denominator, and so on; such as

\[
\frac{1}{2 + \frac{3}{7 + \frac{6}{1 + \frac{2}{3}}}}
\]

A more convenient way of writing such fractions is de-
scribable: in the present article we shall adopt the following:

\[
\frac{1}{2 + \frac{3}{7 + \frac{6}{1 + \frac{2}{3}}}}
\]

Thus \(\frac{b + c}{d + e}\) is written \(\frac{a}{b + \frac{c}{d + \frac{e}{f}}}

The use of continued fractions is as follows:—by con-
verting a common fraction, with a large numerator and
denominator, into a continued fraction, we are able to find a
succession of more simple fractions, which are alternately
greater and less than the given fraction, and approach it
with great rapidity. Let \(a\) be the given fraction, a being
less than \(b\); proceed as in the rule for finding the greatest
common measure of \(a\) and \(b\), and let \(q, r, s, t, \&c.,\) be the
quotients obtained in the process; then

\[
a = \frac{1}{q + \frac{1}{r + \frac{1}{s + \frac{1}{t + \&c.}}}}
\]

The succession of fractions thus obtained is

\[
\frac{5}{1} \text{ first quotient} \times \frac{1}{5} = \frac{1}{6}
\]

To form the succeeding numerators and denominators there is one uniform rule for both, as follows:—multiply the
last found term by the first quotient remaining to be
used, and add the last but one; as in the following process,
where * denotes that the incoming quotient is unity, and
that the multiplication is therefore unnecessary.

\[
\begin{array}{cccccc}
1 & 2 & 4 & 6 & 10 & \text{ N.} \\
5 & 10 & 15 & 20 & 25 & \text{ D.} \\
\hline
1 & 2 & 3 & 4 & 5 & \\
5 & 5 & 5 & 5 & 5 & \\
1 & 2 & 3 & 4 & 5 & \\
5 & 5 & 5 & 5 & 5 & \\
\end{array}
\]

The succession of fractions continually approximating to
the given fraction, and ending in it, is then

\[
\frac{1}{5} \text{ is not wrong by } \frac{1}{6} \text{ or } \frac{1}{30}
\]

these approach nearer and nearer to the last, than which
they are alternately greater and less; the first greater,
the second less, the third greater, and so on; but the second
is not so much too small as the first is too great, nor the third
so much too great as the second is too small, &c. The
error committed by assuming any one of the approximate
fractions instead of the final result, is less than a fraction
having unity for its numerator, and the product of the
denominator in question and the next denominator for its
denominator. Thus—

\[
\frac{1}{5} \text{ is not wrong by } \frac{1}{6} \text{ or } \frac{1}{66}
\]


If it be desired to verify one of the fractions without proceeding to the end of the process, observe that the numerator of the difference of any two succeeding fractions is unity. Thus—

\[ \begin{align*}
1 \times 6 & \text{ exceeds } 1 \times 5 \text{ by } 1 \\
1 \times 11 & \text{ falls short of } 2 \times 6 \text{ by } 1 \\
1 \times 83 & \text{ exceeds } 16 \times 11 \text{ by } 1 \\
1 \times 260 & \text{ falls short of } 83 \times 47 \text{ by } 1 \\
\end{align*} \]

No fraction, having a less denominator than one of the approximate fractions, can come near to the original fraction as the one which is obtained by the process. Thus, \( \frac{83}{2015} \) is nearer to \( \frac{1}{2} \) than any possible fraction which has an integer numerator, and an integer denominator less than 603.

FRACTIONS, VANISHING. This term is applied to fractions in cases where a supposition is made which destroys both numerator and denominator at the same time. Thus—

\[ \frac{x^2 - 1}{x - 1} = \frac{a^n - a}{b^n - b} \]

are fractions which all assume the form \( \frac{0}{0} \), when \( x = 1 \):

That is, though for any other value of \( x \) they represent operations of ordinary arithmetic, yet in the particular supposition that \( x = 1 \) they all end in a direction to find out how many times nothing is contained in nothing. The first answer to this seems to be that the fraction may, in such a case, have any value we please to assign, for nothing taken of two, or three, \&c., is still nothing: that is, to say, according to the rules of common algebra, since 0 = 0 x a, whatever a may be, it follows that 0 divided by 0 may be a. But this is carrying operations which are defined with regard to magnitudes further than is contemplated in the definition, and applying them to a symbol which simply represents the absence of all magnitude. Such a process then may be rejected without scruple.

But this question remains: granting that the preceding reasoning does not entitle us to give the preceding fractions any value we please, can they be said to have a value at all when \( x = 1 \)? To settle this point in part, we must ask not what the preceding fractions are when \( x = 1 \) is unity, but what becomes of their value when \( x \) is made to approach nearer and nearer to unity. To take the first as an instance, we find that

\[ \frac{x^2 - 1}{x - 1} = x + 1 \text{ for all values of } x. \]

Consequently—1. Whenever \( x \) is greater than 1, the fraction is greater than 2. II. As \( x \) approaches to 1, the fraction approaches to 2. III. The fraction may be made as near to 2 as we please by making \( x \) sufficiently near to unity. Hence it follows that if when \( x = 1 \), the fraction has a value at all, that value must be 2. Similarly it may be proved of the second and third fractions that if they have values when \( x = 1 \), these values must be 1 and \( a \log a \) and \( b \log b \).

Such discussion has arisen as to whether vanishing fractions have values or not, as if such a question could be one of deduction from the ordinary reasons with regard to magnitude. The truth is, that any one may either assert that such fractions have values, or may altogether refuse to consider them, according to his ideas of convenience or propriety. Nobody doubts that if the answer to a problem were

\[ y = \text{the value of } \log x \text{ when } x = 1; \]

one of two courses must be taken; either the value of \( y \) must be declared to be unity, or the evanescent form of the fraction must be recognized as arising from a misconception of the problem, by which factors of the form \( x - 1 \) (where \( x = 1 \)) have been used under the idea that they were of the form \( x - 1 \) (where \( x \neq 1 \)): the problem must then be reconsidered, and the (so-called) mistake corrected. But the correction will always lead to the result \( y = 1 \), and those who employ the second method in preference to the first will not deny that they knew as much when they first saw their (so called) erroneous result.

It is not worth while to discuss the particular arguments used with respect to the isolated question of vanishing fractions, since the difficulty raised with regard to them belongs to a class of questions so extensive that they might form the subject of a separate science. Under the heads, Normans—Infinities—Limits, Taxonomy, 

The method of finding the value (or correction, if the reader please) of a vanishing fraction whose numerator and denominator disappear when \( x = a \), is to make a new problem with the different coefficients of that numerator and denominator, and then to substitute the value \( x = a \). If the result be still a vanishing fraction, repeat the process with new differentiations, and so on. Thus to find the value of the third fraction above mentioned—

\[ \frac{a^n - a}{b^n - b} = a \log a \]

\( \frac{a^n - a}{b^n - b} \) when \( x = 1 \), is \( a \log a \).

FRACTURE. Injuries complicated with the breaking of a bone are called fractures.

The comparative importance of such accidents depends in the first place upon that of the bone which is broken. The most dangerous fractures in this point of view are those of the head, skull, and the limb which is immediately essential to life, and extremely susceptible of injury. The processes, or projecting parts, of the vertebrae are sometimes broken without very serious consequences; but if any of the rings of bone which encompass the spinal cord be thus broken the result must be death. The danger is important in proportion to the nearness of the injured vertebra to the head. If the fracture take place above the fourth vertebra of the neck, reckoning downwards, death is generally certain, the paralysis of the nerves of inspiration. Fracture of the base of the skull is often instantly fatal, for analogous reasons.

The sternum, or breast-bone, and ribs, cover parts not so immediately essential to life, and, for many reasons, not so liable to suffer from violence due to their external defences as those to which we have already adverted. Fracture of the sternum can scarcely happen without the direct application of considerable force; and for that reason is both serious and rare. The ribs, on the contrary, are small and easily and frequently broken than any other bones; and generally speaking the consequences are not at all serious, if proper measures be adopted. The fracture unites readily; and the chief danger to be apprehended is inflammation of the serous membrane called the pleurisy, which is a fatal disease of the lungs. 

[Pleurisy; Pneumonia.] This danger is of course increased if the lung be wounded by the splintered ends of the bone, which is sometimes the case, especially when the fracture is the result of direct force. The bones of the pelvis are seldom broken, for the same reason that determines the rare occurrence of fracture of the sternum; but the accident is generally serious, and not unfrequently fatal, from injury to the bladder and other important organs included in the pelvic cavity, or connected with the bones which circumvent them.

The great heat and irritation which is always attached to fractures occurring about these parts; none of which can be considered as slight accidents, for in various degrees they all threaten the future usefulness of the limb. We feel that the subject of fracture, particularly of the limbs, is one that hardly admits of compression within moderate limits; and are aware that in attempting to compress it we must sacrifice order, if not perspicuity, to brevity. Our principal object however will be to give a clear explanation.
tion of certain technical terms, by which important varieties of these injuries are distinguished; and which, though frequently made use of in conversation and in the course of judicial proceedings, are often misapplied or imperfectly understood; with this we shall therefore agree as much general information as possible, subjoining what may be necessary to complete an outline of the whole subject.

It can hardly be necessary to explain what is meant by transverse and oblique fracture: we may observe, however, that by a transverse fracture we practically mean a fracture of the first, or transverse, variety, the bluntness of the ends of the broken bone in some measure preserves the contiguous soft parts from laceration at the time of the accident; it also offers a considerable obstacle to the displacement of any part afterwards from muscular contraction; but it chiefly conduces both to the diminution of present suffering and to the prosperous event of the case, by facilitating the speedy and perfect restoration of the displaced bone to its proper situation, and its steady retention, when restored, by mechanical means.

On the other hand, as most of the bones liable to fracture are cylindrical, or present flattened surfaces meeting in many solid angles, if they be broken obliquely, the ends of the bone will be separated or a soft part, considered as generally separated from each other to a much greater extent than is usual in transverse fracture, and there is not only much more suffering from the laceration of the soft parts and from portions of them being included and pressed between the broken surfaces, but the difficulty, but the difficulty, but the difficulty, but the difficulty is increased of disengaging the ends of the bone, and bringing them into close apposition; and still more in retaining them, from their tendency to slip past each other during the spasmodic and powerful contractions of the vessels, membranes, and muscles. This is a frequent source of suffering, and is often unsatisfactory, in spite of the utmost care and skill; and some distortion and shortening of the limb is inevitable in severe cases.

Comminuted Fracture.—When a bone is crushed, or fissured in more than one direction, so that portions of it are detached from the rest, the fracture is said to be comminated. From the facility generally experienced in replacing the bone, or at least in straightening and supporting the limb in these cases, they often end better than apparently less serious injuries of fracture. Perhaps one reason may be that the direct application of force, by which they are generally produced, has some effect in stunning the muscles and deadening the injurious influence of their contraction. If there be no great laceration of the soft parts, and inflammation and fever may supervene, and the recovery will be tedious in proportion; but the eventual restoration of the natural shape and length of the limb is frequently more complete than might be expected.

Fracture into a joint.—A bone may of course be broken in the situation of a joint; or, if the fracture occur at some distance, a fissure may extend longitudinally into one of these cavities. This circumstance is a very important aggravation of the injury. The synovial membrane, which lines the joint, is an organ of great importance in connection with the convalescent period, and when they become inflamed, the constitutional disturbance of the case is often considerable, and the attendant, or, as it is called, the symptomatic fever, is of a very acute type. When the larger joints, such as the knee, are concerned in injuries of this kind, the old surgeons frequently recommended amputation of the limb. Modern experience has shown that this may generally be dispensed with; but the greatest skill and watchfulness are required and often baffled in endeavouring to prevent the occurrence of a stiff joint, which is much less likely to happen if kept in the most relaxed position, if it should occur; a position which is not always the most conducive to the case, or indeed to the recovery, of the patient, and therefore not always eligible.

Fracture complicated with dislocation.—If a bone be broken, and if it may be beneficial to carry into effect the measures which are necessary for the satisfactory treatment of either injury, and the result is permanent distortion and crippling of the limb. This is of less importance in the case, and is, unless the fracture take place very near the dislocated joint, so that a firm hold cannot be taken of the detached end of the bone. If however the fracture in the bone does not extend to the joint, the constitution does not upon the whole appear to suffer as severely as might be expected in the sequel of the double injury, except in particular cases, such as those complicated with traumatic delirium, in which, as the subject is curious, we shall here take occasion to say a few words.

Traumatic delirium (epilepsia, a round). This affection is by no means confined to fractures with dislocation or injuries of which fracture forms a part. It appears however to be more frequently a consequence of injuries of the nature of those, and particularly of fracture of the head, immediately above the ankle-bone, which is often followed by dislocation of the foot. [Figu. XI.] This symptom, in his ideas, is generally very talkative, and in a state of great alarm and apprehension, expecting, for instance, to be led to execution for some fancied crime. He is conscious of being pale, and is frequently quite unconscious of his pain. If not prevented, he will rise from his bed and make about the room, using his shatterd limbs with perfect unconcern. Traumatic delirium has some points of resemblance with delirium tremens, and, like it, occurs for the most part after drinking, intermixed with delirium-simulans. It is sometimes fatal, but may generally be relieved by large quantities of wine and opium.

Compound fracture.—If the injury of which we are treating be confined to the bones and the parts immediately surrounding them, the fracture is said to be compound. However small the wound in the skin may be,—as it is frequently the case,—the least disturbance, which, though it rarely succeeds, should always be attempted,—this is by far the most serious aggravation of the injury, whether we regard the suffering of the patient, the progress of the case, or the prospect of recovery. A simple fracture may be so complicated with such foreign bodies, that we may generally be expected with confidence to be well enough to permit the accustomed use of the limb in a period ranging from two to eight weeks; the pain and constitutional disturbance is seldom lasting beyond a few days. But a compound fracture of this description is at best an affair of many months of suffering and sickness.

This remarkable difference originates in the wide constitutional sympathies of the skin as an organ of sensation and secretion; in the importance of its function as a covering for the subjacent parts, and in its great tendency to become inflamed when the subject of a punctured and lacerated wound. It further results from the tendency of the inflammation to propagate itself from the edge of the wound along the track of the wound to the periosteum, and from the subcutaneous tissues into the muscles, and finally into the cellular tissue between the muscles, under the periosteal expansions which invest and separate them, and within the synovial sheaths of their tendons. The same causes may have place in simple fractures, but it seldom exceeds manageable limits, and the lower degrees of it may perhaps be considered as curative.

But the inflammation which follows a compound fracture puts a stop to all the natural processes of restoration, and renders the artificial means, that of promoting the balance of evils, amputation often a preferable alternative.

Diagnosis of fracture.—Much need not be said of the means by which the existence of a supposed fracture may be ascertained. The nature of the accident is obvious; and the observer, if he does the better: but where there is any doubt, it may be removed by attending to the grating sound, or the sensation communicated to the touch occasioned by slightly moving the broken ends of the bone against each other. This symptom is called crepitation.

Treatment.—The principles of treatment are, in the first place, to soothe by all possible and prudent means the muscular irritation and spasm which are the immediate and most urgent consequent of a recent fracture. It must be placed in the easiest posture, which, if the thigh
or leg be broken, is generally on the same side or on the back; the limb is to be supported on soft pillows, the constriction being so tight that the arm may be examined as possible the relaxation of each class of muscles, especially the flexors; gentle friction, warm fomentations, or cold evaporating lotions are to be used according to the circumstances of the case and the feelings of the patient. After two or three days the bone firmly and permanently set, which may not be for some hours or days, the bone is to be restored as nearly as possible to its proper situation by the gentle application of force in any required direction. Violence would defeat its own object by reproducing spasm. One hand or an assistant should steady the upper portion of the limb while the lower portion is drawn down and turned till the proper length and bearings are restored. This process, which is called the reduction or setting of the fracture, cannot always be completed on the first attempt, without occasioning acute pain, and indeed only possible, to effect it by degrees. The displacement may also return; and in oblique fracture this will certainly happen unless the case admits of a very fortunate adjustment of the bandages. The process we have described must then be repeated, being to be placed in splints, which are thin pieces of wood or other material of the requisite firmness and length, and suitably shaped and hollowed out to fit evenly without making undue pressure upon prominent points, such as the ankle. The skin is to be laid upon the soft pads a little wider than the splints, which are also useful to prevent them from slipping. When everything is properly arranged as to position, the splints are to be bound upon the limb with a sufficient degree of pressure; this will hold them in place and re-adjust them if occasion presents, in order to detect and rectify any deviation from the correct line of the bone that may arise or become apparent as the swelling subsides. Where there is no fear of the bone being displaced by the motions of the muscles which are attached to it, or by the restlessness of the patient, it is not necessary to apply splints, which are only useful in preventing motion, and otherwise rather retard the progress of the case by their pressure, and for other reasons.

This is sufficient to apply a broad belt or bandage to prevent them from alternate depression and elevation in the act of breathing, which can be carried on sufficiently well by the diaphragm alone [Respiration]; and all such means are inapplicable in many cases, such as the fracture of the bone of the thigh, where there is nothing to keep and the patient in a proper position. This can be done most effectually by the help of a bedstead invented by Mr. Earle, the frame of which is jointed, so that the back may be raised to any required inclination, the knees being also raised, and the feet, if necessary, bound to the cross-board. The mattress is provided with movable pieces, which preclude the necessity of change of position for any purpose. The paramount importance of this fact is illustrated by a strict diet, and the soft parts diet need scarcely be adverted to in this as in all cases of injury, in which a primary object is to repress or prevent inflammation.

Union of fractured Bone.—The process by which fractured bones are united is generally uninterrupted in simple cases, if the constitution be good and the accompanying contusion not very considerable. The extravasated blood is soon absorbed, and the swelling and inflammation subside. The inflammation commences at the part forming the end of the segments of the bone, which swell and unite at the torn edge. In this consolidated mass, which forms a soft case for the bone for some distance aul and beyond the line of the fracture, but is the thickest at the point, particles and spicula of bone are gradually deposited, till at length it becomes rigid and firm, holding the ends of the bone in close contact and preventing them from slipping away from each other, like the slider of a paraisol. The length the sides of the bone, a little below the limit of its union, is restored, and conscious of the change, can no longer be persuaded to refrain from using it. After a certain period, which has been differently stated—perhaps six or seven months in the case of a large bone—the fractured ends of the bone become firmly united, by the deposit of bone from the inner side of each bone between them; the exterior case becomes absorbed, and into the curve is completed, the bone being rather thicker and generally somewhat stronger and more solid in the situation of the fracture than before the accident. The whole of this natural process goes on more slowly in adults, and somewhat more slow in advanced periods of life than in the middle age. Taking all ages, it ranges, as we have said, from two to eight or ten weeks—speaking, of course, of the period at which the limb becomes firm enough to perform its functions.

The treatment and progress of compound fracture depend upon the circumstances of each case; and it would lead us too far to enter upon them. The principles of management, however, are the same, as are likewise, in the main, the natural processes by which firm union is established.

Ununited Fracture.—It sometimes happens that, without any assignable cause, the processes we have just spoken of do not go forward; and the fracture, originally perhaps a very simple and promising one, either does not unite at all, or unites only very imperfectly; and this is an internal impediment or tendon; and this even where nothing faulty can be discovered in the constitution of the patient or in the management of the surgeon. Attempts are made to excite irritation and promote the deposition of bony matter in this new substance; but it is usually too late, or too thin and feeble, and in other ways. Such attempts not unfrequently fail, and the bone remains flexible and useless for life.

Causes of Fracture.—We have said nothing of the various causes in which fractures occur. Without doubt each reader can imagine them for himself. There are, however, some circumstances with reference to this subject which it is proper to mention. In the first place, the simple action of the muscles, without any blow or external pressure, is sufficient to cause the bone to break; speaking, the case in transverse fractures of the patella or knee-pan, and occasionally in those of the olecranon, or point of the elbow. When these are broken off by a sudden jerk of the muscles attached to them, the detached portion is to some distance from the bone, and may be brought into sufficiently close apposition to unite by bony matter. But the ligamentous substance we have mentioned in speaking of ununited fracture is formed between the broken surfaces; and if proper care be taken not to permit it to be stretched by a sudden jerk or by any other movement, especially in the case of the elbow, it answers every purpose in these cases nearly as well as bone. When one patella has been broken in this way, the other is almost sure to follow soon after, having a double duty to perform in supporting the muscular contraction; and it is only by introducing into the wound a fine thread with the extremity of the end of the bone.

Imperfect Fracture.—There are some conditions which modify the liability to the occurrence of fractures. Among many may be mentioned the soft and cartilaginous state of the bones in young infants before the earthy matter has been completely deposited. At this period it is not uncommon to find that although the limb is flexible at a certain point, no crepitation can be felt, and that this point has a kind of the end of the bone. This is called imperfect fracture.

The opposite state of brittleness prevails in old age, and owing to this circumstance, a very slight accident will often cause a fracture of the neck of the thigh bone, the soft parts common to little injury. In these instances ligamentous union is sometimes all that can be effected, and the limb remains for the remainder of life to a great degree crippled.

Fragmenta Ossem.—A still more brittle condition of the bones is sometimes co-existent with cancer and probably other vascular states of the constitution. It is called frag-

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little injury of the soft parts in these fractures, and they are said to unite rather more quickly than others.

Some persons have asserted that the bones are more brittle in winter than in summer; but it does not require an hypothesis so improbable as this to explain the principal fact on which the proof has been rested, namely, the more frequent occurrence of fractures in frosty weather.

FRACTURE, in mineralogy, means the irregular surface which appears when a mineral is broken, so that surfaces do not constitute a cleavage. The kinds of fracture are determined by the aspect and forms of the surface presented by the mineral. Werner divides the varieties of fracture into compact, fibrous, radiated, and foliated. The compact may be splintery, even, conchoidal, uneven, earthy, or hackly. The fibrous may be coarse or delicate, straight or curved, parallel or diverging; and the diverging again is either stellar, scoepform, or prismatic. The radiated fracture is broad or narrow, straight or curved, diverging or parallel; and streaked or smooth.

Other mineralogists do not employ so many descriptive terms as those above; thus, on looking through the description of minerals by Mr. Brooke, we find little else but the following varieties of fracture:—conchoidal, fine conchoidal; earthy, fine earthy; foliated; granular; indistinct; very indistinct: splintery, coarse splintery, and uneven.

FRAGARIA [SWEBISH].

RAISE is a row of palisades placed in a horizontal or inclined position on the exterior of a rampart of earth, in order to increase the difficulty of passing over it at the time of an assault.

FRAMLINGHAM. [SUFFOLK.]

FRANCE, the most westerly of the kingdoms of continental Europe with the exception of the Spanish Peninsula. Its form is very compact, and resembles an irregular polygon, the general contour and dimensions of which, with the latitude and longitude of the extreme points, are given in the subjoined diagram. From this it appears that it is comprehended between 42° 25' and 41° 30' N. lat. and 5° 17' E. and 4° 46' W. long.; that the aggregate length of the circumnavigating lines of the polygon is 2157 miles, of which 1188 miles are coast (929 miles on the ocean and 259 on the Mediterranean) and 969 miles of land frontier. If all the less important windings of the coast or of the frontier were followed, these numbers would of course be materially increased. The longest diagonal is from south-east to north-west (B to M on our diagram), about 860 miles; and the next longest from north-east to south-west (B to L), about 613 miles.

The area of France may be computed at 26,766 square geographical leagues of 25 to a degree (264,741 square English miles), including the island of Corsica, or Corsica, which, though by its geographical position and ancient political ties rather pertaining to Italy, is now incorporated with France, and forms one of its departments; or, 36,211 square geographical leagues (=204,825 square miles) exclusive of that island. The population, by the last census of 1856, was 33,510,908 (164 to a square mile, exclusive of Corsica, or 33,333,019 (166 to a square mile), exclusive of that island. The number of inhabitants was greater than at the census last preceding, viz. that of 1831.
belonging to France. This geographical position, and con-
sequence with it, is the basis for the unity of the French population, are politically united to the British isles, and form indeed the sole relic of the once extensive Norman or other French possessions of the early English kings: the Islands of Brehat, les Sept Iles (the Seven Islands), and the Isle of Jethou form the extreme west of France. On the western extremity of France are the Isles of Ouessant or Ushant, and along the remainder of the coast of the ocean are the Isles of Glénan, Groix, Belle-Ile, Noirmoutier, Êlé- dieu, R. Oléron, and others of less importance. In the Mediterranean we have the Alpes and the west coast of Corsica. All these are noticed either under their respective articles, or under those of the departments to which they belong: Alderney, Bar, Belle-Ile, Charents Infer-
mités, Corsica, Cotes-du-Nord, Finistère, Guernsey, Jersey, Jersey, Morbihan, etc.

The land frontier of France is, for the most part, formed by great natural barriers. On the southern or Spanish frontier are the Pyrenees, along the crests of which from the Mediterranean to the ocean (H to I in diagram) the line of demarcation runs. On the north-east, the frontier towards the continental dominions of the king of Sardinia (from between C and D to E in diagram) is formed by the lofty ridges of the Alps; and that towards the Swiss Confederation (from C towards D) by the lower, but still confi-
tant, Mont Blanc range. On the left bank of the Rhine (B to C) separates France from the domi-
nants of the grand-duke of Baden. The remaining part of the frontier (A to B) is purely conventional, and has varied materially in the last half century, as the fortunes of war have enabled the French to extend and retract their dominions. The conterminous states are Bavaria, Prussia, and Belgium.

Surface, geological character, hydrography.—The lofiest mountains in France are those on the Sardinian or Spanish frontier, but the Pyrenees, where the Pyrenees is the highest point, the highest summits lie beyond the boundary of France, in Savoy or Switzerland; but some of those on or within the line of the frontier are of great elevation: as Mont Blanc, in the valley of Gédar, on the upper waters of the Durance, is 15,193 feet; Puy de Boeuf, 14,168 feet; and the peak of the village of Maurin 13,107; Mont Trois Illions 12,737, and others. Of the Pyrenees the highest point, Mont Maladeta, is in Spain, but other points which nearly equal it are in France or on the fron-
tier, as Vignemaré, at the head of the valley of Cauterets, 11,901 feet; Peak, near the Cascade of Gauniere, 10,745 feet; Montcalm 10,663; Peak of Estates 10,611, and several others of above 10,000 feet. The highest summits of the Jura belong to Switzerland; Le Mont d'Or, near Roche-
quefort, is 10,714 feet, and Le Gros Tauron, near Pontarlier, 4351. [ALPS; PYRE-
NEES].

The Cévennes, of which the Montagnes Noires, or Black Mountains, of Languedoc and the mountains of Espinouse and the Gard, are subdivisions, are separate from the Pyrenees by a valley, through which the great canal of Languedoc runs: they extend in a north-
eastern direction, and after sending off branches to join the group of primitive and basaltic mountains of Auvergne, turn to the northward and skirt the valley of the Rhône and the Saône: in this part of their course they are known (accor-
ding to the districts through which they pass) as the heights of Vivarais, Forez, Lyonnais, Beaujolais, or Charollais. Mont Mezenc, the highest of Cévennes, is 5500 feet, and Mezen, the highest of Cévennes, is 5000 feet, near the source of the Loire, 5125. The mountains of Auvergne rather surpass these in height. Le Pic de Sancy, the summit of Mont d'Or, is 6224 feet, Le Puy Ferrand is 6116 feet, and Le Plomb de Cantal is nearly as high. There are several other 'Puy's' or volca-
nic mounts of equal height.

The comparatively humble slopes of the Côte d'Or of Bourgogne (Burgundy) may be regarded as a continuation of the Charolais heights, and serve with the heights of Langres to connect the Montagnes Noires with those. These branches extend to the south-east so as to unite with the Jura, and whose wild and wooded steeps form the western boundary of the valley of the Rhine. The principal sum-
mits of the Vesiges are Le Ballon de Souta or Guelwieter, 4695 feet high, Le Haut de l'Echappel, 4391 feet high, Les Chaumes, 4208 feet, and Le Ballon d'Alace, 4124 feet.
From the heights of Langres a range of high lands extends in a north-west direction to the coast of La Manche, about Cape Gris Nez, separating the streams which belong to the great system of the Rhine from those which belong to the river systems of central France. A branch from these heights branches off to the basin of the Semois, and a second branch from the Charollais heights a range of hills of gradually diminishing elevation extends to the neighbourhood of the Loire, separates that river from the streams which flow into the Seine, and connects the mountain system of Central France with the heights of Beauce, which are a prolongation of the Menez mountains of Bretagne. These run from the headlands near Brest in an eastward direction. A range which proceeds in a north-west direction from the central group of the Auvergnt mountains toward the mouth of the Loire, makes the basin of the Seine extend from the Loire from that of the Garonne; and another range, which branches off from the Pyrenees near the Pic du Midi, and runs north-west till it subsides in the Landes (heaths) of Bordeaux, separates the basins of the Garonne and the Arc.

The Seine, the heights of Langres, and the range proceeding from the latter to the coast of the Channel, separate the western or oceanic slope (versant Océanique de Malte Brun) from the eastern; the latter is subdivided by the basin of the Seine from that of the Arno. The Pyrenees and by those branches of the Vosges which unite with the Jura, into the north-eastern or Rhénish slope (versant Rhénan), and the south-eastern or Mediterranean slope (versant Méditerranéen).

The Seine includes the basins of the Adour, the Garonne, the Charente, the Loire, the Vienne, the Orne, the Seine, and a number of others of less importance. The basin of the Adour is bounded by the Pyrenees and the range which extends from these to the mouth of the Adour, and the length of the river is about 234 miles. The basin of the Garonne is bounded by the heights mentioned, by the Pyrenees, the Cévennes, the mountain group of Auvergne, the heights of Gâtine, and a small branch from these which divides the basins of the Garonne and Charente. The basin of the Loire has two principal courses, the north-west; that of its principal tributaries which flow from the Cévennes and the Auvergnat group (as the Dordogne, the Lot, and the Tarn) is to the west; that of the Pyrenean tributaries, which are smaller, to the north; the Dordogne is the last tributary of importance which it receives in its course to the ocean; and their joint estuary is called the Gironde, a name which like that of our own Humber applies to the estuary alone. The basin of the Gironde extends to the east to the Garonne, but does not exceed that of the Seine in the proportion of 7 to 6. The length of the principal streams of the system of the Garonne is thus given by Malte Brun: the Garonne itself, 250 miles, the Dordogne 293 miles, the Lot 166 miles, and the Tarn 206 miles. The basin of the Charente is bounded by the heights of Gâtine or their branches, and the length of the river is 232 miles thereafter. The basin of the Loire, the largest river that wholly belongs to France, is bounded by the heights of Gâtine, the Auvergnat group, the Cévennes in which it rises, the Charollais heights, the heights which connect these with the heights of Beauce, the heights of Beauce, and the Menez mountains of Bretagne. The direction of a line drawn from the source of the Loire to its mouth would be north-west, and it would lie nearly along the whole length of the heights of Gâtine, upon which the river makes, its course is first north and then west; its principal tributary, the Allier, has a northerly course nearly parallel to and not far distant from the upper part of the Loire; the Cher, the Indre, and the Vienne, have called the heights of Gâtine, separate the basin of the Loire on the left bank; the most important tributary which it receives on the right bank is the Mayenne. The length of the Loire is given by Malte Brun at about 600 miles; that of the Allier at about 250; that of the Cher, 212; that of the Vienne, 207; and that of the Creuse, an affluent of the Vienne, 166 miles. The basin of the Vienne is bounded on the north by the Menez mountains, and on the east by a bunch of the same mountains which separates the basin of the Vivaune from the basin of the Loire; the length of the Vivaune is about 124 miles. The basin of the Vivaune is bounded by the Menez mountains, or their branches; the length of the river is about 92 miles. The basin of the Seine is bounded by the heights of Beauce and those of Langres with their connecting range; and by the hills which branch off from the heights of Langres toward the Channel. The length of the Seine is given by Malte Brun at 470 miles; that of its principal tributary, the Marne, is 268 miles. The basin of the Semois which branches off from the basin of the Seine, lies between the heights of Langres to the coast of the Channel; the length of the river is about 110 miles.

The north-eastern or Rhénish slope comprehends parts of the basins of the Escout or Scheufel, the Meuse or Mea, the Moselle, and the Rhine; it is comparatively small, and the course of each of these rivers belongs to France; so that part of the course of the Rhine is indeed included in that country, of which it only forms the boundary.

The Mediterranean slope comprehends the basin of the Rhône, and the branches of the Loire, and the Rhône is too small to require notice. The basin of the Rhône is bounded by the Cévennes, the heights of Charollais, the Côte d'Or, the heights of Langres, the Vosges, the Jura, and the Alps; its greatest extension is from north to south, and it is convex toward the south; and that of the Saône, which principal affluent, is about 232 miles; that of the Saine, a secondary affluent, is about 190 miles; and that of the Doubs, a feeder of the Saône, about 250 miles.

General Geological Character. Of the geology of France our limits and our materials restrict us to a general and rapid survey of the principal groups and forms of which our country is composed.

1. The basin of the Garonne extends from a line drawn along the foot of the Pyrenees from the ocean to the Mediterranean, northward to a line drawn from the mouth of the Gironde below Blaye to the Étang de Sigean, near Narbonne, the whole length of the valley of the rivers of the valleys of the Adour and the Garonne, with the intervening 'landes,' or heaths; the lower part of the valleys of the Dordogne, the Lot, the Tarn, the Ariège, and the other streams which join the Garonne on the right bank; the whole valley of the valleys of the Adour and the Seine, with the intervening 'landes,' or heaths; the lower part of the valleys of the Dordogne, the Lot, the Tarn, the Ariège, and the other streams which join the Garonne on the right bank; the whole valley of the valley of the bottom of the basins of the Gironde, the Loire, and the Saône, from its junction with the Loire, along the valley through which the canals of the Loire, and of Briare have been cut, to the valley of the Loire, the valley of which these basins extend upwards to the Gironde, and downwards below Briare; from this last point they are bounded by a line drawn northward to the neighbourhood of the Saône, and of its tributaries the Arques, Ouvèze, and Durance.

2. The third district extends along the valley of the Saône on the east side of that river from the junction of the Doubs to Lyon, and then along the east side of the Rhône to the source of the Rhône, along the valley of the Drôme; this long strip has a breadth of several miles on the east side of the Saône and Rhône, but does not extend to the west of those rivers, except between the junction of the Drôme and the Canal du Centre with the Saône. The next district comprehends the alluvial formations of the delta of the Rhône, and the lower part of the valley of that river, and of its tributaries the Arques, Ouvèze, and Durance. 3. 6, 7. There are three other narrow portions occupied by these later formations, extending along that part of the valley of the Rhône which belongs to France, along the valley of the Allier, from near Briare to below Moulins, and along the valley of the Loire from near Feurs to the junction of the Avron. 8. That small part of France which lies to the north of a line drawn from Calais by St. Omer to the Belgian frontier, is occupied by those formations which extend into Belgium, and occupy a large part of that country.
The island of Corsica consists chiefly of granite and other primitive rocks, bounded on the east and west by sandstone which form the coast, and on the south by the later, or super-cretaceous formations, which occupy the neighbourhood of Bonifacio. (Geological Map in the Atlas to Malte-Brun's Geography.)

The mineral riches of France are considerable. Granite, sienite, porphyry, variolite, and serpentine are quarried in the department of Hautes Alpes (High Alps), in Corsica, and in some of the departments of the north-west; lava in Auvergne, marble of great variety and beauty in the Pyrenees, in Corsica, and in various other parts. Granite quarries are wrought at the foot of the Pyrenees and in the department of Maine et Loire, as well as in some parts of the east of France, near the Belgian frontier; and except for stone quarries for building purposes, different departments of the centre, east, north-east, and north, and in that of Hérault in the south. Good stone, adapted for the purpose of lithography, is also found. The departments of the north-east, into which the former provinces of Savoy and Duchy of Burgundy have been divided, furnish the best clay for bricks and tiles; the department of Haute Vienne (part of the ancient Limousin) the best kaolin or fine clay for porcelain; that of Seine Inferieure (antient Normandy) furnishes the best zeolite, or limestone, for the manufacture of artificial fire-brick; there is a great quantity; and of lead, which is combined with silver, there is a great abundance, especially in the departments of Finisterre, Isere, Lozere, and Vosges. Silver, uncombined with any other metal, is found in the department of Isere. Copper, the most important in the neighbourhood of Lyon. Gold is found in the soil brought down by some of the streams which rise in the Pyrenees and the Cevennes, by the Rhone and by the Garonne. A gold-minne in the department of Isere, though now abandoned, might, it is supposed, be worked with advantage.

No less than thirty-three of the departments contain coal-pits, and some, especially Bouche du Rhone, Isere, Mayenne, Sarthe, and Bouches-du-Rhone, produce lignite, coal, wood, and anthracite; sulphate of iron, alum, asphaltum, bitumen, and petroleum, are also found. The most productive coal-districts are near Valenciennes in the north, and St Etienne in the south of France. The mines near Valenciennes are enormous, and those near St Etienne contain enormous quantities of coal, but are worked on a much larger scale, and produce a more valuable coal. Much coal is dug in the departments of Saone et Loire, Aveyron, and Gard. The department of Meurthe contains brome-springs and rock-salt. The departments of Dauphine and Savoy contain large quantities of building-stone, some of which are of a more than one hundred and fifty are collected in baths for the reception of patients; the others are taken internally, and are frequented, the greater part by visitors from a distance, the others by persons in the neighbourhood. The department of Isere, the mean annual quantity of rain is 32 inches; in the mountainous part of Haut Rhin 30 inches (French 75); in the northern part of France, between the Somme and the Meuse, 26 inches; and in the department of Rhone (Lyon) above 29 inches; while in the department of Ille et Vilaine it is only 21 inches; in those of Orne and Eure, between 20 and 21; and at Paris, in the departments of Paris and Seine, 19 and 20 inches. Of the difference and the variations of temperature in different parts of France, a judgment may be formed from the following table, some of the statements of which are however to be regarded as approximations to the truth rather than as of accurate exactness:

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<tr>
<th>Placed</th>
<th>Average Temperature.</th>
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<th>Average Temperature.</th>
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<tr>
<td>Placed</td>
<td>Summer</td>
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<tr>
<td>Clermont in Auvergne</td>
<td>64°-4'</td>
<td>34°-9'</td>
<td>Bordeaux</td>
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<tr>
<td>Dunkerque</td>
<td>64°-3'</td>
<td>38°-7'</td>
<td>Montpellier</td>
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<tr>
<td>Paris</td>
<td>64°-6'</td>
<td>39°-7'</td>
<td>Toulon</td>
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<tr>
<td>St Malo</td>
<td>66°-4'</td>
<td>42°-10'</td>
<td>Nimes</td>
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<tr>
<td>Nantes</td>
<td>68°-5'</td>
<td>40°-5'</td>
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We give the table from the last edition of Malte Brun's Geographie Universelle, substituting Fahrenheit's scale for the Centigrade.

Agriculture.—France has always been considered one of the most agricultural countries in Europe; and if the husbandry of France is not superior to that of other countries, it is not inferior to many countries. This is admitted: the most authors on agriculture have collected all the information which has been handed down from the ancients, or which experience has taught the moderns. But this has had little influence on the practice of the great mass of the cultivators of the soil, who are too much engaged in reading books, and when they could read them, would seldom adopt methods not sanctioned by the usage of their forefathers. The want of ready communication by roads and canals must ever prevent any great exertions being made to increase the produce of the soil. We have followed, in the present chapter, the neighborhood of Paris, one part of France has often had a deficiency of corn approaching to a famine, when plenty reigned in another. Even now (1837) the price of grain in the south of France varies so much from that in the north, that there is a payment to the labourer or peasant, when his plot of ground, in different ports; whereas in Great Britain the price is brought so nearly to a level everywhere, that the only difference arises from the expense of carriage by water, which is always considerable.

The distance from north to south, and from east to west, the traveller, who expects to find an improved state of agriculture, is much disappointed. Arthur Young, in his tour through France in 1767—8, comparison of what is cultivated in various parts of France, where they have introduced a better husbandry, the present state is not very different from what Arthur Young represents it to have been. The arable land is not very different from that of other countries, but the whole of France into four distinct climates as regards agriculture. In the northern the vine does not thrive so as to make good wine. This district lies north-west of a line which passes near Paris, and is parallel to the line of Toulouse and Bordeaux, and is situated in a direction nearly east-north-east and west-south-west, so that it advances more to the north on the eastern part, and less so on the western. The next division is that in which wine is made, but not so good as that in the preceding. The next is that of the vineyards divided France nearly into two equal parts. The third division is that in which both wine and grain, but where the climate is still too severe for the olive or the white mulberry; this is bounded on the west by the Jura and a line passing to the north of Lyon. The last division consists of the southern provinces from the last-mentioned line to the Pyrenees, where the olive and the white mulberry flourish, and where the maize and the vine. In this part of France, which yields two crops of corn, but the soil is not well adapted to permanent pastures, except at a considerable elevation above the sea.

The finest climate is in the third division, where corn, maize, and vines are good and abundant. The heat is not so oppressive as in the southern; the winters are the greatest scope for agricultural operations. The most fertile lands are towards the north and east. The Beauce immediately south of Paris is a fine country, and so are Normandy, Anjou, and the plain of the Garonne. The worst soils are in Burgundy, Sologne, and the coasts of the Bay of Biscay. Arthur Young gives the following distribution of the land and its productions:—The whole surface of France is divided into 131 millions of acres, of which 70 are cultivated, 51 forests, 5 million acres good meadow, 4 million meadows and good pastures, 5 million artificial grasses, which may be added to the arable part, and 27 in wastes, heaths, and poor pastures. These quantities were only an approximation; but they serve to show the small proportion of permanent grassland in France, the greater part of which is in Normandie and Bretagne.

The arable land of France is now estimated at 23,000,000 of hectares, which (taking the hectare = 2.47 acres nearly) are about equal to 56,810,000 acres English measure. The yearly agricultural produce of France is given by Malte Brun as follows:

| Crop     | Acres | Harvested
|----------|-------|-----------|
| Wheat    |       | 60,000,000
| Rye      |       | 2,000,000  |
| Barley   |       | 2,000,000  |
| Oats     |       | 2,000,000  |
| Buckwheat|       | 2,000,000  |
| Potatoes |       | 2,000,000  |
| Beets    |       | 2,000,000  |

There are in France very few large proprietors of land, very gentle,men, spend a great part of their time in the country, and take an interest in agricultural pursuits. There are not many speculative farmers who have capital, and are possessed of a superior practical, as well as a theoretical knowledge of agriculture, and who make it a means of acquiring wealth. Few expensive instruments can consequently ever be tried, or brought into general use, nor are extensive improvements to be recommended, or any great idea entertained of preventing a rapid improvement in French agriculture.

The northern part of France, on the confines of Belgium, and in the immediate neighbourhood of Paris, are the best cultivated. In most other parts, except those where the maize is cultivated, the old system of two or three crops of corn, and a fallow, is generally adopted. If the fallows were well worked and clean, the crops would be better; but this is by no means the case. The variegated appearance of the corn in May, from the abundant growths of weeds which have not been kept checkered, gives an appearance of want of care in the tillage. When they appear likely to choke the corn, they are sometimes weeded out; but as the method of sowing the seed in rows or drills with an instrument is unknown or undervalued, there is no possibility of hoeing the intervals between the growing plants, and all the weeding must be effected with the hand.

The best account we have in English of the state of French agriculture is contained in the journal published by Arthur Young, of his journeys through France in 1767—8; and he gives the following, although it is not a complete improvement, since the Revolution of 1793, and several Englishmen have purchased farms in various parts of France, where they have introduced a better husbandry, the present state is not very different from what Arthur Young represents it to have been. He has been a better husbandry, the present state is not very different from what Arthur Young represents it to have been.
We have given the equivalent quantities in English measures in round numbers (taking the quarter = 291 hectaroles nearly). The quantity of grain produced in France now, very little exceeds what was grown fifty years since, although the population has advanced in the interval from 25,000,000 to 40,000,000, and the area of the cultivated parts has increased. In the Cévennes and Auvergne they build walls to retain the water, by which even the smallest torrents and cultivated the sides of the mountains by means of the terraces thus formed.

In the south the soil of the hills is stony, which suits the vine but is unfit for the growth of corn; between the hills there are valleys which abound in every kind of produce, and where there is a command of water to irrigate the fields the most productive water-meadows may be made. But there are many spots quite unproductive for want of improvement. Wherever the maize is cultivated, it is sown every year in a certain desirable depth in the furrows, and the sugar cannot fail to exhaust the soil; however good it may have been at first; for maize returns little to the ground in the way of manure, and the straw of the wheat is not sufficient for that purpose. The French-bean is likewise cultivated for its seeds, weighing 30 to 36 kilos per hectare, but the nutritive matter than any other seed, in the same compass. These crops cannot be raised to any extent without much manure; and the number of cattle kept is not sufficient to produce an adequate supply of it. The erable land and pastures of the neighbourhood are not sufficient to feed the horses or oxen which are raised. The French peasants have no idea, at least in the central part of France. The consequence appears in the average produce of land which has every advantage of soil and climate. The increase of five or six measures of wheat for each measure sown is the full average of production; of barley and oats it may be some what more. The mode of valuing a crop by a comparison with the quantity sown is very fallacious: the produce per acre is a better criterion of the goodness of the soil; for the quantity of the crop is not so much dependent on the manure as on the quality of the soil.
her or in excellence to what they might be under a better system of agriculture. A considerable number are imported annually; although the richness of the soil should rather enable the natives to exploit them, considerable pains have been taken by the establishment of government studs and by other means to improve and increase the breed. The horses of the departments of the north and north-east, Somme, Pas de Calais, Aisne, Haute, Rhin, and Bas Rhin are well adapted for the work of the land, and for the cultivation of the vineyards of Orne and Calvados are excellent for the saddle or the carriage; those of the departments of Maine et Loire, Sarthe, and the departments adjacent to the mountain-chains of the Alps and the Jura, are adapted for the light cavalry; the horses of the former are very celebrated under the name of the Limousin breed, and those of the latter, the Guignes, Gasogne, and Bearn realliced Narvarra, are in the highest repute for the combination of lightness and strength. The horses of Corsica and Baux are renowned, though largely introduced throughout Europe, the ass, though highly superior to that of Great Britain, is, except in the department of Vienne, far inferior to the ass of Spain or Italy. Mules are bred in many parts, and some of them are exported. Oxen in France are much employed in the horse-fattening of the breed of Berne goats are in 12 or 13 different breeds; among the largest are those of the departments of Seine et Marne, Aisne, Haute, Rhin, Pas de Calais, Charente Inférieure, Deux Sèvres, Lot et Garonne, and Gironde; among the smallest are those of Béarn, the Pyrenees, Gironde, and Corse. Oxen are frequently bred in one part of the country and fattened in another part. The rich plans of Lower Normandy afford pasturage to great numbers of oxen which are brought thither for fattening. Mutton is especially valuable in central France where they are bred. The sheep of various breeds, some of which have been so far improved as to furnish a wool equal to that of Saxony. The number of sheep in proportion to the population is by no means equal in France to England; the chief mutton town in the former provinces of Berry, Bourbonnais, Normandy, Picardy, Île de France, Orléans, Rouenque in Gironde, and part of Limousin. The sheep of Béarn and Picardy, as well as those of Normandy, the Guignes, and the Pyrenees, are the fattest; those of Bourgogne and the Ardennes are most esteemed for their mutton; but the best on the whole are those reared on the sandy districts near the sea. The sheep of Roussillon approach nearest to the Merino breed. The breed of Berne goats is bred in the provinces of Berry, in the mountainous districts of Auvergne, the Cévennes, the Vosges, and the hogs which connect these two chains, in the Pyrenees, the Alps, in the Landes of Gironde and Gasogne, and especially in Picardy. The Théoule goat from the crossing of these breeds a number of varieties have resulted. The trade in salt provisions forms an important branch of industry in the department of Basses Pyrénées (where the Bayonne hams are cured), and in the frontier departments of the east and north-east. The number of horses in France is estimated at 2,500,000. The number of oxen in 1868 was ascertained to be 7,130,632; they were most numerous in the departments of the north-west, comprehending the western part of Normandy, and the whole of Anjou and Maine; the number of oxen at the same period was 29,130,231, and of goats, 1,206,093.

The rearing of poultry is in some parts much attended to. The cock and hen of the peninsula of Caux constitute a perfect breed, which are fattened in the environs of Barbizeux, La Feuillée, or other villages. A special market is held in the provinces of Languedoc and Alais, and in several places in the west of France; and the duck in Languedoc Normandy, and Languedoc. By a peculiar mode of treating the liver of the duck and those rendered of large and very delicate. The duck liver pies of Toulouse and the goose-liver pies of Strasbourg are known to epicures.

Of wild animals there are some which are not found in Europe. The black and brown bear have their haunts in the Pyrenees; the lynx, found, though very rarely, in the ranges of the higher Alps; and the wild boar are common in the forests of any extent. The chamois and the wild goat are found on the summits of the Alps and Pyrenees. The stag, the roebuck, the hare, and the rabbit department. The marmot inhabits the Alps and the Pyrenees, and the ermine and the hare are found in the neighbourhood of the Vosges.

The red squirrel, the alpine squirrel, and a species of the flying squirrel are also found in the forests of the Vosges and the woods of the land, and in the higher districts of the Alps. The smaller beasts of prey and vermin, such as the fox, the badger, the hedgehog, the polecat, the weasel, the rat (of which the original black species has been, as with us, exterminated and replaced by the invasion of the brown species), the cat, the wolf, the skunk, the marten, and the field-mouse are sufficiently numerous in their respective haunts. Among the amphibious animals are the otter and the water-rat; the beaver is occasionally found on the banks of the Rhône [BEAVER, p. 124]; and the 'dream,' in the animal world, is sometimes seen in the neighbourhood of Tarbes.

Of birds the chief songsters and the birds of passage are much the same as in England, with the addition of the hoopoe and one or two others.

The coast of France and the shores of the Mediterranean. Of game, there are the red partridge, common in the departments of the centre and west, and the grey partridge, common in the south; the quail, the partridge, the beauceron, the peacock, the woodcock, abundant in Picardy, and the partridge in Béarn and Picardy. In the Pyrenees and others are taken in great numbers on the coasts of the Channel and the Ocean, especially in the departments of Charente Inférieure.

Of other animals we mention only a few: the goat is found on the Mediterranean coast. There are several species of vipers and of harmless snakes: the latter are in some places regarded as fit for food. Frogs are numerous and of many species; one, the prick frog (emend. espinass) is of great value. The tortoise, the salamander, the scorpion, and a kind of spider closely resembling the tarantula of Italy, are found.

The bee and the silk-worm are the most valuable insects; and the Spanish fly is sufficiently numerous to furnish an article of commerce.

Fisheries.—The coasts abound in fish of various kinds, the taking of which occupies a number of hands; the herring, the mackerel, and especially the sardine or pilchard, are the chief objects of attention to the fishermen of the eastern Mediterranean and the Atlantic: the tunny and the anchovy, to the fishermen of the Mediterranean. The sardine fishery of the coast of Brittany is calculated to supply 1,400 vessels, and allowing five men to each vessel 7,000 men; there are above 250 curing-houses in which the fish are wrought and preserved, is large enough for a cooper, and it is calculated that more than 8,000 barrels of the fish are cured annually. The mackerel and herring fisheries are carried on by the inhabitants of Dieppe, St. Valery, Fécamp, Boulogne, and other towns on the coast of Normandy and Picardy. The whole amount of sardine and anchovy has been found occasionally on the French coast.

The oyster is in great demand, especially in Paris. The best are found on the coast of the departments of Manche, Calvados, and Charente Inférieure. The mussel is used as food by the poorer classes, and the crab, the lobster, and other crustacea are consumed to a considerable extent.

Administrative divisions, Civil, Military, Judicial, Ecclesiastical. The present civil division of France is into 83 departments. The departments are under the government of a prefect, and are subdivided into cantons or arrondissements, each comprising a certain number of communes for which their extent and average population may be compared with our parishes. [DEPARTMENTS,] This system of classification was introduced by the National Assembly, a.d. 1790. The name of the department is usually borrowed from some marked natural feature, a river, a chain of mountains, &c.; the name of the arrondissement is a variable taken from its chief town. As the divisions administrative or provinicial departments, subdivisions which existed before the introduction of the present departments are continually referred to, though no longer officially recognised, it is desirable to give them in a tabular form, together with the departments which correspond to them.
Military Government, with their respective
Principal Subdivisions.
(capitals in brackets).

I. LA FLANDRE FRANÇAISE (Lille). Le
Pas-de-Calais, La Flandre Maritime, La
Flandre Wallonne, La Cambrésis, Le Haut
Calais, Français.

II. L'ANDOIS (Arras). L'Amiensois,
La Sénartière, La Vermandois, Le
Théâtre, Le Pays reconquis ou La
Calaisis, Le Boulognois, Le Ponthièu,
Le Vimeu.

IV. LA NORMANDE (Rouen). Le Pays de
Caux, Le Pays de Bray, Le Vexin
Normand, Le Roumois, Le Pays de
la Campagne, Le Pays d'Ouche, Le
Louvain, Le Pays d'Auge, Les Marches,
Le Bessin, Le Bourgogne, Le
Bocage, Le Cotentin, ou Le
d'Octeville, L'Arrancien.

V. L'ÎLE DE FRANCE (Paris). Le
Parisien, Le Beauvaisis, Le Loir- et
Cher, Le Sissonnais, Le Vexin
Français, Le Gouault, Le
Vaubois, Le Mauvoisin, Le
Hurepoix, La Brie Francaise,
Le Gâtinois Français.

VI. LA CHAMPAGNE (Trièves). Le
Rethelais, Le Peronnais, Ar
gonne, La Principauté de
Sedan et Raucour, Le
Perthois, Le Champagne
(properly so called), Le
Vallons, Le Bas-Brie, Le
Senonnois, Le Brie.

VII. LA LORRAINE (Nancy). La Lorraine
(properly so called), La
Lorraine Allemande, Le
Pays des Vosges, Le Pays
Meurthe, Le Bouc, Le
Verdunois, Le Luxembourgeois, Le
Grenoble, Francois, La
Principauté de Bouillon, Le
Bacino.

VIII. L'OISEL (Orléans). Orléans
(properly so called), La
Beauce ou Beaune (com
cerning Le Château,
Le Duomo, Le
Vendémois), La Blosais,
La Sologne, La
Gâtine
Oisillonne.

IX. LA TOURAINE (Tours). La Haute
Touarine, La Basse
Touarine.

X. LE BERRY ou BEARN (Bourges). Le
Haut Berri, Le Bas
Berri.

XI. LE NIVEROIS (Nevers).

XII. LE BOURBONNAIS (Moulins). Le
Haut Bourbonnais, Le
Bas Bourbonnais.

XIII. LA MARCHE (Gien). La
Haute Marche, La
Basse Marche.

XIV. LE LIMOUXIN (Limoges). Le
Haut Limousin, Le
Bas Limousin.

XV. L'AUVERGNE (Grenoble). La Haute
Auvergne (comprehending
La Haute Auvergne,
properly so called, Car
lais), La Basse Auvergne
(comprehending La
Basse Auvergne,
properly so called), Le Pays
d'Auvergne, La Ligne
Magique, Le Livradois,
and Le Dauphiné d'Au
vergne.

Departments, with the population, 1836.

1. NORD, 1,026,417.
2. PAS DE CALAIS, 664,654.
3. SOMME, 552,706.
4. SEINE INFERIEURE, 720,046.
5. EURE, 424,763.
6. CALVADOS, 694,775.
7. MANCHE, 594,382.
8. ORNE, 443,688.
9. AISNE, 527,955.
10. OISE, 398,641.
11. SEINE, 1,106,891.
12. SEINE ET OISE, 449,582.
13. SEINE-ET-MARNE, 325,881.
14. MARNE, 345,245.
16. AUBE, 253,870.
17. HAUTE MARNE, 255,969.
18. MEUSSE, 371,071.
19. MOSELLE, 427,530.
20. MEURTHE, 424,366.
21. VOSGES, 411,034.
22. EURE ET LOIR, 285,053.
23. LOIRET, 316,189.
24. LOIR ET CHER, 214,843.
25. INDE ET LOIRE, 304,271.
26. CHER, 276,853.
27. CREUSE, 276,234.
28. HAUTE VIENNE, 293,011.
29. CANTAL, 262,117.
30. PUY DE DOME, 389,438.

Capital of Department (in capitals)—Chief towns of Arrondissements (in italics), with the population of their respective
cumines in 1836, and other places of importance.

BOURG, 99,068; Le Hêtre, 25,568; Dieppe, 18,820.
DYRE, 92,123; Neufchâtel, 3,463; Éribon, F.
camp.
Etampes, 12,097; Louviers, 9,997; Pont Audemer, 5,358; Bernay, 7,244; Les Andelys, 5,085.
Caine, 41,576; Lisieux, 11,473; Bayeux, 9,676; Falaise, 9,498; Ville, 7,333; Pont L'évêque, 2,137.
St. Le, 9,953; Chelorsy, 19,315; Coutances, 7,663; Avranches, 7,689; Falaise, 6,655; Mortain, 2,291.
Alençon, 13,834; Argentan, 5,772; Mortagne, 5,692; Domfront, 5,471.
Lamorlaye, 5,283; St. Quentin, 20,578; Soissons, 8,124; Château-Thierry, 5,261.
Bruxelles, 13,082; Campigne, 8,893; Senlis, 5,050; Clermont, 3,233.
Paris, 909,126; St. Denis, 9,322; Santeuil, 1,670.
Villers-Cotterets, 4,618; Noyon, 7,896; Ponts-les-Oise, 5,408; Montils, 3,818; Corbeil, 3,960; Honnecourt, 3,060; St. Germain-en-Laye.
Mellum, 68,466; Menes, 7,909; Fontainebleau, 8,021; Provenchere, 6,007; Coulommiers, 3,573.
Chalons-sur-Marne, 12,952; Reims, 38,259; Foyere-le-François, 6,523; Epernay, 3,457; Sainte-Maure, 3,992.
Meaux, 4,983; Sedan, 13,719; Reilhâ, 677; Royere, 3,882; Fouesnois, 2,101.
Troyes, 25,563; Bar-sur-Aube, 3,946; Negot-sous-Seine, 3,955; Azeu-sur-Aube, 7,732; Bar-sur-Seine, 2,390.
Chaumont, 6,318; Langres, 7,677; Fassy, 3,694.
Bar-le-Duc, 12,863; Verdun, 10,577; Conmyony, 3,716; Montcecy, 2,231.
Metz, 42,793; Thionville, 5,809; Sarreguemines, 4,113; Broye, 1,730.
Nancy, 31,447; Lunéville, 12,798; Toul, 7,333; Château Salins, 9,621; Sarrebourg, 2,340.
Epinal, 9,926; St. Dié, 7,990; Arsac, 5,064; Rémiremont, 5,055; Neuf-Chatel, 3,645.
Château-Thierry, 14,750; Château-Thierry, 7,776; Nogent-le-Rétro, 6,661; Drez, 6379.
Orléans, 60,161; Montargis, 7,757; Gien, 5,530; Pitiers, 6,305; Blois, 13,629; Ffoudre, 9,206; Morvan, 7,811.

* As the capital of a department is always the capital of an arrondissement, and as all the chief
towns of arrondissements are given, the number of these subdivisions in any department is readily as
certained.
35. SARTHIE, 466,888.
36. MAYENNE, 361,765.
37. MAINE ET LOIRE, 477,270.
38. LOIRE INFÉRIEURE, 476,768.
39. MONTDEZIR, 449,743.
40. FINISTERE, 546,955.
41. COTES DU NORD, 603,565.
42. ILLE ET VILAINE, 547,259.
43. VENDÉE, 341,318.
44. SEINE-ET-MARNE, 304,105.
45. VIENNE, 288,002.
46. CHARENTE, 365,126.
47. CHARENTE-INFÉRIEURE, 449,849.
48. HAUT-RHIN, 447,019.
49. BAS-RHIN, 561,859.
50. HAUTE-SAÔNE, 313,298.
51. DOUBS, 276,274.
52. JURA, 315,555.
53. YONNE, 355,237.
54. CÔTE-D’OR, 385,624.
55. SAÔNE-ET-LOIRE, 356,507.
56. AIN, 346,188.

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<table>
<thead>
<tr>
<th>No.</th>
<th>Departments included</th>
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<tbody>
<tr>
<td>I.</td>
<td>Seine, Seine-et-Oise, Seine-et-Marne, Aisne, Oise, Loiret, Eure et Loir</td>
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<tr>
<td>II.</td>
<td>Ardennes, Meuse, Marne</td>
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<td>III.</td>
<td>Moselle, Meurthe, Voges</td>
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<td>IV.</td>
<td>Indre et Loire, Loir et Cher, Maine et Loire, Mayenne, Sarthe</td>
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<td>V.</td>
<td>Haut Rhin, Bas Rhin</td>
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<td>VI.</td>
<td>Ain, Doubs, Jura, Haute Saône</td>
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<td>VII.</td>
<td>Isère, Drôme, Hautes-Alpes</td>
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<td>VIII.</td>
<td>Basses-Alpes, Vaucluse, Bouches-du-Rhône</td>
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<td>IX.</td>
<td>Ardèche, Gard, Lozère, Hérault, Tarn, Aveyron</td>
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<td>X.</td>
<td>Aude, Pyrénées-Orientales, Ariège, Haute-Garonne, Hautes-Pyrénées, Gers, Tarn et Garonne</td>
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<td>XI.</td>
<td>Landes, Gironde, Basses-Pyrénées, Dordogne, Lot, Lot-et-Garonne</td>
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<td>XII.</td>
<td>Charente Inférieure, Lot-et-Garonne, Dordogne, Lot, Lot-et-Garonne</td>
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<td>XIII.</td>
<td>Côtes-du-Nord, Finistère, Ille-et-Vilaine, Morbihan</td>
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<td>Seine Inférieure, Euro, Manche, Calvados, Orne</td>
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<td>XV.</td>
<td>Cher, Indre, Allier, Creuse, Nièvre, Haute-Vienne, Corrèze</td>
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<td>Nord, Pas-de-Calais, Somme</td>
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<td>XVII.</td>
<td>Corse</td>
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</tbody>
</table>

The principal fortresses are: along or near the Belgian, Prussian, and Bavarian frontier—Gravelines, Dunkerque, Lille, Douai, Cambrai; Valenciennes, Compiègne, Maubeuge, Avesnes, Rocroi, Givet and Charlemont, Mézières, Sedan, Thionville, Metz, Bitche, and Weissembourg; along the Rhine frontier—Haguenau, Strasbourg, Scheidtstadt, and Neuf-Brisach; towards the Jura—Belfort or Belfort, Bâle, and the new Fort de l'Ecluse; towards the Alps and the Sardinian frontier—Grenoble and Briançon; along the Spanish or Pyrenean frontier—Perpignan, Belle-Isle, Mont Louis, St.
Jean-Pied de-Port, and Bayonne. The cavalock dock and
building yards are Brest, Toulon, Rochefort, Cherbourg, and
Le Havre. Sloops of St. Malo sail also at Bayonne, Nantes,
and St. Servan, a suburb of St. Malo. In time of war Dunkerque
and St. Malo send out a great number of privateers.

The administration of the laws in France has led to other
divisions. The smallest judicial divisions are cantons, each
of which has its own jurisdiction, that of a juge de paix (a
judge of peace), and in the rural districts comprehends several
communes; but in the large towns, which consist of but one
commune, there are usually several juges. These juge de
paix have a final jurisdiction in smaller matters; but, with a
view, if possible, to an amicable adjustment, before they are
are carried into a superior court. They are all salaried, and are profes-
sional men. The whole number of cantons in the kingdom
is 2534. The matters of commerce have to have also
the special authority. The Tribunaux de Premiere Ins-
stance, or primary courts, which may perhaps be compared
to our quarter-sessions, are one for every arrondissement.
The whole number of arrondissements in France is 363.
Each tribunal consists of three to eight or more
judges (besides supplementary members), according to
the population or business of the arrondissement, with
a procureur du roi, or attorney for the crown. These
courts take cognizance of civil and criminal cases within
their jurisdiction and of offences which are a part of
the state's jurisdiction, the latter section of the tribunal which
takes cognizance of criminal cases is called Tribunal de Police Correctionnelle. The Cours
Royales (twenty-seven in number) are the highest courts
(with the exception of the Cour de Cassation), and may be
compared with our English courts. Some of these courts
are divided into several chambers; one decides on bills of indictment, in the same manner as an
English grand jury; another tries criminal cases; others
take cognizance of civil cases. Some members of these
courts are subject to the jurisdiction of a juge de paix (a
judge of peace), others have a separate jurisdiction.

Cours Royales.

Place of
Agén.
Aix.
Amiens.
Angers.
Aix.
Bayeux.
Bordeaux.
Bourges.
Caen.
Colmar.
Dijon.
Doural.
Grenoble.
Limoges.
Lyon.
Metz.
Montpellier.
Nancy.
Nimes.
Orléans.
Paris.

City.
Gers, Lot, and Garonne.
Aisne.
Maine et Loire, Mayenne, Sarthe.
Corse.
Doubs, Haute-Saône, Jura.
Charente, Dordogne, Gironde.
Cher, Indre, Nièvre.
Calvados, Manche, Orne.
Basses-Alpes, Bouches-du-Rhône, Var.
Aisne, Oise, Somme.
Calvados, Manche, Orne.
Côte d'Or, Haute-Marne, Saône et Loire.
Nord, Pas de Calais.
Drôme, Hautes-Alpes, Isère.
Corrèze, Creuse, Haute-Vienne.
Ain, Loire, Rhône.
Ardennes, Moselle.
Aude, Aveyron, Hérault, Pyrénées-Orien-

tales.
Meurthe, Meuse, Vosges.
Ardèche, Gard, Lozère, Vaucluse.
Indre et Loire, Loiret, Loir et Cher.
Aube, Eure et Loir, Marne, Seine, Seine et
Marne, Seine et Oise, Yonne.
Basses-Pyrénées, Hautes-Pyrénées, Landes.

Charente Inférieure, Deux-Sèvres, Vendée,
Vienne.
Côtes du Nord, Finistère, Ille et Vilaine,
Loire Inférieure, Morbihan.
Allier, Cantal, Haute-Loire, Puy-de-Dôme.
Eure, Seine Inférieure.
Arrond. Haute Garonne, Tarn, Tarn et
Garonne.

The whole cost of the administration of justice in France,
according to the Budget of 1838, is 19,000,675 francs, which
is thus distributed:

<table>
<thead>
<tr>
<th>Department</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Administration</td>
<td>524,500</td>
</tr>
<tr>
<td>Council of State</td>
<td>516,400</td>
</tr>
<tr>
<td>Cour de Cassation</td>
<td>965,000</td>
</tr>
<tr>
<td>Cours Royales</td>
<td>4,242,130</td>
</tr>
<tr>
<td>Cours d'Assises</td>
<td>154,400</td>
</tr>
<tr>
<td>Tribunaux de Premiere Instance</td>
<td>5,880,145</td>
</tr>
<tr>
<td>Tribunaux de Commerce et de Police</td>
<td>2,342,300</td>
</tr>
<tr>
<td>Justices de Paix</td>
<td>3,163,500</td>
</tr>
<tr>
<td>Expenses of Criminal Justice, and of Civil and Criminal Statistics</td>
<td>3,322,000</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>45,000</td>
</tr>
</tbody>
</table>

Total: 19,000,675 francs

The ecclesiastical division of France has undergone many
changes. Before the Revolution there were eighteen arch-
bishops, fourteen of Arpajon. Of these, one (Cambray)
has been reduced to a simple bishopric, and four united
with others, viz, Arles and Embrun with Aix; Vienne
with Lyon; and Narbonne with Toulouse: the addition of
Arpajon and Montpellier to the archbishops, and the
removal of thesee bishopric from Toulouse to the department
of Lot-et-Garonne, has made them, with the addition of
the archbishopric of Cambrai and the new sees of
Noyon, St.-Quentin, and Moulin, make the present sixty-six
bishoprics of France.

Archbishoprics in Italy, and Bishoprics with the
Departments included in them. Each Archbishopric is followed by
its suffragan dioceses.

<table>
<thead>
<tr>
<th>Archdiocese</th>
<th>Diocese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paris</td>
<td>Seine</td>
</tr>
<tr>
<td>Chartres</td>
<td>Eure et Loir.</td>
</tr>
<tr>
<td>Meaux</td>
<td>Seine et Marne</td>
</tr>
<tr>
<td>Orléans</td>
<td>Loiret</td>
</tr>
<tr>
<td>Blois</td>
<td>Loir et Cher</td>
</tr>
<tr>
<td>Versailles</td>
<td>Seine et Oise</td>
</tr>
<tr>
<td>Arnois</td>
<td>Pas de Calais</td>
</tr>
<tr>
<td>Cambrai</td>
<td>Nord.</td>
</tr>
<tr>
<td>Lyon et Vienne</td>
<td>Rhône, Loire</td>
</tr>
<tr>
<td>Autun</td>
<td>Saône et Loire</td>
</tr>
<tr>
<td>Langres</td>
<td>Haute-Marne</td>
</tr>
<tr>
<td>Dijon</td>
<td>Côte d'Or</td>
</tr>
<tr>
<td>St. Claude</td>
<td>Jura.</td>
</tr>
<tr>
<td>Grenoble</td>
<td>Isère.</td>
</tr>
<tr>
<td>Rouen</td>
<td>Seine Inférieure</td>
</tr>
<tr>
<td>Bayeux</td>
<td>Yvelines</td>
</tr>
<tr>
<td>Evreux</td>
<td>Eure.</td>
</tr>
<tr>
<td>Sées</td>
<td>Orne.</td>
</tr>
<tr>
<td>Coutances</td>
<td>Manche.</td>
</tr>
<tr>
<td>Sens et Auxerre</td>
<td>Yonne.</td>
</tr>
<tr>
<td>Troyes</td>
<td>Aube.</td>
</tr>
<tr>
<td>Reims</td>
<td>Nièvre</td>
</tr>
<tr>
<td>Meaux</td>
<td>Moulins, Allier.</td>
</tr>
<tr>
<td>Arrondissement</td>
<td>Reims, in the department of Marne, Ardennes</td>
</tr>
<tr>
<td>Sensieux</td>
<td>Aisne.</td>
</tr>
<tr>
<td>Châlons</td>
<td>Marne (except the arrondissement of Reims)</td>
</tr>
<tr>
<td>Beauvais</td>
<td>Oise.</td>
</tr>
<tr>
<td>Amiens</td>
<td>Somme.</td>
</tr>
<tr>
<td>Tours.</td>
<td>Indre et Loire</td>
</tr>
</tbody>
</table>
| Le Mans      | Sarthe, May-
|enne. |
| Angers        | Maine. |
| Rennes        | Inde et Vilaine |
| Nantes       | Loire Inférieur |
| Quimper       | Finistère |
| Annecy        | Savoie, Morbihan. |
| Saint-Brieuc | Côtes-du-Nord |

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bills may originate with either of the three branches of the legislature, except money bills, which may originate in the Chamber of Deputies; and that a bill requires the assent of either branch of the legislature cannot be brought in again the same session. The civil list is fixed at the commencement of every reign, and cannot be altered during that reign. The following articles—

Paires (Of the Chamber of Peers).—This head provides for the assembling of this chamber simultaneously with the deputes, and renders every sitting illegal unless when the chamber is exercising its judicial power unless it is held during the session of the deputes in the department of Bouches du Rhône, or at a place of residence of the peers vested in the king; (the princes of the blood are peers by right of birth;) their number is unlimited, and their dignity may be for life or hereditary. (Hereditary peers have been since abolished.) The peers have no votes of entry into the chamber, and no right to originate, to age or of voting under thirty. The chancellor of France is president, or, in his absence, a peer nominated by the king. The sittings of the peers are public. The chamber takes cognizance of offences against the state. A peer can only be expelled from the assembly, unless taken by the authority of the chamber, and is not amenable to any other tribunal than the chamber in criminal matters.

4th head, containing sixteen articles.—De la Chambre des Deputés (Of the Chamber of Deputies).—This head provides for the dissolution of the deputes when the sitting of the chamber. The electors must not be less than twenty-five years of age and the deputes not less than thirty (since reduced to twenty-five), and each must possess whatever other qualifications the law requires. The deputes are elected for five years, and one-half of the deputes for each department must be residents in it. The chamber elects its own president at the opening of each session. Its sittings are generally public; but any five members can require that it sit in camera. The deputes are discussed in separate bureau or committees. No tax can be levied without the consent of both chambers. The land-tax (impôt foncier) can be granted only by year; other taxes may be voted for several years. The king consents to the appointment of the deputes, and to the dissolution of the deputes, but must in that case assemble a new one within three months. All members are free from arrest for debt during the session, and for six weeks before and after, and from arrest on a criminal charge during the session, unless taken in the act or arrested by permission of the chamber.

5th head, containing two articles.—Des Ministres (Of the Ministers).—Those may be members of either chamber; and have, besides, the right of entry into the other chamber, in the exercise of their functions. The ministers, or officials of the state, are discussed in separate bureau, or committees. No trading is allowed without the consent of both chambers. The land-tax (impôt foncier) can be granted only by year; other taxes may be voted for several years. The king consents to the appointment of the deputes, and to the dissolution of the deputes, but must in that case assemble a new one within three months. All members are free from arrest for debt during the session, and for six weeks before and after, and from arrest on a criminal charge during the session, unless taken in the act or arrested by permission of the chamber.

6th head, containing twelve articles.—De l'Ordre Judiciaire (Of the Administration of Justice).—This head provides for the continuance of the previously existing institutions. The courts of justice are properly recognized, and the successor of the deputes, but must in that case assemble a new one within three months. All members are free from arrest for debt during the session, and for six weeks before and after, and from arrest on a criminal charge during the session, unless taken in the act or arrested by permission of the chamber.

7th head, containing eight articles.—Droits particuliers garantis aux Anglais et aux Américains demeurant en France (Of the Rights of British and American Citizens).—Among other things, this head renders inviolable all engagements with the public creditor; provides for the government of the colonies by particular laws; and requires the king and his successors, on their accession, to swear to the faith of the treaties of the late war. The deputes are all chosen by the departments: or, to borrow the language of our own institutions, they are all county members; but the nature of the electoral qualification, which is the payment of rather more than 8l. direct taxes, precludes the admission of any of the deputes who live in towns any undue predominance of the agricultural interest, or rather in the depressed condition of the agriculturalist, secures the predominance of the residents in towns. The votes are given by ballot. The whole number of deputes is now divided into two equal parts, and is fixed by the constitution at 340. They are thus returned:

1 Department. Seine, (containing Paris and its environs) 14 members.
### REVENUE

<table>
<thead>
<tr>
<th>Source</th>
<th>Revenue (in francs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue arising from land property</td>
<td>961,000,000</td>
</tr>
<tr>
<td>Tax on personal property (old and new)</td>
<td>85,000,000</td>
</tr>
<tr>
<td>Taxes on immovable property (mineral and personal)</td>
<td>250,000,000</td>
</tr>
<tr>
<td>Stamps and licenses (old)</td>
<td>396,000,000</td>
</tr>
<tr>
<td>Customs and indented taxes</td>
<td>254,900,000</td>
</tr>
<tr>
<td>Total revenue</td>
<td>1,055,000,000</td>
</tr>
</tbody>
</table>

### EXPENDITURE

<table>
<thead>
<tr>
<th>Ministry of Justice and of Public Worship (including the charge on the income of houses, etc., and the government troops)</th>
<th>Total (in francs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of Justice and of Public Worship (including the charge on the income of houses, etc., and the government troops)</td>
<td>65,175,273</td>
</tr>
</tbody>
</table>

The troops were distributed as follows:

- Infantry: Veteran Subaltern Officers, 10 companies; Veteran Fusiliers, 20 companies; Infantry of the Line, 97 regiments; Légion d'industrie, 2 battalions; Artillery, 14 regiments.  
- Cavalry: Veteran Cavalry, 4 companies; Carabiniers, 9 regiments; Chasseurs, 3 battalions.  
- Artillery and Engineers: 1,114,000 men; 2 battalions; Training Companies; 8 companies; 4,800 men.  
- Vessels of all kinds: 521

The number of superior officers at the same time was as follows:

- Artillery, and other flag-officers, not given.  
- Post Captains (Capitaines de Poste)  
- Commanders (Capitaines de Corvette)  
- Lieutenants  
- Boatswain of the Poste

### Notes

- It is estimated that the national debt of France, on Jan. 1, 1838, will be as follows:

<table>
<thead>
<tr>
<th>Source</th>
<th>Debt (in francs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue arising from land property</td>
<td>961,000,000</td>
</tr>
<tr>
<td>Tax on personal property (old and new)</td>
<td>85,000,000</td>
</tr>
<tr>
<td>Taxes on immovable property (mineral and personal)</td>
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<td>254,900,000</td>
</tr>
<tr>
<td>Total revenue</td>
<td>1,055,000,000</td>
</tr>
</tbody>
</table>

- Besides the revenues of the state, the commune taxes for defraying their own expenses: of these taxes, the octrois, or local duties, levied in the towns on all goods which pass through the barriers, constitute a leading portion.

- The army in 1837 consisted of upwards of 390,000 officers and men. They may be thus classified:

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Officers of all ranks, and of all portions of the staff</td>
<td>15,520</td>
</tr>
<tr>
<td>Subalterns, non-commissioned officers, drummers and trumpeters, soldiers not in the ranks, and children</td>
<td>75,023</td>
</tr>
<tr>
<td>Soldiers of all kinds, i.e., cavalry, infantry, artillery, and engineers</td>
<td>210,134</td>
</tr>
</tbody>
</table>

- Of general and superior officers the number was as follows:

<table>
<thead>
<tr>
<th>Rank</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marshal of France</td>
<td>10</td>
</tr>
<tr>
<td>Lieutenant-General, in active service</td>
<td>99</td>
</tr>
<tr>
<td>Lieutenants-General, in reserve</td>
<td>28</td>
</tr>
<tr>
<td>Majors-General (Major-du-Camp) in active service</td>
<td>134</td>
</tr>
<tr>
<td>Colonels, Lieutenant-Colonels, and subordinate officers, to Sub-Lieutenants</td>
<td>567</td>
</tr>
<tr>
<td>Adjutants, Intendants, and Sub-Intendants</td>
<td>320</td>
</tr>
</tbody>
</table>
  | Vessels of all kinds | 521

The principal element from which the French nation derives its origin has been the Celts. At the period of their invasion of the country, these Celts occupied nearly all the midland, western, and southern parts of the country, extending in one direction from the promontory of Bretagne to the mountains of Switz.;; and in another direction from the Rhone to the sea. The eastern bounds of the territory occupied by the Celts were, in the northern part of Switzerland, those of theувеличить_изображение

The predominant religion of France is the Catholic; but there are a considerable number of Protestants, especially in Alsace and in Languedoc. It is not possible to state the number of Catholics to the church but this statement is to be received as true only upon the assumption that all the bishops and clergy do not worship under some dissentering form. The ecclesiastical divisions of the country have been already given. Those of the Catholic hierarchy who have the dignity of cardinal have a yearly income of about 13000.;, the archbishops have about 8000.;, the bishops about 6000.;, and the clergy about 4000. Of the working clergy the incomes are very small, from 201. to 301. a year: there is one in almost every commune. The number of clergy in 1836 was as follows:

| Archbishops | 14 |
| Bishops     | 66 |
| Vicars-general | 174 |
| Canons      | 660 |
| Curés       | 3401 |
| Secrétaires | 2677 |
| Vicaire     | 616 |

Before the first French Revolution, the country abounded with monastic establishments for both sexes, some of them endowed with vast possessions. The abbots and convenants were supported by tithes, and the sale of their property precludes the expectation of their being re-established. The nunneries and abbey for women for the most part remain, and have existed throughout the Revolution, with the exception of a few years at the period of its greatest violence. The French nunns, who amount to more than 20,000, do not, except a few, lead a life of pure meditation, but are actively engaged in attendance upon the sick, or in the instruction of youth.

The Protestants are partly of the Lutheran, but chiefly of the Reformed church. The members of the Reformed church are found in Alsace, in the capital, and in the department of Isere, a part of the former province of Dauphine. The members of the Reformed church amount to about 1,000,000, according to M. Balbi; they constitute by far the majority of the French Protestants. They are found chiefly in the south Languedoc, and in the west, about Rochelle, once the stronghold of the Huguenots. A few Baptists are found in the Jura and the Vosges, and are remarkable for the innocence of their lives, and the simplicity of their worship and discipline. The Catholic priests are chiefly educated in Seminaries established for the express purpose of clerical instruction. There is one establishment for the higher studies at Paris; and above 200 seminaries scattered throughout France. Strasbourg is the chief place of instruction for the clergy of the Lutheran church; Montauban for those of the Capuchin or Reformed church.

The cost to the state of the maintenance of public worship, according to the budget of 1838, is as follows:

| Cost of the administration of this branch of the public service | 173,500 fr. |
| Members of Chapters and Parochial Clergy (dec.) | 30,145,000 |
| Revenue of Church of St. Denis | 2,500,000 |
| Seminaries | 1,000,000 |
| Grant (Secours) to Ecclesiastics and Monks | 1,070,000 |
| Maintenance of collegiate service | 450,000 |
| Building and upkeep of cathedrals | 1,500,000 |
| Grants to Catholic Colleges | 1,000,000 |
| Protestant sects' salaries | 800,000 |
| Worship may,电费, etc. | 118,000 |
| Jewish worship | 90,000 |

Before the Revolution, France had twenty-three universities, of which Paris was the most important, and enjoyed great privileges. The universities were at Aix, Angers, Avignon, Besançon, Bourges, Bordeaux, Caen, Cahors, Dijon, Douai, Montpellier, Nevers, Orleans, Orléans, Pau, Perpignan, Poitiers, Poitiers, Lyon, Mâcon, Nimes, Orleans, Strasbourg, Toulose, and Valence. Under Bonaparte, a body was org.
nised with the title of Université, which has continued with some modifications to hold to the present time the chief direction of education. Of this body, which is incorporated, and which possesses large disposable funds, arising partly from real property, partly from public grants, and partly from payments of all public transactions, are members. The highest officer of this body is the minister of public instruction, who has a seat in the cabinet; he fills up all appointments in this branch of the administration, and all vacancies in the academies and colleges, upon the recommendation however of the local authorities by whom strict examinations are instituted. He is assisted by a council of ten members, men of the highest rank in the literary world. Twenty-six académies universitaires are established in different parts of France; and the whole territory is divided into as many circuits, one to each. The académies are at Aix, Amiens, Angers, Besançon, Bordeaux, Bourges, Caen, Cahors, Clermont, Dijon, Douai, Grenoble, Limoges, Lyon, Metz, Montpellier, Nancy, Nièmes, Orléans, Paris, Poitiers, Rennes, Rouen, Strasbourg, and Toulouse. Each académie consists of a rector or superintendent, who inspects all schools and places of public instruction within his circuit, and communicates with the higher authorities at Paris. He is assisted and controlled in the exercise of his functions by a council of ten members. These form the administrative portion of the académie. The branch of instruction, if the institution is complete in all its parts, comprehends the five faculties of theology, law, medicine, literature, and the sciences; together with a college or high-school. The elementary instruction in the académies is furnished in the colleges or high-schools, which are established in almost all the larger towns. Paris has several collèges. That of Louis le Grand, contained, in 1836–7, 1,054 pupils; that of St. Louis 990; that of Bourbon 864; that of the Capitole 816; that of Versailles 409; that of Rollet 395; and that of Stainclos 330. The collège Henri IV. is eminent for literature; the collège Stanislas for philosophy. The lowest grade of schools comprehends the écoles primaires, or elementary schools, in which France until late years was miserably deficient.

In 1833 a law was passed ordaining that every commune by itself, or by uniting with others, should have one school of elementary instruction (i.e. reading, writing, arithmetic, and the elements of grammar), established system of weights and measures); that every commune, the population of which exceeded 6000, should have also a school for superior instruction (i.e. in addition to the requirements of the lower schools, the elements of algebra, geometry, and its application to the arts, the elements of chemistry, and, when applied to the ordinary habits and pursuits of life, the elements of history and geography, and more especially the history and geography of France); and that every department should have a normal school for the instruction of schoolmasters, either by itself, or by uniting with some other departments.

These schools are supported partly by private foundations, donations, and legacies; partly by the communal, departmental, or general government.

The state of education in 1836 was as follows:—

36,000 elementary schools for boys.
11,000 elementary schools for girls.

47,000: containing 3,270,000 scholars.

33 normal schools for training teachers for the elementary schools.
873 board-schools.
44 schools for superior instruction.
322 Collèges Communautés, or district high-schools, with 27,500 scholars.
41 Collèges Roguay, or royal high-schools, with 6500 scholars.

All the poor who are incapable of paying for the instruction of their children are to have their educated gratis at the schools of elementary instruction; and a certain number selected after an examination, are educated gratis at the schools of superior instruction. The masters of the elementary schools are elected by the residents, and receive 200 francs, or less, according to the rank of the masters of the superior schools; the residence of the master of the superior schools is a salary of 400 francs, or above 10d. The whole charge to the state of the department of public instruction, according to the budget of 1838, is 19,065,673 francs, or nearly 800,000l.; which is thus distributed:—

Central administration 650,463
General services 330,000
Departments of academic administration 1,850,000
Superior instruction—faculties 1,972,050
Superior instruction—pupils 1,655,600
Elementary instruction general fund 4,350,000
Additional 3,650,000
Primary normal school 1,300,000
Liberal and scientific establishments 7,675,600
Colleges of government, academies, industries, published, and collections of uned works 557,000

Total 19,065,673

The subjoined table of the comparative state of education in France is quoted by Mr. Bulwer in his France—Social, Literary, Political. It states the number of those who could read and write out of 100 of the young men enrolled in 1829–29, in the military census. It furnishes data for estimating, not the present means of instruction, but the present state of knowledge among the younger part of the adult male population of France. The departments are given in the order of enlightenment.

<table>
<thead>
<tr>
<th>Department</th>
<th>Proportion of those who can read and write in every 100 enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meuse</td>
<td>74 Gers</td>
</tr>
<tr>
<td>Doubs</td>
<td>73 Vaucouleurs</td>
</tr>
<tr>
<td>Jura</td>
<td>73 Aim</td>
</tr>
<tr>
<td>Haute-Marne</td>
<td>72 Roy</td>
</tr>
<tr>
<td>Haut-Rhin</td>
<td>71 Aude</td>
</tr>
<tr>
<td>Seine</td>
<td>71 Saône et Loire</td>
</tr>
<tr>
<td>Haute-Alpes</td>
<td>69 Lot et Garonne</td>
</tr>
<tr>
<td>Meurthe</td>
<td>68 Cantal</td>
</tr>
<tr>
<td>Aisne</td>
<td>67 Loire-Orientantal</td>
</tr>
<tr>
<td>Marne</td>
<td>63 Haute-Garonne</td>
</tr>
<tr>
<td>Voges</td>
<td>62 Aveyron</td>
</tr>
<tr>
<td>Bas-Rhin</td>
<td>62 Sarthe</td>
</tr>
<tr>
<td>Côte d'Or</td>
<td>60 Leau</td>
</tr>
<tr>
<td>Aube</td>
<td>59 Landes</td>
</tr>
<tr>
<td>Moselle</td>
<td>57 Vendee</td>
</tr>
<tr>
<td>Seine et Oise</td>
<td>56 Lozere</td>
</tr>
<tr>
<td>Eure et Loir</td>
<td>54 Loir-et-Cher</td>
</tr>
<tr>
<td>Sienne et Marne</td>
<td>54</td>
</tr>
<tr>
<td>Oise</td>
<td>54 Indre et Loire</td>
</tr>
<tr>
<td>Hautes-Pyrénées</td>
<td>53</td>
</tr>
<tr>
<td>Calvados</td>
<td>52 Vienne</td>
</tr>
<tr>
<td>Eure</td>
<td>52 Ille et Vilaine</td>
</tr>
<tr>
<td>Asne</td>
<td>51 Charente</td>
</tr>
<tr>
<td>Corse</td>
<td>49 Lot</td>
</tr>
<tr>
<td>Pas de Calais</td>
<td>49 Var</td>
</tr>
<tr>
<td>Yonne</td>
<td>47 Meuse-et-Loire</td>
</tr>
<tr>
<td>Basses-Pyrénées</td>
<td>46</td>
</tr>
<tr>
<td>Basse-Alpes</td>
<td>46 Deux-et-Mois</td>
</tr>
<tr>
<td>Nord</td>
<td>45 Tarn</td>
</tr>
<tr>
<td>Rhône</td>
<td>45 Nièvre</td>
</tr>
<tr>
<td>Haute-Marne</td>
<td>45 Mayenne</td>
</tr>
<tr>
<td>Orne</td>
<td>44 Dax</td>
</tr>
<tr>
<td>Seine-Inférie</td>
<td>43 Dordogne</td>
</tr>
<tr>
<td>Mauche</td>
<td>43 Indre</td>
</tr>
<tr>
<td>Loire</td>
<td>42 Côtes-du-Nord</td>
</tr>
<tr>
<td>Drôme</td>
<td>42 Finistre</td>
</tr>
<tr>
<td>Deux-Sèvres</td>
<td>41 Morbihan</td>
</tr>
<tr>
<td>Gard</td>
<td>40 Clermont</td>
</tr>
<tr>
<td>Gironde</td>
<td>40 Haute-Vienne</td>
</tr>
<tr>
<td>Charente</td>
<td>39 Allier</td>
</tr>
<tr>
<td>Conflans</td>
<td>39 Château</td>
</tr>
</tbody>
</table>

From the above table it will appear that the north and east of France are the parts in which elementary instruction is most widely diffused; and the central and western those in which there is least.

The education since 1833 to instruct the people go far to redeem France from the reproach of indiffercence on this head. The state education of previous to that epoch was indeed far from commensurate with the high rank held by the country in the social scale. The proportion of children in school at France was only about two-thirds of the proportion in Austria, one-half than in England and Bavaria, one-third of the proportion in Prussia, the Pays de Vaud, and Wurttemberg, and one-fifth of the proportion in the United States of America. At present the proportion of pupils in France is about one-third greater than before that epoch; but France is in this particular still behind America; and, as the extent of crime an estimate may be formed from the following data, which we borrow from the official re-
turns for the year 1834. The number of charges in that year was 5125, viz. 1557 for crimes against the person, and 3568 for crimes against property. The number of persons accused before the Cours d'Assises, which have jurisdiction in the more important criminal cases, was 8669, being in the provinces, Nimes, and Montpellier, 4576, as compared with the whole population of the country. Of the 669 persons accused, 77 were tried twice, and 3 times three, making the number of accused 6932: of whom 2216 were charged with crimes against the person, and 4736 with crimes against property. Of the accused, 1378 were convicted was 4164, viz. 1066 of crimes against the person, and 3158 of crimes against property: of the convicts, 25 were capitally condemned, viz. treason, 1; murder, 1; assassination, 1; rape, 1; incendiarism, 1; poisoning, 1; arson, 2; total, 25. The numbers accused, from the year 1826 to 1834, was as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Persons Accused</th>
<th>Convicted</th>
<th>Acquitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1826</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1827</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1828</td>
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<td>1829</td>
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<td>1830</td>
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<td>1831</td>
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<td>1832</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1833</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1834</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In fifteen of the departments the amount of crime was below the average of the whole kingdom: in the department of Creuse the proportion of those accused to the whole population was only 1 to 11,258, in that of Maine 1 to 11,255, in that of Corrèze 1 to 10,917, and in that of Lot 1 to 10,817. The departments of the Seine (which include Paris), Pyrénées Orientales, and Corsica were those which presented the greatest proportion of accused persons: in the first the proportion was 1 to 1191; in the second 1 to 1619; and in the third 1 to 1142. The proportion of accused per 100,000 was 5793; of women 1199, being about 5 men to 1 woman: of the accused 107 were under sixteen, and 1239 between sixteen and twenty-one. There were 4080 who were unable to read or write, and out of 12,000 who were tried or acquitted, 1008 could read and write, 608 could only read, and 203 had received instruction beyond reading and writing. The Tribunals de Police Correctionnelle, or subordinate criminal courts, took cognizance of the year 102, 150 cases, in which 172,652 persons were implicated, of whom 36,559 were men, 60,032 women, and 28,071 children.

It is observable that the amount of crime in France is much less than in England and Wales, though the latter have not half its population; yet in the crimes of murder and rape France very far exceeds England. There is not a single case of murder annually in England, whereas in France about one is committed each week. The number of cases of rape is nearly equal to the number of cases of murder in England, but the proportion of rape to murder is much greater in France.

The Commercial and Manufacturing Industry.—Means of Communication &c.—Every branch of industry in France has undergone vast improvement since the peace of 1815. The energies of the nation being turned from war to domestic employments, speedily repaired the evils which France had suffered from so long a struggle. Agriculture advanced so rapidly, that the apprehension of famine was in a few years succeeded by the cry of surplus production. The consumption of wool increased, and the manufacture was augmented by 700,000 men. (Duport's Forces Productives de la France.)

The woollen manufacture has increased materially: the increased quantity of wool used is partly furnished by the increased number of sheep bred, partly by the importation of wool from foreign countries. The manufacture of homespun wool has been improved by the introduction of foreign breeds, and the Cachemire goat has been naturalised on the slopes of the Pyrenees. The principal localities of the different branches of the woollen manufacture are as follow: broad cloths are made at Elbeuf, Louviers, and Vire in Normandie; at Abbeville; at Sedan, in the ex-ducilly of Bouillon; and in the south at Carcassonne, Lodève, and Castres; light woollen fabrics at Paris, Reims, Amiens, and Beauvais: hosiery at Paris, Troyes, Orléans, and at different places in Picardie, in the north of France; and in the south at Nimes, Lyon, and Marseille; and carpets at Paris, (La Savonnerie and les Gobelins,) Abbeville, Beauvais; and at Aubusson and Féligitan, (Department of Creux,) in central France: shawls are made at Paris, (the cachemirem,) and at Lyons. The consumption of wool in these manufactures is probably above 50,000,000 killograms or more than 1,000,000 cwt.

The cotton manufacture has increased since 1812 in a greater proportion than that of wool, and has probably tripled: the annual consumption of cotton in the different branches of this manufacture is about 30,000,000 killograms, or 600,000 cwt.; and the process of manufacture and the fineness and excellence of the fabrics have undergone great improvements. The north and east of France are the chief seats of this manufacture. Rouen is considered the Manchester of France; and Paris, Troyes, St. Quentin, and the towns of the department of the Nord, also participate largely in this manufacture. Printed calicos are made at Rouen and Beauvais; but especially at Colmar, Mulhouse, and Creil, where the printed cottons of which are much approved in the German markets for the vividity of their colours (especially the Turkey-red), and their other qualities.

The silk manufacture is carried on chiefly in the south. The population of the principal towns of this manufacture had been reduced by the disasters of the Revolution and the commercial inactivity of the empire from 140,000 to about 110,000. The improvement of the silk manufacture had raised it in 1831 to 135,000, and it is now 150,000. The other chief centres of the silk industry are Marseilles, Lyons, Toulouse, and Tours. Ribands are made at St. Etienne and St. Chamond, towns to the westward of Lyon. The brilliancy of the French silks has been increased by the substitution of Fussian-blue for indigo as a dye. A part of the raw silk required for the manufacture is brought from China, and the quantity of mulberry trees for the silk-worms had increased from 9,601,574 in 1820, to 14,579,404 in 1834, or more than 50 per cent. in 14 years. They are chiefly grown in the departments of Gard, Drôme, Vaucluse, and Var, and the silkworms of the cities of Arles, Aix, St. Etienne, Avignon, Grenoble, Mâcon, and Tours. Linens of the finest quality are made at Aix, Nîmes, St. Quentin, Cambray, Valenciennes, Douai, &c.: the damask linens of St. Quentin rival those of Saxony and Silesia. Coarser linens and sail-cloth are made in Bretagne. The linen manufacture in Dauphiné, Languedoc, and Provence is also carried on. Alpaca and Oyon are wrought at St. Etienne, and Bayeux, in Normandie; also at Valenciennes and Douai; and in some other places.

The working of the metals has much increased, especially iron. The quantity of iron smelted in 1815 was about 100,000 tons; in 1834 it had increased to 300,000 tons, and various utensils of this useful metal, for which France was formerly dependent, are now produced at home. The quality and appearance of the steel and wrought-iron goods have much improved; yet the quality of the French iron is still not on a par with that produced on the ground against the Russian and Swedish iron only by means of protecting duties. The principal iron-works are in the departments of the valley of the Loire, especially Nevers, and the district of Forêts about St. Eloi.

In the manufacture of clocks and watches France is not equal to Switzerland; and for chronometers and instruments for scientific purposes it is not surpassed by any country. The inventions of the French chemists and the improvement of chemical science have done much in reducing with the introduction of new processes the expenditure of the many chemical agents employed in the various branches of manufacture, and particularly dyeing.

The commoner sort of French earthenware has much improved in beauty of design. Fine china, porcelain, and earthenware are made at Issy, Blankenau, and Bayeux, in Normandie; also at Valenciennes and Douai; and in some other places.

The Commercial and Manufacturing Industry is of considerable value: the trade of France in 1834 was 715,000,000, or 30,000,000, and the trade of the United States of America 480,000,000, of which 6,435,635 of 5,153,158, 6,632,374 of 10,429,066. (Imported.)

Raw materials and goods for use for manufacture, Unmanufactured, Manufactured, Total.
The number of ships cleared outwards was—

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1834</td>
<td>1384</td>
</tr>
<tr>
<td>1835</td>
<td>1835</td>
</tr>
</tbody>
</table>

French ships, &c. 4221 370,217 4292 387,139
Foreign, in direct, &c. 4217 376,503 4356 352,583
In carrying, &c. 866 141,713 898 132,224

9304 888,435 9486 871,946

The coast fishery employed in 1836, 406 vessels of 51,915 aggregate tonnage, and 10,175 men; the whole fishery 35 vessels of 14,813 aggregate tonnage, and 1183 men. The French whale fishery has been rapidly increasing for many years past.

The means of internal communication in France are much inferior to those of Great Britain. The roads are divisible into those maintained by the central government, and designated Routes Royales, and those which are kept up at the cost of the several departments to which they belong, and designated Routes Départementales. About one-third of all the Routes Royales are paved like a street. With a few exceptions, the roads are kept in good condition, and a large part of the country is snowed in the winter, while the roads are not kept in good repair. The roads are maintained by the government, and the distances are measured from the cathedral of Notre Dame, in the heart of Paris. According to the official report, the total length of the Routes Royales, on 1 January, 1837, was 10,800 miles, and about two-thirds of them are in repair or unfitted.

The post offices are strictly regulated by the government. Post-stations at which post-horses are kept are fixed at convenient distances. The post offices are maintained by the government, and the mail is conveyed by a vehicle which is designed for the purpose, and carries passengers and letters. The post offices are maintained by the government, and the mail is conveyed by a vehicle which is designed for the purpose, and carries passengers and letters.

The number of ships entered inwards at ports in France in 1834—35, was as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Ships</th>
<th>Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1834</td>
<td>3963</td>
<td>394,496</td>
</tr>
<tr>
<td>1835</td>
<td>4001</td>
<td>407,999</td>
</tr>
<tr>
<td></td>
<td>5552</td>
<td>650,452</td>
</tr>
<tr>
<td></td>
<td>808</td>
<td>115,581</td>
</tr>
<tr>
<td></td>
<td>10,361 1,174,032</td>
<td></td>
</tr>
</tbody>
</table>

The number of ships entered inwards at ports in France in 1834—35,

<table>
<thead>
<tr>
<th>Class</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>French, exclusive of coasters</td>
<td>9304</td>
</tr>
<tr>
<td>Foreign, in direct trade to the country to which they belong</td>
<td>888,435</td>
</tr>
<tr>
<td>In carrying trade</td>
<td>871,946</td>
</tr>
</tbody>
</table>

The cod fishery employed in 1836, 406 vessels of 51,915 aggregate tonnage, and 10,175 men; the whole fishery 35 vessels of 14,813 aggregate tonnage, and 1183 men. The French fishery has been rapidly increasing for many years past.

The means of internal communication in France are much inferior to those of Great Britain. The roads are divisible into those maintained by the central government, and designated Routes Royales, and those which are kept up at the cost of the several departments to which they belong, and designated Routes Départementales. About one-third of all the Routes Royales are paved like a street. With the exception of a few which are kept in good repair, they are in a very bad condition, and a large part of the country is snowed in the winter, while the roads are not kept in good repair. The roads are maintained by the government, and the distances are measured from the cathedral of Notre Dame, in the heart of Paris. According to the official report, the total length of the Routes Royales, on 1 January, 1837, was 10,800 miles, and about one-third or one-fourth are out of repair or unfitted.

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greater part of its course the valleys of the Armançon and the Ouche, feeders respectively of the Yonne and the Sâne. The canal of the Ouroq, near Paris, is 56 miles long. The canal of Nivernos, connecting the Yonne with the Loire, at some point above Briare, 109 miles long, is in course of execution, and will be the chief port of export and import for the basin of the Seine.

The water communication of the western part of France consists chiefly of the navigation of the river Vilaine from Rennes, and of some smaller rivers which are navigable only for a few miles, and of three canals. The canal of the Ille and the Rance connects the Rance, a small stream which falls into the bay of St. Malo, at St. Malo, with the Vilaine, at the junction of the Ille, one of its feeders, at Rennes, and saves a tedious and dangerous navigation round. It begins on the Ille near St. Malo, 25 miles long: it was commenced above thirty years ago, but is only just completed. The canal of the Blavet renders the river Blavet navigable up to Pontivy. Another canal, yet unfinished, but open in part for navigation, is designed to connect Brest with Nantes, avoiding the navigation of a dangerous coast, and affording secure communication in case of a war with England or any maritime power. Its length will be 374 kilometres or 232 miles.

The navigation of the Loire commences at Roanne in France, with the Vienne and the Touvre, and at Tours, with that of the Allier above Vichy; that of the Cher at St. Aignan; that of the Indre at Loches; that of the Vienne at Châtellerault; that of the Sarthe at Le Mans; that of the Mayenne at Laval; and that of the Loir at Château-du-Loups, the eastern part. These rivers, though much more effectual outlet than it does to the produce of central France; the navigation of the great arms of the Loire is very short, (except perhaps of the Arroux, and of the Mayenne and its connected stream,) compared with that of the Seine; and the latter, which was subjugated at the expense of execution, intended to shorten the navigation of the Loire, by avoiding the great bend which that river makes between the junction of the Allier and that of the Indre, called the Canal of Berri. Nantes is the port of the district watered by the Loire and its affluent.

The navigation of the Garonne commences at Cazères, several miles above Toulouse; that of the Arriège at Aurèive; that of the Tarn at Gaillac; that of the Baïse at Nérac; that of the Lot at Entraygues; that of the Dor-dogne at Sarlat, Italy, and Toulouse, is a great tributary, at Montignac. The only navigable canal connected with this system is the Great Canal of Languedoc, the most important in France. It connects the Garonne, at or near Toulouse, with the Mediterranean. It flows down the mouth of the Garonne, and passing through a depression between the Côtes and the Pyrenees follows the valley of the Aude, and the line of the coast to the sea at the port of Céret. Its length is more than 151 miles and itsdimensions, its immense reservoirs, and its numerous sluices, bridges, and aqueducts, render it one of the most magnificent canals in the world. It was opened in the reign of Louis XIV., a.d. 1661.

The navigation of the Adour commences at St. Serer; that of the Madoura, its tributary, at Mont de Marsan. The port of Bayonne is the channel for the exports and imports of the territory watered by the Adour and its tributaries.

The navigation of the Rhône is liable to interruption after it leaves the lake of Geneva. It recommences a little above Seyssel, on the frontier toward Savoy, and remains open throughout the rest of the course of the river: the navigation of the Sâne begins at Sevres, between Gray and Vesoul. The canal of the Centre, which unite the navigation of the Seine with that of the Loire, and that of the Saône and of Bourgogne, which unite the Sâne with the Yonne, have been noticed. The canal of Monsieur, or the canal from the Rhône to the Rhone, unite the Sâne near St. Jean de Losne with the Ille, a feeder of the Rhone, just above St. Jean de Losne. It connects the Sâne and the Doubs from the Sâne to the Doubs, above Dôle; the second consists of the navigation of the Doubs and the various cuts by which it is shortened; the third extends from the Doubs, near Monthédiard, to the Ille; the fourth branch off from the main line near Mulhouse, and enters the Rhine at Huningue. The length of the canal is about 217 miles. The first part was finished in 1806, the second in 1820, the fourth within the last few years. There are several canals which connect the Saône with the Rhone. As that of Beaucaire, 31 miles long, from the Rhone at Beaucaire by Aigues Mortes to the Sea; that of the étangs, 17 miles long, from the last mentioned canal at Aigues Mortes through the étangs or pools of Mauguio and Thau to the layer of Herault; that from the Rhone at Arles, 29 miles long, to the Port de Béziers, where the étang de Berre opens into the sea.

Several other canals are in course of construction, of which the most important are the canal from Romieu to the Poire, 20 miles long, from the Marche to the Oise, 43 miles long; that of Ardenne, 25 miles long, to connect the Meuse with the Aisne, and so with the Oise and Seine; the lateral canal of the Loire, extending along the valley of the Loire from Digoin to Briare; the lateral canal of the Oise, 20 miles long, and the canal from the Sivre de Niort to La Rochefoucault, 48 miles long.

History.—Gallia, or, as we have Englished it, Gaul, was the general term by which this country was designated by the Romans. Little was known of it either to the Greeks of classical times; three races of Aquitan, Celts, and Belgae, with an intermixture of some Germans, Ligurians, and Greeks: of these the Belgae occupied the north and north-east, the Celts the western, central, and south, the Aquitan the southern part; the first, who were a warlike and adventurous race, must have settled in Gaul at an early period, as the wants of an increasing population led them, in the reign of the elder Tarquin of Rome, about b.c. 600, to send out two vast emigrating bodies, one into Italy, the northern part of that country being already occupied by Gauls; and the other, a race of brave warriors, into Germany and Hungary. [Bourrous.] Two great countries of Germany, Bohemia (Bohæmum) and Bavaria (Boioaria), derive their names from one of the tribes (the Boans) engaged in this early migration. The part of Gaul which these two races occupied, and which was the Mediterranean coast, on which they established colonies. The earliest and most important of these colonies was Massilia, or Massilia (now Marseille), founded by the people of Phoenix (itself a Greek colony of Asia Minor) b.c. 600, and augmented by the immigration of the main body of the Phocæans when they sought refuge, b.c. 546, from the pressure of the Persian monarch. The power or influence of Massilia extended over the neighbouring districts, and several colonies were founded on the shores of the Mediterranean: such as Agatha (Agdo), Antipolis (Antibes), Nicaea (Nice), &c.

At the commencement of the second Punic war Hannibal marched through Gaul in his route from Spain into Italy; and Scipio and the Romans, on hearing of his movements, sent their army under Scipio Aemilianus and the other generals, such as Agathocles, to intercept him, sent a small body of cavalry up the banks of the Rhodanæ (Rhône) to reconnoitre, and these had a small skirmish with a body of Hannibal's Numidians. Hannibal however marched onward into Italy, and, on which country Spain, and the other tribes, sending his army forward under his brother Cæcrops into Spain.

After the close of the Punic wars the Romans gradually extended their power in Gaul. Fulvius Flaccus and his successor, Sextus, conquering the Suevi, the Gauls, the Britons, and some other tribes. The coast of the Mediterranean was now secured by the foundation of the Roman colony of Aquitania (Anx), b.c. 122; and that portion of Transalpine Gaul which the Romans had subdued was shortly afterwards formed into separate provinces, the Narbonian (Narbonne), colonised the following year, (b.c. 117) became the capital. Massilia, nominally in alliance with, but really in subjection to, Rome, was within the province. In the migratory invasion of the Cumîri, the Gauls, the Franks, and the other tribes, the province continued for several years the seat of war: the Roman armies were repeatedly defeated; in one dreadful battle (b.c. 104) they are said to have lost 80,000 men. The province was however rescued from the invaders by the great victory obtained by Marius (b.c. 101) over the Cumîri near Ambrennes Aix. The Cumîri had marched into Italy.

The conquest of Cæsar (Caesar) nearly reduced the whole country between the Rhône (Rhine), the Alps, the
<table>
<thead>
<tr>
<th>Time of Nation</th>
<th>Capital, or other Important Town</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Celtic and Ligurian Tribes</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Volci</strong>-including Volci Tectosages Carcaso (Carassonne)</td>
<td></td>
</tr>
<tr>
<td>Tolosates, a sub- Tolosa (Toulouse)</td>
<td></td>
</tr>
<tr>
<td>Alimentum of the Volci</td>
<td></td>
</tr>
<tr>
<td>Volci Arecomici Narko Martius (Narbonne)</td>
<td></td>
</tr>
<tr>
<td>Tasceni</td>
<td></td>
</tr>
<tr>
<td>Ancient people on the river Atax, or Audo</td>
<td></td>
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<tr>
<td>Sardones Iliberis (Elbe)</td>
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<td>Ruscino (Toule de Romasil, near Perpignan)</td>
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<tr>
<td>Salies, or Salbuffi, Massilia (Marseille) and (a Ligurian tribe) Aquae Sextiae (Aix)</td>
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<td>with a number of small tribes adjacent to them</td>
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<td>Vacentii Dena (Dio)</td>
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<td>Cayares Avencia (Avignon)</td>
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<tr>
<td>Tescasiun Augusta (St. Paul Triis)</td>
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<td>Cloupas</td>
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<td>Segalumni Valentia (Valence)</td>
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<td>Allobroges Vienna (Vienne)</td>
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<tr>
<td>Helvii Alba Augustia (Alps)</td>
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<tr>
<td>Caturges, and many small tribes</td>
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<tr>
<td>Ebrodomum (Embrun)</td>
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<tr>
<td>and many other small tribes</td>
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<tr>
<td>Centuriones, and many other small tribes</td>
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<tr>
<td>Darantasia (Montier, in the Tarentaise)</td>
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<td>Lingones Andematumum (Langres)</td>
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<tr>
<td>Autio Bibracte, afterwards Augustodunum (Autun)</td>
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<tr>
<td>Mandubii Ambarri</td>
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<tr>
<td>Boii Settled in the country of the Autio in the time of Caesar. (Vide Ces. de R. G., i. 25)</td>
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<tr>
<td>Segusiani Forum Segusianorum (Feurs in Forez) and Lugdunum (Lyon)</td>
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<td>Insubres</td>
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**Time of Nation**

- **Aulerici Eburovices** Mediolanum (Evreux)
- **Lexovi** Noviomagus (Lieux)
- **Viduvasses** Viduvasses (Vieux)
- **Rajovasses** Arageissi (Bayeux)
- **Unedii, or Veneti** Corusontum (Valognes)
- **Abrainetui** Ingena (Arvanches)
- **Sabi, or Essui** Sui (Sezé)
- **Arvii** Vagoitum (Arce, or near the river Erce), Neologanum (Jablins, near Mayenne)
- **Aulerci Cenomani** Suundinum (Le Mans)
- **Turones** Casorolentum (Tours)
- **Apulii, or Aquitavi** Palomagus (Angers)
- **Numinundii** Condomini (Nantes)
- **Boënes** Coribame (Remes)
- **Veneti** Daurigorium (Vannes)
- **Osunicii** Vorgamus (Carhaix)
- **Coesaces** Conopus (Carcar, near Dinan)
- **Carnutes** Antaerianum (Chartres)
- **Auréliani** Gamaubane (Orléans)
- **Parisii** Latetinum (Paris)
- **Moldi** Latumum (Mayenne)
- **Senones** Aquilium (Senv)
- **Triasses** Angustobona (Troyes)
- **Sequani** Vesontio (Besançon)
- **Helvetii, divided into four Cantons, of which two are known, and a third conjectured, and the other unknown, viz.**
  - Pague-Urbighenus Tigurinus Tugenus? (Zug?)
- **Rauraci** Augustinurumburum (Augustin, near Switzerland)
- **Bituriges Cubi** Avarium (Bourges)
- **Lenones** Augustoritum (Lyon)
- **Artemi** Augustonemetum (Clermont, in Auvergne)
- **Vellavi** Revesias, (St. Paulien, near Le Puy, in Velay)
- **Galaci** Anduritum, (Javal, near Mende)
- **Ruteni** Segulium (Roulez)
- **Cadurei** Divona (Cahors)
- **Pictones, or Pretavi** Limonium (Poitiers)
- **Santones** Mediolanum (Saintes)
- **Biturges Vivisci** Bardigala (Bordeaux)
- **Petronii** Vesuauna (Périgueux)
- **Nitubringi** Aginum (Agen)

**II. AQUITANIAN Tribes.**

- **Boii, or Boates** Boii, or Boates (Tible de Buch)
- **Vasates** Cosio (Bazas)
- **Tarbelli** Augusta Augustiae (Aqs, or Dax)
- **Corosates** Coesoa
- **Taritasses** Virois Julii, or Atures (Aire)
- **Elusates** Elusa (Eauze)
- **Ausi** Cimbitiae (Auel)
- **Locates** Lectorum (Lectoure)
- **Bigeriones** Turba (Tarbes)
- **Convenae** Lugdunum (near St. Bernard)
- **Consoareni, or Consoromani** (in Conserans)

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Druidian, had sunk beneath the edicts of the emperors and the growing influence of Christianity.

Of the last day of the year 406, the Rhine was crossed by a host of barbarians who never repassed that frontier stream. They consisted of Vandals, Alans, Suevian, Burgundians, and other nations. The Vandals, who first reached the junction of the tributaries, were received by the Franks as the allies of the empire, the approach to the frontier; but on the arrival of the Alans, the Franks in their turn were overcome, and the passage was effected. The devastation of Gaul by these hordes of invaders was terrible: the inhabitants of many towns were slaughtered, and carried into captivity, the sanctity of the churches was violated and the open country laid waste. Armorica (the present Brittany), into which the settlement of the British soldiers who had followed Maximus the usurper into Gaul [Bretagne] had infused a mingled element of Teutonic and Gallic independence; but the rest of Gaul became a prey. The Suevians, the Alans, and the Vandals crossed the Pyrenees into Spain: the Burgundians settled, with the sanction of the Roman government, in the east of Gaul, on both sides of the Jurak, in the Rhine, from the lake of Geneva to the confluence of the Rhine and the Moselle; and the Visigoths, who had been long ravaging both the eastern and western Empires, were induced, just before the settlement of the Burgundians (A.D. 414 to 418), to accept the cession of that part of Gaul which lies to the south and west of the Loire. Toulouse was their capital. Both Burgundians and Visigoths took the name of Romans, and preferred sucession, which was however merely nominal, to the entire invasions. In the tribes ceded to them were divided between the original possessors and the new comers, who gave up their unsettled migratory course of life upon receiving a permanent interest in the soil.

Hostilities were before long renewed between the troops of the Empire and these new-settled nations; but their settlement opportunity supplied Gaul with the means of defence against a fresh invasion. In A.D. 451, Attila, king of the Huns, with an immense host of barbarians, passed the Rhine at or near Necker, descended into Gaul, and ravaged the coast. The Roman power sufficed to keep these barbarians from entering in Gaul; it could not however arrest the constant pressure on the frontier; and the decaying strength of the empire only protracted, but could not avert the final catastrophe.

The Franks (i.e., the freemen) were a confederation of German nations, the Salian, the Bructerans, the Ripuarians, the Cuoci, the Cherusci, the Chamavi, the Catti, the Tenetari, and the Angivarians. These tribes preserved their independence while confederate, and each had its king. Like the Saxons who professed all to derive their line from Woden, the Frankish princes claimed a common ancestor, Meroveus, (Merovingian, from whom they bore the title Merovingians. The era of Meroveus is not ascertainable. In the fourth century the Franks were settled on the right bank of the Rhine from the junction of the Meun or Mayn to the sea, and in the latter part of that century and during a considerable part of the next appear to have been in alliance with the empire. The Allemans dwelt on the same bank of the Rhine from the Maun upwards. Upon the downfall of the Roman empire, Gaul became a prey to the barbarous nations by which the empire was dismembered. There was no revival of national independence as in Britain. The nationality of the Gauls had been lost, when the extension of the right of Roman citizenship to all the natives of the provinces by Caracalla, A.D. 212, merged the distinction previously maintained between the conquerors of the world and their subjects; and the national religion, P.C., No. 648.
Rhine, the cradle of his power, to the Loire, the Rhône, and the Ocean, for Armorica had submitted to him. He now determined, on the pretext of uprooting Arianism, a plea which was calculated to secure him numerous sympathizers beyond his own confines, to attack Alaric II, king of the Visigoths, whom he defeated and slew at Vouglé in Poitou. The Burgundians, hoping to share in the spoils of the conquered nation, supported Clovis; but the Ostrogoths of Italy supported the Visigoths and prevented their entire extinction. They held, however, the majority of their territories, including Bordeaux and Toulouse, and extending perhaps to the foot of the Pyrenees, fell into the hands of Clovis; but the Visigoths preserved the coast of the Mediterranean, together with Spain, which they had conquered: the Ostrogoths were deprived of the territory held by Alaric II, king of the Visigoths also as guardian of their king, his grandson Amalaric. The assassination of the various Frankish kings by Clovis rendered him undisputed head of the tribes of his own nation, and his sovereignty extended over Gaul, with the exception of the part obtained by the Ostrogoths, Visigoths, and Burgundians. Clovis may be considered the real founder of the French monarchy: he died A.D. 511.

The death of Clovis brought down the dismemberment of a monarchy which had been established too short a time for consolidation. The four sons of Clovis had each shared the regal inheritance. Thierry became king of Austrasia (Champagne, Lorraine, Luxembourg, and the left bank of the Rhine as low as Cologne); Clodomer, king of Orleans (Mâconnais, Orléanais, and the valley of the Loire); Childebert, king of Soissons (Picardy, the Netherlands, and part of the Île de France); and Childeric, king of Paris (comprising the rest of the monarchy). But though the sovereignty was divided, the nation was regarded as one, and all the kings claimed their thrones by the descent of Clovis. The Franks now first invaded Italy, though without success; but their power was increased by the submission of the Burgundians and the cession of Provence to them by the Ostrogoths; and ultimately the dismembered monarchy of Clovis was reunited, together with these possessions, under Clovis II, the youngest of his sons. Under the successors of Clotaire, France was again repeatedly divided and reunited: it is needless to describe changes which it is difficult to trace and to remember, and which left no other permanent mark on the western portion of the Roman empire than the decline of the kingly power. The various divisions bore the names of Austrasia, which comprehended the eastern and north-eastern part of France, Flanders, the Rhenish provinces, and part of Switzerland; Neustria, which comprehended the eastern and south-eastern part of France, Aquitaine, the country south and west of the Loire; and Bourgogne, the remainder of France and Switzerland, with some parts of Savoy. The Merovingian kings, the descendants of Clovis, ceased with Childeric III, who was deprived A.D. 752; but the office remained, in the hands of hereditary dukes of Austrasia, Pepin l'Heristal, Charles Martel, and Pepin le Bref; while the governors of provinces had acquired all but absolute independence of the crown.

The accession of Pepin le Bref to the crown, upon the deposition of Childeric III, reanimated the spirit and power of the Franks. Pepin waged war with the Saxons and with the Saracens, who had possessed themselves of the coast of the Mediterranean, which he wrested from them; and the subjugation of the duchy of Aquitaine reunited the empire of the Franks. The Franks were already in alliance with Pepin, who reigned A.D. 752-768; but the splendour of his achievements faded before the superior glory of his son Charles, who extended his power over Italy, except the southern part, then held by the Greek emperors, and over the greater part of Germany. His reign (in conjunction with his brother Carloman, A.D. 768-771; alone, 771-814) was distinguished by the attention which he paid to the revival of letters. [CHARLEMAGNE.] But the fabric of empire which he had raised fell to pieces under the less vigorous sway of his son Carloman and of his brother Charles, who reigned A.D. 814-844.

In the confused history of the Carolingian princes, successors of Charlemagne, it is difficult to trace the events which belong to France, or to separate its annals from those of Italy and Germany. [CHARLES II, LE CHAUP.; CHARLES III, LE GUT; CARLoman; CHARLES III, LE CHOEUF; CHARLES IV; CHARLES V; CHARLES VI; CHARLES VII; CHARLES VIII; CHARLES IX; CHARLES X; and CHARLES XI.] The most important divisions of the Frankish empire took place; and the wars of rival princes, and the degeneracy of the descendants of Charlemagne delivered France a prey to the ravages of the Normans or Normans, who acquired possession as a thief of the crown, by cession from Charles le Simple (A.D. 911), of the territory subsequently known as the Duchy of Normandy. The governors of provinces established themselves and held their possessions by the grace of the kings, and the cities, destitute of protection from the government, declined in wealth and population, and in many cases lost their municipal rights and privileges; the number of serfs or villains increased, and the feudal arts were exercised to the last degree of refinement. Hugh Capet, son of Hugh le Grand, count of Paris, was elected by his army and consecrated at Reims, A.D. 987.

From the time of Hugues Capet the history of France is less involved: the crown descended with tolerable regularity to the son or successor of each deceased king, and the divisions and reunions of the parts of the kingdom were arrested. The kingly power was indeed feeble; but it gradually acquired strength, and the royal domain (as distinguished from the domains of the great feudal lords) was progressively enlarged by the conquest, forfeiture, inheritance, or acquisition of other means of the greater fiefs.

The following chronological table of the kings marks the principal extensions or diminutions both of the royal domains and of the kingdom at large; and those changes which form the characteristics of the periods in which they are placed, in relation to the several articles on the several kings. [CHARLES; PHILIPPE; LOUIS; &c.]

(987.) HUGUES CAPET, son of HUGUES le GRAND, count of Paris.

The condition of the kingdom at the accession of Hugues is thus described by Siomondi:—We have designated two long periods of the history of the French by the name of the two races of kings, the Merovinigas and the Carolingians, who first held the government of France. A third period begins with the deposition of Hugues Capet at Reims, the 3rd July, 987; a period which, without impropriety, take its name from the new race of the Capetians: it is a period in which royalty was, as it were, annihilated in France, in which the bond of society was broken in country which extends from the Rhine to the Pyrenees and from the channel of the Manche (the English Channel) to the Gulf of Lions was governed by a confederacy of princes rarely under the direction of one common will, and only kept together by the feudal system. From about this time the feudal system, silently adopted, and obtaining consistency and extension by custom, was the only system recognised by the numerous potentates who divided the provinces among themselves. It held with them the place of the social bond of the monarchical and legislative power.

The accession of Hugues however increased the power and domain of the crown by the addition of that domain which he had possessed while yet a subject. He was duke of France, count of Paris and Orléans, and abbot of several monasteries. The duchy of Burgundy, under him by the feudal tenure; and he had the support of the duke of Bourgogne, his brother, and of the duke of Normandy, his brother-in-law. Yet he was not acknowledged as king in Guienne till A.D. 990; and Limousin did not acknowledge his right till the reign of his successor. These two nobles, the dukes of Bourgogne and Normandy, the latter especially, were among the most powerful of the French lords: and of the rest the principal were, the count of Champagne, the count of Vermandois, the count of Flandres, the count of Auvergne, the count of Poitou, the count of Toulouse; and, though at the beginning of this period, all the provinces were as paramount feudalities, those which afterwards became exclusive peers of France, were, the dukes of Bourgogne, Normandy, and Aquitaine, the counts of Flandres, Champagne, and...
Toulouse. The vassals of Hugues, as count of Paris and Orléans, made such approaches to independence, that, at his death, the authority of his successor extended little beyond the walls of Paris and Orléans.

(969.) Robert, son of Hugues Capet, born a.d. 970.
(1031.) Henri I., son of Robert, born a.d. 1000.
(1047.) Henri II., son of Henri I., born a.d. 1055.

The power of the first four Capetian kings was very small, and the kingdom over which their nominal sovereignty extended was not co-extensive with modern France; Lorraine Transjurane Bourgogne, and Provence were subject to the imperial crown. Their reigns constitute the more of the rise of chivalry. The reign of Philip I. was marked by the conquest of England by William of Normandy. The communes or municipalities of France originated in leagues of the inhabitants of towns for defence against baronial oppression; these leagues were ascribed to the reign of his successor. Philippe was engaged repeatedly in hostilities with the Anglo-Norman kings, William I. and William II. The first crusade took place in Philippe's reign, and by exhausting the power of the nobles, he prepared for the emerging of the regal authority from its depressed condition.


The reign comprehends an important period in the history of the French, whether by the progress of the people in the communes, the rights of which had scarcely received at this epoch their first legal sanction; or by the progress, not less marked, of the central authority in the power of the crown, which, instead of remaining unnoted the compacts with the barons, in the nature of feudal vassals, began really to make itself felt from the Meuse to the Pyrenees; or, lastly, by the development in the same interval of the feudal system. This system profiting by the progress of intelligence and the study of other systems of legislation, acquired the same dark and gloomy aspect, and was to be long a subject of dispute. The activity of Louis vindicated his authority in his own domain, which had by this time been considerably extended, and enabled him to struggle with the Anglo-Norman and other great princes of his kingdom, and to extend the jurisdiction of the crown.


The king carried on the policy of his father, of establishing his authority in the communes, and of defeating the Anglo-Norman from their civil divisions, from the Crusades, the heavy ransom of Richard I., Cœur de Lion, and the weakness of John, enabled Philippe to raise the power of the crown above that of his puissant vassals. Philippe displayed constitutional powers by a decision of the English court in 1189—91, in conjunction with Richard Cœur de Lion, and in hostilities with Richard and John, and with the emperor Otho, whom he defeated at Bouvines, near Lille, a.d. 1214. He united Normandy, Maine, Anjou, Touraine, and Berry, to the crown of the crown; increased the previously small domain of the crown in Auvergne, and other parts of the south of France; and consolidated the regal power by substituting constitutional forms for individual caprice. This reign was marked by the blood-stained Crusades against the Albigenses [Almagnaves] in the south of France, which weakened the power of the count of Toulouse who protected the Albigenses. France, in its present extent, was at this time divided between four sovereign princes—the king of France; the Emperor, who held the provinces of the east and south-east; the king of England; and the king of Aragon, who had considerable territories near the Pyrenees and the Mediterranean.

(1223.) Louis VIII., Cœur de Lion, son of Philippe Auguste, born a.d. 1187.

Louis conquered Poitou, and engaged in the crusade against the Albigenses.

(1226.) Louis IX., (St. Louis), son of Louis VIII., born a.d. 1226.

(1270.) Philippe III., Le Hardi, son of St. Louis, born a.d. 1245.


(1314.) Louis X., Le Hutin, son of Philippe Le Bel, born a.d. 1295.

(1316.) Jean I., a posthumous son of Louis Hutin, lived only three or four days.


The accession of Philippe established the Salic law: he was preferred to the daughter and heiress of his elder brother, Louis Le Hutin.

(1322.) Charles IV., Le Bel, third son of Philippe Le Bel, born a.d. 1295.

The direct line of the Capetian kings ended with Charles IV.

The reign of St. Louis, one of the most equable and virtuous of princes, and the reigns of his successors, some of them as remarkable for the opposite qualities, are marked as the period of the consolidation of the royal authority, and the consolidation of the national cohesion. This beneficial change was however accompanied under the successors of Louis with the most revolting acts of injustice under the forms of law. Many of the nobles were despoiled of their fees; the order of the Templars was dissolved; the state was put into the hands of the Jews and Lombards grievously oppressed; and trade ruined by the abasing of the coinage. Persuasion assumed a more systematic form by the establishment of thequisition at Toulouse. In this period the greater part of Languedoc was added to the domains of the crown, which were considerably augmented in other places.

COLLATERAL BRANCH OF VALOIS.


(1356.) Jean II., Le Bon, son of Philippe de Valois, born a.d. 1319.

(1364.) Charles V., Le Sage, son of Jean II. Le Bon, born a.d. 1337.

The reigns of these three kings are marked by the wars of the English in France under Edward III., who claimed the throne of France in the right of his mother, and his son the Black Prince. The French were defeated in the great battle of Sluys (naval) a.d. 1340, Crécy, a.d. 1346, and Poitiers 1356. But the premature infirmity of Edward III. and the death of his son, who had at one time received the cession of a large territory in the south-west of France, under the title of the principality of Aquitaine [Bourbons], caused the great power of the English to pass over to the Benediction, which extended ultimately to the extensions of the domains of the French crown.

(1356.) Charles VI., Le Bien Aimé, son of Charles Le Sage, born a.d. 1368.

(1429.) Charles VII., Le Victorieux, son of Charles VI., born a.d. 1403.

The reigns of these two kings were marked by another desperate struggle with the English under Henry V. and his successor Henry VI. At one time the success of the English court was so decided by Henry V., who was recognised as king in France, to succeed on the death of Charles VI. but the perseverance and spirit of the French ultimately triumphed, and of all their splendid domains in France the English monarchs retained only Calais. This was a period not only of foreign invasion, but of civil dissensions and of the most frightful massacres and assassinations. The dukes of Bourgogne, who descended from a younger son of Jean II., were acquiring a vast territory and great power.

Charles VII. was the first to substitute a standing army for the military service of the feudal vassals.

(1461.) Louis XI., the first entitled Le Roi Très Chrétien, son of Charles VII., born a.d. 1423.

Louis, a crafty and intriguing prince, did for France what Henry VII. did for England in breaking down the feudal system. Upon the death of Charles Le Téméraire, duke of Bourgogne, he seized a portion of his inheritance [Bourbons]. The domain of the crown was now become

3 1 2
very extensive, though parts of Picardy in the north, Brabant in the west, several parts of Gascony, the south of Bourbon, Provence, Artois, and several districts of the centre were not included. (1483.) Charles VIII, son of Louis XI, born a.d. 1470. In him ended the direct succession of the house of Valois.

Branch of Valois Orleans.


Branch of Valois Angoulemme.

(1515.) François I., Le Père des Lettres, descended from the duc de Bourbon, 1494.

In the reign of this prince the arts, commerce, and literature began to revive. The domains of the crown were augmented by several additions, as of Auvergne and Bourbonnois in the centre, parts of Picardie in the north, and parts of Gascony in the south; and virtually of Brabant in the west; if indeed we may not rather ascribe this last acquisition to the reign of Louis XII. (1547.) Henri II., son of François I., born a.d. 1519. In this reign the French reconquered Calais and its territory, the last hold of the English possessions in France. [Calais].

(1559.) François II., eldest son of Henri II., born a.d. 1544.

(1560.) Charles IX., second son of Henri II., born a.d. 1550.

(1574.) Henri III., third son of Henri II., born a.d. 1551. The reigns of the last two princes were distinguished by the religious wars of the Catholics, at the head of which were the dukes of Guise, of the family of Lorraine, and the Huguenots of Condé and Coigny [Coligny], afterwards under Henri de Navarre. The dreadful massacre of St. Barthélemy [Bartholomew Massacre, The St.] was perpetrated by the Catholics who formed the celebrated Confederation of the League, at the head of which were the Guises. The court, which had previously supported the Catholics, was driven by the fear of this powerful and ambitious family to an alliance with the Protestants, and Henri III. perished by the hand of a Catholic assassin a.d. 1569. In him ended the direct succession of the branch of Valois Angoulemme.

Branch of Valois Bourbon.

(1589.) Henri IV., Le Grand, born a.d. 1553, descended from Robert, count of Clermont, younger son of St. Louis, and brother of Philippe III., Le Hardi.

In the reign of Henri IV. the resources of France were far developed that the country began to assume that state of the economic and social advances that mark a people on the upward progress of population, and social improvement entitled it. A farer prospect seemed to be opening to the rulers of that country. The earlier kings had to struggle with the spirit and the institutions of feudalism; and when, at the close of the direct line of the Capetians, the prince of the peace, over the armed violence of feudalism seemed to be gaining consistency and strength, the accession of the house of Bourbons brought on the struggle between the kings of France and England for the right and possession of the crown. The excesses of the disbanded soldiery, the struggles of the contending factions (the Bourguignons and the Armagnacs), and the rising of the commons of Paris and the peasantry—rue jacquerie, as they were termed, were added to the ravages of the religious wars. After a contest of a century, the contest terminated in the almost entire expulsion of the English, the kings of France had to watch or struggle with rivals of almost equal strength in the dukes of Bourgogne, and the other nobles whose power, the result of the feudal system, still survived when the spirit of the system was gone. The reviving strength of the crown and the kingdom under Charles VIII., Louis XII., and Francis I., was repressed by the rising power of Spain and the ascendancy of the imperial house of Austria, and exhausted by the useless wars which occupied possession of Italy. Then came the ascendancy of the house of Lorraine, and the wars of religion which desolated France for thirty years. At length however the exhaustion of the Lorrainers was Leagues, and the opportune conversion of Henri IV. to the Catholic faith, and the opportune conversion of the Spanish of their possessions in Languedoc, and the districts, such as the Nivernais and Auvergne, over which any of the nobility retained territorial sovereignty, were of little importance when compared with the royal domain, now augmented by Bearn, and the other portions of Henri's patrimony. The generous disposition and popular manners of Henri's reign made for him the love of the people, and 1500 wisdom of Sully, his chief minister, promoted the prosperity and husbanded the resources of the country. Henri granted to the Protestants the enjoyment of many important rights and privileges by the edict of Nantes, a.d. 1598, and was more desirous of introducing the condition of his people than of extending his frontier by foreign conquest.


In this reign, Richelieu, the minister of this prince, had in view to crush the nobility, to humble the Protestants, and to set bounds to the power of the house of Austria. His attempts to humble the Protestants led to a renewal of the religious war: the duke of Rohan and his brother, the prince of Soubise, were at the head of the Protestant party but their talents were exerted without success: the court triumphed, and the Protestants lost the towns which they held as securities: the edict of Nantes was not however revoked. To abase the house of Austria, Richelieu supposed the measures of the Council of Catechism, or Anti-War; but however his talents may have animated and directed the allies, the French armies obtained little distinction until the next reign.


The minority of this prince was marked by the dissensions and hostilities of the courtiers and powerful nobles, and by the splendid success of the French armies under the prince of Condé and the marshal Turenne. The dissensions of the crown and the rising power of commerce, and the extension of the 'proprieties,' or the despotism of the crown, caused the king was enabled to assume and exercise a more despotic power than any of his predecessors had possessed. The nobility were reduced to be the mere dependents on the court: their titles descended to all their children, and a noble held the purse of commerce, and enjoyed concessions, to be a degradation: the country was burdened by the expenses of a court which had such a body of retainers, and the privileges and exemptions from taxation, which the nobility possessed, and other relics of the feudal system were among the principal causes of the French Revolution. The despotism of Louis XIV. then, however splendid in appearance, prepared the way for the overthrow of the crown in the person of his descendant, next but one to himself in the possession of the throne.

On the other hand the French in this reign were splendid, except near the close, when the arms of the coalition against France, under the guidance of Marlborough and Eugene, gained the ascendant. The boundaries of France were however considerably enlarged in this and the preceding reign, and the possessions of Flanders, Flandes, Franche Comté, and Alsace: the boundaries of France thus became nearly those at present. The manufactures and trade of France made considerable progress in this reign under the able management of Colbert. (1715.) Louis XV., Le Bien aimé, great-grandson of Louis XIV., Le Grand, born a.d. 1710.

The long reign of Louis XV. presents little worthy of notice except the changes in the public mind which were produced by the rising power of the bourgeoisie and the increasing state of the kingdom; and the increasing dilapidation of the finances. These circumstances, with the gross sensuality of the king, and the disputes of the Jesuits with the Jansenists, and of the clergy and the crown with the parliaments or courts of justice, all tended more or less to prepare the way for great changes.

In this reign Corsica was added to France; the last relics of the feudal sovereignties, the Duchies of Lorraine and Bar, and the principality of Dombes, were added to the dominion of the crown. Le Comtat d'Aix and le Comtat Venaissin remained in the hands of the pope. (1774.) Louis XVI., grandson of Louis XV., Le Bien aimé born a.d. 1754.

In this reign the catastrophe, which had been long preparing, took place. The French Revolution is an event too complicated for us to attempt to trace its history; all we can do is to mark some of the chief organic changes, and the
principal accessions to or diminutions of the territory of France. Among the more immediate causes of the Revolution were the financial embarrassments of the government, and the enthusiasm for liberty inspired by the alliance of France with the United States, in the struggle of the latter for independence against the power of Great Britain.

1787. The Meeting of the Notables, a number of persons from different parts of the kingdom, chiefly selected by the king. The Notables dissolved the same year.

1789. The States General, the ancient assembly of the kingdom, consisting of the deputies of the nobles, clergy, and of the Tierce État (third estate) or commons, assembled. The deputies of the Tierce État, with such deputies of the clergy as chose to join them, (none of those of the nobility accepted the invitation) voted themselves the supreme legislative body, under the title of the National Assembly.

In this year the division of the kingdom into departments was introduced.

1790. Hereditary nobility and titles of nobility were abolished.

1791. A new constitution was promulgated by the Assembly;—France was declared a limited monarchy.

1792. The Legislative or National Assembly assembled according to the new constitution.

1793. The royal authority was suspended by the National Assembly;—the nation was invited to elect a national convention, and determine on the form of the government. The convention assembled and proclaimed a republic.

1793. Louis XVI. was executed: the nominal reign of his son Louis XVII. (born 1785) commenced.

1793. The constitution of the republic was completed; but it was determined that the Convention should continue in power till the end of the war.

1795. A new constitution was substituted for that of 1793, which was found to be impracticable. The executive power was confided to a body of five, called the Directory. Two legislative bodies, the Council of Ancients and the Council of Five Hundred, were constituted. The nominal king, Louis XVII., died.

1799. The Constitution was remodelled: the Directory was overthrown;—consuls for a term of years were appointed; Bonaparte, Sieyes, and Ducos, provisionally: then Bonaparte, Cambacérès, and Le Brun.

1802. Consuls for life were appointed—Bonaparte, Cambacérès, and Le Brun.

1804. NAPOLEON assumed the sovereign power as Emperor. During these changes the boundaries of France were continually extending.

The chief acquisitions, with the dates at which they were made, and the departments into which they were formed, are as follow:—

<table>
<thead>
<tr>
<th>Date Acquired</th>
<th>Department and Capital</th>
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<tr>
<td>1799</td>
<td>Le Comtat d’Aix and Le Comtat Venaissin</td>
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<td>Vaucluse. Aixon</td>
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<td>Doubs.</td>
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<td>Haut Rhin.</td>
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1801. Poretruy (Switzerland) incorporated with Geneva and Chambéry, with the surrounding districts.

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<thead>
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<th>Region</th>
<th>Department and Capital</th>
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<td>Dômes. Isère.</td>
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<td>Sibia. Territoire.</td>
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(1814.) LOUIS XVIII., brother of Louis XVI., born a.d. 1755.

The Charter was granted in 1814 by this king.

(1824.) CHARLES X., brother of Louis XVIII., born a.d. 1757.

The second Revolution broke out a.d. 1830.

COLLATERAL BRANCH OF ORLEANS.

(1830.) LOUIS PHILIPPE, previously duke of Orléans, descended from a younger brother of Louis XIV., born a.d. 1772.

State of France before the Revolution. The population of France previously to the Revolution was politically divided into three classes, called États, or states—the clergy, the nobility, and the commons, or tierce État.

The clergy, as a political body, was divided into the old French clergy, and the foreign, that is, those belonging to the provinces which had been united with France since the reign of Henry the Second. The income of the whole clerical body was estimated by Necker, in his 'Administration des Finances,' at 130 millions of livres, and the proportion of their real property to that of the other landowners was as 1 to 54. The share of the parish clergy in this income was estimated by the same author at from 40 to 45 millions of livres. The abbots, except those which were the chief seats of some monastic orders, as, for instance, the Grand Chartreuse, near Grenoble, and the Great Cisterian Convent at Citeaux, near Dijon, were in the gift of the king, and part of them were granted to real ecclesiastics and part to the Abbés commendataires. Of these latter there were 225, and some of them very rich. The Abbés commendaires...
Iaries received the third part of the income, but were under no obligation either to reside in or to submit to the regulations of the convent, the duties of which devolved on the prior. These ecclesiastical benefices were employed as securities for the younger sons of the nobility, and only the possessors of them simultaneously held, or were allowed to hold, the dignities of clerics who were not born among the privileged classes. The number of regular abbeys or monastic establishments was 366, of which 113 were convents and 253 monasteries. The contribution of the clergy to the general revenue of the country was the tribute established under Francis the First, and called from the first revising commissioner, Paschal, Deuxième Parlement. But as this contribution, as compared with the wealth of the clergy, was very small, that body granted regularly every five years the exemption of all its members from special obligations, from the 18th of May to 20th of December, and occasionally also absolution gratis et priorum. These latter however were not donations, but only loans without interest, which were repaid after a long time. The so-called foreign clergy were in some provinces subject to the general taxes. There was a good deal of relaxation of discipline and corruption of manners among the clergy, which, united with the anti-religious spirit which at that time pervaded all France, had rendered the clergy an object of hostility to the other classes of society, and was not only feared by many French priests, particularly among the parish clergy, exhibited the most perfect examples of the Christian virtues, and bore the severe trials to which they were exposed by the French Revolution with a fortitude worthy of their profession, although sometimes not without a tinge of fanaticism and superstition.

The nobility of France was quite differently constituted from that of this country, where the eldest son inherits the title of his father, and the other children fall into the general revenue of the country, and the younger sons of nobles, and the property of the deceased, were accorded to the great mass of the population. The French noblesse was extremely numerous, for not only all the children of a noble belonged to the class of their father, but that class was continually increased by the creation of new nobles. There were still a few of the old noblesse, who were accorded a title by birth, and who conferred nobility, either simply by being obtained, or by being held for the space of twenty years. Almost all these places were acquired by purchase. Besides, there were frequent creations of nobles by royal patent. The nobility possessed great privileges: they were exempted from the land-tax taille, the military service, the state Income tax for the maintenance of roads, and many other duties and taxes. They were subject, it is true, to the impost, but this tax was included in the land-tax imposed on the privileged classes, and was a mere tribute. The nobility, the clergy, and some orders, as, for instance, that of the knights of Malta and of St. Lazans, possessed by far the greatest portion of the landed property in France, and might be described as the manufacturers of the state in which, although living in their object, as, for instance, the exclusive right to keep pigeons and rabbits, were the subject of great vexation to the peasants. Personal service was finally abolished in many parts of France only a few years before the Revolution. Although the nobility enjoyed all the above-mentioned privileges as a body, there was a great difference between the old and new nobles, the latter being held in a very slight estimation by the former. Only such nobles as could prove that their families had been ennobled for more than 100 years, and had held their seats in the different states of the realm, were able to prove four generations of nobility in order to become an under-lieutenant. Every regiment had a colonel-ship en second, which was reserved for young noblemen of the first families, who thus began their military career with a grade which would be the highest only after years of hard service. Besides the great mass of untitled nobles, there were dukes, marquises, counts, viscounts, and barons; but except those who bore the title of these titles, there were not distinguished among them by any special privilege. Only the dukes had peculiar privileges at court, of which the principal was that their wives were allowed to sit on a table set in the presence of the queen.

The third class of the inhabitants of France comprised the whole population, except the nobility and clergy, and constituted somewhat more than 2 parts of the whole. This class was subdivided into four or five distinct classes. The letters tutti and its claims: Qu'est-ce que tous êtes? Tout? Qu'est-il déjà sorti de vous? Rien? Que demandez-vous à être? Quelque chose! This definition contains all the secret of the French Revolution. The letters tutti included before the Revolution all the inhabitants, the richest merchant and the most eminent scholar, to the poorest peasant and the meanest artisan. The lower part of the letters tutti was crushed by the burden of a most unjust taxation, the weight of which pressed almost equally on the richest and the poorest, and was not only intolerable by the oppression of the landowners or their agents, and by the grossest abuses of the manorial jurisdiction. A consequence of all this was the greatest misery among the people, and a deeply-rooted hatred towards the higher classes, which manifested itself in the terrible acts of revenge and bloodshed which accompanied the Revolution in France. While the lower part of the letters tutti was ground down by what we may term physical oppression, the higher part of that class was suffering under a moral degradation. Two classes, the middle and the lower, were both in the same position, that of the middle, the two most natural means towards attaining distinction, were unvailing to a man who had not the advantage of birth, and the road to honours and promotion was closed against him. Even a great number of the new nobles who, by the Revolution, had acquired, and were by the Revolution, had acquired the same rights with the other nobles, they were virtually prevented from enjoying them by the old families, who carefully excluded the new intruders upon their privileged class from all honours and preferments.

The French Revolution did not originate in direct taxation. The direct taxation consisted—1st, of a land-tax called taille, levied only on the lands belonging to the privileged classes; 2nd, the capitation, to which all classes were equally subject; 3rd, a property tax, principally as, for example, the tax on annual receipts from property. The net income, was called rente; it was afterwards doubled, and called les deux rentes. This tax was augmented by a third rente, which was imposed not as a permanent but only as a war-tax. The nobility were not locally exempt from the аббапое tax, but were in many cases by their influence contrived to have it assessed in such a way that they were very slightly affected by it. The whole amount of revenue derived from direct taxation immediately before the Revolution was 216,000,000 livres, of which 142,000,000 livres were raised in the privileged classes, although they owned scarcely one-third part of the soil of France. Besides those unequally assessed taxes, the peasants were exclusively subject to a statute labour for the benefit of the state. Instead of public roads they were obliged to construct the roads called voies et chemins, some of which, although they were not in the power of the peasants, were the subject of heavy taxation on the privileged classes was military quarters: they were obliged to furnish the soldiers gratuitously not only with furniture, but also with fire, candles, salt, and ammunition; and wherever the cavalry was quartered in the country, the inhabitants were also obliged to furnish the horses with forage. This class was also exclusively subject to compulsory military service, and 60,000 men were drawn by lot for the army every year.

The indirect taxes were still more oppressive than the direct, and their assessment was of the most oppressive character. They consisted—1st, of customs levied not only on goods imported from abroad, but on those which passed from one part of France to another, the country being divided into 55 different customs districts, and the provinces enjoying privileges and exemptions which the others did not have; 2nd, of the monopoly of snuff and tobacco; and 3rd, the monopoly of salt. This last gave birth to a kind of oppression unparalleled in the annals of fiscal exactions. A merchant was required to buy or to sell for him, at a high price, common salt. All France was divided, with respect to the salt trade, into six districts: 1st, the provinces of Brittany (Bretagne) and a part of Poitou, where salt was not taxed, and could be purchased for its market price, about two livres; and the department of Maine-et-Loire; 2nd, the provinces of Touraine, Anjou and the rest of Poitou, Guerande, and Anjou, which had purchased their exemption from the salt monopoly in the reign of Henry II. for 1,700,000 livres. These provinces
supplied themselves from the sea salt-works of Saintonge and Poitou, and, although they paid an import duty, they could get the quintal of salt for a price varying from 6 to 10 livres. 3. The Lower Normandie, which produced sea-salt, of which it had formerly given the fourth part to the government, and was called on that account Pays du Quart Bouillot. The salt-works, drawn from the salt-mines of Trouville and Vaufont, raised the price of that commodity to 13 or 15 livres for the quintal. 4. The Pays des Salines, which were furnished from the salt-mines of the interior, and which comprehended Alais, Lorraine, Franche Comté, and the Lot. The salt-producers raised without any discussion the price of salt at the unequal prices of 12, 15, 27, and 36 livres for a quintal. 5. The Pays des Petites Gabelle, or Provence, Languedoc, Lyonnais, and Dauphiné, which received salt from the salt-works on the confines of the county, and paid for the quintal 28 to 40 livres. 6. The Pays de la Mer, comprehending almost all the inland provinces of Northern France, or about one-third of the whole country. These districts paid the heaviest duties on salt, and two-thirds of the whole revenue from that source was raised from them. In these districts the price of salt varied from 44 to 62 livres the quintal.

A consequence of this oppressive and unequal taxation on salt was a general contraband trade in that indispensable article of life, which was carried on by all their subjects, in defiance of numerous preventive service, or by the heavy punishments inflicted on the smugglers. There were generally about 1500 individuals in prison for such offences, and a year was considered fortunate when there were no more than 300 persons suffering in justice for injuries committed to the salt monopoly. These severities proved useless against so lucrative a business as salt smuggling; for it was calculated that an individual could gain in one hour, by transporting over the frontier of a province two pounds of salt in his pocket, more than a hard-working labourer could earn in a day. The oppression caused by this system of taxation was increased by the custom of farming out the indirect taxes to individuals or companies, who paid the government a stipulated sum, which they endeavoured to get back with a profit from the importers, whom they oppressed in the most unscrupulous manner.

Besides the above-mentioned taxes, the country suffered greatly by the absurd policy which prohibited the exportation of corn not only from France, but even in many cases from one port to another. This restriction was introduced by Colbert as a means of favouring manufactures by ensuring cheap provisions; but what was only a financial error of that statesman became the source of the greatest abuses under his successors. The intendants, without whose permission the rank of a merchant was given to any of the country districts, sold that permission to capitalists, who raised the price of corn and resold it at an enormous profit to the government, which endeavoured to maintain an equal price of bread all through the country. It is no wonder that agriculture could not be easily raised from its depressed state; and the partial supply of the metropolis always remained an object of considerable difficulty; it was easy to alarm the inhabitants of Paris with a dearth; a measure which was employed in bringing about the first scenes of horror in the Revolution, and exciting the Parisians to revolt.

The revenue extorted from the people by this system of taxation was squandered in the most profligate manner. The wars of Louis XIV, the splendid edifices erected by him, and the pomp of his magnificent court, although supported by oppressive taxation, had at least the advantage of flattering the national vanity; but the wanton prodigality of Louis XV, and of his favourites, Madame Pompadour and Madame Dubarrié, was without the same excuse. It was under the reign of Louis XV. that a new custom was introduced into the tax system, and the golden source of and the pretext for the grossest abuses. We allude to the acquit à complant, or receipts signed by the king himself for monies received by him: these sums were never actually received by the king; and the receipts were only used as the means of concealing in the official accounts the real employment of the revenues. Louis XVI. was by no means a spendthrift, and the memory of the unfortunaté Marie Antoinette has been recently vindicated against the reproach of prodigality; but the habit of lavishing public money was too deeply fixed in the court and the system of government to be eradicated. The acquit à complant, or, as they were afterwards called, ordonnances au porteur, were continued under the reign of Louis XVI. The amounts drawn from these sources increased prodigiously, from 1779 till 1787, to 860 millions of livres; the whole of which, with the exception of secret service money for foreign affairs, was given in pensions or expended in grants to the court noblesse. These favours were bestowed without any discretion, and the creditors, who could not invent a pretext for asking a grant or a pension, used to propose to sell to the king some property or privilege, for which they received the desired sum. Sixteen millions of livres were expended in two years in paying the pensions of a single royal functionary named Beaumarchais received for secret services a million livres at once.

The royal power which had been long limited by the feudal institutions gradually became absolute. The meeting of the general assembly (the tiers état) was suspended since 1614. Some provinces, as Artois, Bretagne, Languedoc, &c., had their provincial states, which were composed of the deputies of the nobility, clergy, and tiers état, and assembled in making the assessment of the taxes in order to control the general revenue which was required of these provinces. This circumstance was the cause of the different systems of taxation in the several provinces, which were particularly marked in certain provinces to which we have already alluded. The provinces were governed by royal intendants, of whom there were 32 possessed of extensive powers. The municipal institutions, which were flourishing in France during the middle ages, were almost entirely abolished, and the offices of towns were generally either hereditary or acquired by purchase. A few towns preserved their antient institutions by paying to the treasury the sum which would have been derived by the sale of the municipal offices in each city, and elected their registrars and notaries. In Paris a municipal registration was nominally the prêtre de marchand, who was the chief municipal officer of the town; the city elected 4 aldermen (bêtes), and the places of 26 municipal councillors and of 16 chiefs of quarters of the town were hereditary.

The central administration was conducted by the chancellor of France and the secretaries of state for foreign affairs, war, marine, and the royal household, and the comptroller general or general director of the finances. Each of these functionaries, although not always enjoying the confidence of the king, or sometimes having the annual decline of state, had uncontrolled power in his own department. Their orders were issued in the name of the king, and with the royal signature; the king however did not sign himself, but the minister stamped the royal signature and countersigned the order. The minister's orders by which the ordinary course of justice was interfered with, were issued only by the ministers of the royal household. The ministers were not appointed by any written document, but became invested with their powers by a simple investiture from the king or from the council of state. They could not be deprived of their places without a formal condemnation, and it was therefore almost indispensable to exile a minister from the capital in order to dismiss him. The king himself presided in the council of state, and the ministers deliberated their reports to him. There was also a council of dispatches for foreign affairs, a council of finance, and a privy council of war: all the ministers and secretaries of state sat in those councils. There was another council of state composed of conseillers d'état and maires des rues, in which the chancellor of France, or the keeper of the seals, presided. This was a kind of judicial body which decided on appeals from the supreme courts. There was also a tribunal called grand conseil, composed of 2 presidents, 34 councillors, and several other functionaries, which decided questions of canonical benefits, bankruptcy, and various other matters. The chancery, or grande chancellerie, was composed of the chancellor, two grands rapporteurs, two grands auditeurs, and several other functionaries, which decided questions of ecclesiastical benefits, bankruptcy, and various other matters. The chancery, or grande chancellerie, was composed of the chancellor, two grands rapporteurs, two grands auditeurs, and several other functionaries, which decided questions of ecclesiastical benefits, bankruptcy, and various other matters.
was enormous. Necker states that the number of officers employed only in the collection of the property and land-tax, and of the customs, was 250,000.

The inferior courts of justice were the manorial courts, justices seigneuriales. The manorial or seigniorial jurisdiction was divided into the high, middle, and low, the first of which had jurisdiction in criminal cases. An appeal was at first taken to the court of chancery, and thence to the seigneur haut justicier, but generally it was made to the royal tribunals called baillages and séminarchies, whose authority extended not only over the royal demesnes, but also in certain extraordinary cases, called cas royaux, in which cases the king’s agents were present in the courts of the manors and of the parishes. The highest was that of Paris, being the most ancient (established in 1302), and having the largest district subject to its jurisdiction, which comprehended almost half of France. It was composed of the first president, 9 presidents of the grande chambre, 8 presidents of the other 4 chambers, and 116 conseillers. It had attached to it a host of subalterns, procurators, advocates, &c. Nine presidents of the grande chambre were a kind of royal cap, whose names were generally called président. The second president was established at Tours (1444), Grenoble (1453), Bordeaux (1462), Dijon (1476), Rouen (1499), Aix (1501), Nantes (1553), pau (1620), Metz (1639), Besançon (1674), Dijon (1686), Nancy (1759). All these parliaments claimed to be considered as forming a single court, and the government acknowledged all claims to that status: as the parliaments decided in the last resort, they assumed the appellation of Courts Sovereigns, and in consequence of that sovereignty claim some peculiar rights. The government had no direct influence over the parlement, and it could not, by either name or other means, interfere with their members, all offices in the parliaments being acquired by purchase, and considered by those who were invested with them as their lawful property which they could sell to others. This notion of property was so strong that even the mass of the people followed the fortune of the court, so that every legal right and every legal practice retained the right of selling them. These judicial functions became in progress of time vested in a certain number of families, which formed a separate class of nobility called Curtes de Roi, or nobility of the gown. The parliaments presented a most perfect specimen of a close self-elected corporation, which exercised a terrible despotism over the country, and from which it was almost impossible to obtain redress. They often deviated from the letter of the law in the name of equity—a mode of proceeding however which seems not to have been much relished by the public, as it gave rise to frequent protestations in the provinces and to the French proverb—Dieu nous garde de l’équité du parlement. The parliaments were not infrequently in receipt of money, and the punishment of death could be inflicted by them on very slight proofs of guilt; indeed there are many well-known cases of most iniquitous sentences by them, as for instance that of Colas, de Lallic, &c. Civil process being generally very slow, overloaded with useless forms, and very expensive. The salaries of the judges were trifling, but they received fees. Their pay was determined by the number of daily attendances (vocations) employed on any case. For each session there were paid to a counsel- ler 600 livres, and to a serjeant 300 livres, or 500 livres for such vocations. The first president was supposed by a legal fiction to be present at every transaction of the parliament, and he accordingly received his vocations, or daily fees. It was reckoned that the last president and but one of the parliaments. Parlement was never paid, contrary to what would receive, from 1768 to 1773, the daily fees of 400 years. Such incomes, united with the advantage of high consideration, and all the privileges of nobility, rendered places in the parliament very desirable: the office of a counsellor generally cost 60,000 livres, and that of the first president of the parliament of Paris 500,000 livres.

The edicts of the government were formally registered in the parliamentary records; but this was a mere formality, and the parliaments could not prevent a royal edict from being carried into effect by their representatives. The decrees of the parliament were frequently annulled by the council of state, in which the chancellor presided. The government also frequently interfered with the ordinary course of justice by the lettres de cachets, by which people were arrested, imprisoned, exiled, and sometimes sentenced from the arm of justice.

There were at Paris, as well as in many parts of France, tribunals for auditing the public accounts, which were called cours de comptes. Other tribunals, called cours des archevesques, were set up for the same purpose at Lyons and at Rheims. The introduction of these courts of France enjoyed great popularity, as it constantly took the part of the people against the extortions of the farmers of the revenue and treasury officers. All the places in the above-mentioned tribunals were purchased like those in the parliaments.

For further particulars about the state of France before the Revolution, see Considerations sur le Gouvernement de la France, par le Marquis D’Argens; and Histoire des révolutions de 1789 aux Cinquièmes Systèmes, par Montleil; also Histoire de la France pendant l’Anse Sixties, par LaCretelle.

Historical Sketch of the French Language and Literature. First period—From the establishment of the French monarchy to Francis I.—The dominion established in Gaul by the Romans ultimately destroyed the ancient languages of the country. It is also probable that the Greek colony of Massilia (Marseilles), established about six centuries before Christ, furnished some of the words in use of the French tongue. No monuments of the poetry of the Celts of Gaul have reached us, although we may conjecture that they had one similar to that of the Scottish Gaels. Under the Roman dominion Latin became the general language of the country, and the use of the French language was discouraged. This is the period in which the language of that tongue, such as Aunonis, Sidonius Appollinaris, Sallianus, Sulpicius Severus, &c., &c.

The invasion and settlement of Germanic nations in Gaul produced a corruption of the Latin by the admixture of foreign idioms. The French language, which was established in the southern provinces, was however, in respect to language, not considerable, and their northern idiom was soon absorbed by the Latin. Yet this Latin, which, except among the educated, had probably never been spoken by a large portion of the people, became still more corrupted by the admixture of a foreign race, and degenerated into a peculiar idiom called the Romanzo, or Langue Romane Rustica. This idiom became not only the language of France, but of many other parts of southern Europe, and the baronets of the south established their dominion on the ruins of the Roman empire.

The conquest of Gaul by the Franks hastened the corruptions of the Latin tongue. The conquerors however seem to have had a decided aversion to their native tongue; as the council of Tours, held in 813, ordered that all the inhabitants of these countries should be compelled to translate their homilies into two languages, the Romano and the Teutonic, or German. The same injunction was repeated at the council of Aries in 851.

The apogee of the Roman language in France was the dominion of the German from the Roman language dates from the division of Charlemagne’s empire among the sons of Louis the Désorme, when the German part of it became separated from France. The most ancient monument of the French Romanzo is the south of France, the Dalmatian, on the occasion of a treaty with the emperor Charlemagne and the Bald of France, concluded at Strasburg in 847. The German monarch took the oath in Roman, and the French in Teutonic.

The Romance of France had a variety of idioms, according to the provinces where the influence of the invaders was more or less exercised. These were however but small, and the language of France generally divided into two principal idioms, separated by the Loire. These two languages were generally divided into the north and the southern, the Langue d’Oc, and the northern the Langue d’Oit or d’Oit. The Langue d’Oc, or as it was frequently called the Occitanian language, is better known under the appellation of the Provençal, as the rulers of Provence united at the beginning of the twelfth century under their dominion the greatest part of southern France.

The Provençal language was not only formed by a modification of Latin words, but by the admixture of foreign words and idioms. Many favourable circumstances united to spread the language at once in the south. The early development of a poetical literature in the Occitanian language. The poetry of Provence was not like the northern,
a melancholy and meditative character, but rather of a
spirited and animated tone; and it bore the appropriate
name of the merry science, Guaya Ciencia. It was cultivated
by the Troubadours, who spread its glory over all Europe.
(Troubadour.) (Simonde, Menestrels de la Littérature de
l'Europe; and Raynoud in the Language and
Poetry of Provence.) The dialect of northern France, or
the Langue d'Oüi, although formed like the Langue d'oc
from the Latin, had a greater admixture of the Germanic
characters, in particular the A, E, I, O, U; and the
establishment of the Normans in France at the begin-
ning of the tenth century. The first authors who wrote
in the Langue d'Oüi were descendants of Normans, who
introduced the romance of chivalry. This kind of composition
was founded on facts was disfigured by the most extravagant
fictions. Robert Wace, an Englishman educated in Nor-
mandy, who lived at the court of Eleanor of Aquitain,
mother of Richard Coeur de Lion, wrote the Breve South-
terr about the year 1150 of the twelfth century. He also
the author of the celebrated Roman de Rou. Many
other romances were written about that time. Their principal
theme was king Arthur, and his Knights of the Round
Table. The exploits of Charlemagne and the Crusades are
also the subject of many romances; and some of them are
found on ancient history, for instance the romance of
'Troy,' written about 1176, by Benoit de St. More, and the
celebrated romance of 'Alexander,' written in the begin-
nings of the thirteenth century. The Langue d'Oüi,
with its magnificently written romances, is a treasure
of modern French writers. (Corps d'extraits de Romans
de la Clévererie, par Tressen: Dunlop's History of Fiction;
and Huet, de l'Origine des Romans.)
The poets who wrote in the Langue d'Oüi were called
Trouveres, and like their namesakes of Provence, the Trou-
badours, reckoned among their body several persons of
high rank, such as Thibaut, count of Champagne, and
king of Navarre (1201-33), who imitated with great success
the poets of Provence. He was his disciple. Divided 1725
at Paris, under the title 'Poesies du Roi de Navarre,' 2nd
ed. 1824. Another kind of poetry which belongs to this
period is the Fabliaux, or tales, which are partly of oriental
origin, and were imported by the Crusaders into Europe.
The Fabliaux are the most characteristic of Middle
French, and are so rich in wit and humor, that they are
frequently translated into verse and prose. They often contain
a great deal of wit and fun, but are also frequently disfigured
by a coarse licentiousness. The poets of other countries
have borrowed from them, and Boccaccio has largely drawn
for this source. A large number of these Fabliaux, printed
for the Royal Library, was published by Bazard in 1756.
3 vol. ; and a new edition of the same collection in 4 vol.,
by Meun, 1808, and in 2 vol. 1823. The most entertaining
of these Fabliaux were translated into modern French
by Raynoud, called le Roman de la Fable, 1773, under the title
of: Fabliaux, ou Contes du 12me et 13me Siècles; a new
edition by Raynoud appeared in 1829.
The persecution of the Albigensians, whose tenets
were embraced by many of the Troubadours, plunged the
south of France into a series of mis-
sery, and destroyed the literature of Provence. The
Troubadours, who had spread the glory of the language of
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with piety and a ceremonious courtesy. The first of these
memoir-writers was Geoffroy de Ville Hardouin, who left
a remarkable description of the capture of Constantinople
by the French and the Venetians, in which he had himself
a share. He was successively in the service of both
empires, and was accompanied St. Louis in his first cru-
sade, 1248. He describes the events of that crusade with
great talent in his 'Histoire de St. Louis.' Charlotte de
Pisa, daughter of the astrologer of the court of Charles V,
who wrote memoirs about 1480, was the widow of Louis XI.
She had been a confidante of Louis, but was banished in the
troubles under Charles VII.

The best historian of France during the middle ages is
Philippe de Comines, and the most entertaining is Fras-
sart. Guizot has published an excellent collection of
French 'Mémoires relatifs à l'Histoire de France jusqu'au 13ème Siècle,' 29 vols., Paris, 1823. A
continuation of Guizot's collection was published by Petitot
under the title 'Collection complète de Mémoires relatifs à
l'Histoire de France depuis le Règne de Philippe Auguste
jusqu'au Commencement du 17ème Siècle' ('First Series
52 vols., Paris, 1819). The second series of this collection
appeared in 56 vols., Paris, 1820, under the title 'Collection
des Mémoires relatifs à l'Histoire de France depuis
l'Avènement de Henri IV, jusqu'à la Paix de Paris con-
cluse 1661.' Both these collections are completed by the
chronicles published by Buchon, in 46 vols., Paris, 1824,
under the title 'Collection des Chroniques nationales Fran-
çaises écrites en Langue vulgaire du 13ème au 16ème Siècle.'
The interest of the middle ages, although rude, has the merit
of being truly national; it bears the stamp of the
French character, and gives an image of the civilization
of those times. It certainly contained the seeds of a great
development; and had the French writers of the sixteenth
century not been deprived of their predecessors, the litera-
ture of their country would have been really a national one,
and something very different from what it is now. Under
Francis I., the study of the Greek and Roman authors began
in France; and the French writers, dazed with the flood of
knowledge, dispersed the works of their forefathers and attached
themselves to the imitation of the ancients. The national re-
colections, as well as the ideas introduced by Christianity,
were replaced by the history and mythology of ancient
Rome and Greece; and thus arose the so-called 
classical school—that which, instead of imitating the an-
tients, derived its materials from national elements, has
been designated by the appellation of Romanic. Besides
this platitudinous imitation of the ancients—which in fact was
a falsification, and has done the greatest corruption to the French
literature under Francis I., but produced its most debaseing effects
under Louis XIV.: we mean that degrading flatly manifested
more particularly by the poets towards the court and the
grandees of the court, the grandees, gradually acquired and
base adulators of the writers of the Augustan age. Until the
time of Louis XIV., this kind of literature encountered
some resistance from the national opinion and even
some from writers; and the political and religious struggle
which disturbed France during that period—from 1562
to 1643—had its counterpart in the literature of the same time.

Among the poets of this period is Francis I., who, not
withstanding his numerous faults, possessed the undoubted
merit of promoting the literature of his country. He
wrote in an easy and descriptive, at the same time,
extravagant and decorous style. France's sister Marguerite
of Valois, queen of Navarre, is well known by her attain-
ments and literary labors. Mary queen of Scots, who
was educated in France and married to Francis II., com-
posed some beautiful verses; and Henry IV. indulged him-
self, not unsuccessfully, in poetical effusions.

Among the authors of the reign of Francis I. Clement
Marot deserves the first place, and next to him the learned
Etienne Dolet of Orleans, who was burnt as a heretic.
Longfellow's translation of Marot was an admirable
work. The influence of the classical literature produced a new poetical school in
France, whose leader was Ronsard, an author long extolled
far above his merits, but now perhaps too much despised.
The other principal writers of the same school were Jodelle,
(see above), Guillaume Du Bartas. Maturin Regnier wrote satire with
considerable success; and Passerat obtained distinction by
the satire 'Menippe;' he wrote in conjunction with the
learned lawyer Rapius against the Ligue. French
poetry began to be purified from the admixture of Graeco-
Latins, and with which the school of Ronsard, and par-
ticularly the school of Jodelle, sweated of all European
poets, such as was the house of Rochechouart, Jean BERTAUT, and Despertes. But the merit
of creating a new epoch in French poetry, particularly in
improving its versification, undoubtedly belongs to Mal-
herbe, of whom Boileau says with justice—

"Tu sacrifies Malherbe, et le premier en France
Des petits vers les vers plus chers a l'âme.
D'on ne m'a pas un si place enseigne le pouvoir,
Et relevé la note aux rimes des versure.
Par ce sage connais la langue repaire,
N'a point autres vers de rude à l'epee.
Les stances avez grace appuyé au tomber,
Et le vers est le vers sans plus engendrer,
Tu nous a donné lieu de verser nos vers

"An autuncem de cette tems ser entre de modelle."

Racan (1589—1670), one of the first members of the French Academy, which was founded in 1635 by Richelieu,
and a pupil of Malherbe, is still considered the best hoo--
ter of one of the French Academy, which was founded in 1635 by Richelieu,
and a pupil of Malherbe, is still considered the best hoo-
ter of French literature. Jean Ogier de Guibour distinguished himself by his witty epigrams; and Pierre de Gadolin
of Toulouse (1579—1619) made a successful attempt to
mime the ancient poets of Provence in their own language.

The predilections of Francis the First brought the
romance of chivalry again into fashion; but it could not
long maintain its ground against the fast-spreading
ness for classical literature and its imitations. The romance
of chivalry however did not disappear altogether, but it lost
preponderance, and was gradually replaced by the
historical romances and tales of love intrigues. The
two French queens Catherine and Marie de Meillot
introduced into France a taste for Italian literature, which
created the sonnet and the novel; but except the H Florentia,
which was written by Noiret de Varenne, few compositions of
this kind appeared in France. Under the tutelage of>
the knowledge of the language and literature of Spain
was spread in France. The drama of Montesquieu
became the general favourite, and it was imitated by d'Urfé
in his 'Amadis,' 5 vols., Paris, 1610. But the most import-
ant of these French adaptations of ancient classical
literature is the history of Aosta. We may refer to this
epoch, Balsac and Viourrieu, who
formed the epistolary style, which the French have
brought to perfection.

Among the historical writers of this period, Thambi-
had he wrote in Latin, occupies the first place, and
still maintains his reputation. Théodore Agrippa Dau-
agné wrote a history of his own times. The 'Histoire
de l'armée de Flandres et de l'armée de Bavière,
contre les Allemands' by Etienne Batiffol, 3 vols.
was another interesting work. Memoirs of Joinville,
Blaise de Moulle, Marshal de France, wrote memoirs of his military career, which attracted
general notice not only in France, but in other countries,
and were translated into English by Charles Cotton
of Pembroke. Malherbe's 'Chronique des rois de France
studied in France; and his Memoirs of Michel de Castelnau are distinguished by their
manly style. The first queen of Henry IV., Marguerite
of Valois, described in a very attractive manner the French
court. Brantome's Memoirs are the most remarkable
of this period. La Popeliniere wrote a history of France, and
Théodore Beza a history of the reformed churches. Perdix
wrote the life of Henry IV., and Sully left his interesting
memoirs of the events of his time, and the part which he
took in them. Henry duke of Rohan (died 1635)
was a devoted to the court, was by no means the civil wars in which he was the principal leader.

Jean Serran, or Serranes, wrote several historical works
chiefly relating to the affairs of the French protests,
ity which bore he himself belonged. Boitin (Jean)
may be considered the first French historian of his work. De
la République, had great celebrity, and was translated
into many languages. It was for some time very popular in
this country, and was translated into English: John
Boitin's 'Six Books of a Commonwealthe, ou of the
French', was translated from French by Richard Knolles.
London, 1606. Gifford says that it was once read
in our universities.

In concluding our rapid sketch of this period we must
not omit mentioning the moral writers who have added
much to the enjoyment and reputation of France. The
high and well-deserved reputation. Montaigne was one of
the shrewdest observers of human character. His friend
Étienne de la Boétie expressed in energetic language the principles of ancient freedom, and his little work, "Discours de la Servitude Volontaire," written, as Montaigne says, "in honour of liberty against tyrants," is perhaps the first vindication of political liberty in a modern language. Pierre Charron, also a friend of Montaigne, became celebrated by his "Rêveries," which celebrate in disingenuous verse at the expense of modesty and account of some scopolical passages, although the writer showed by his other works that he was an orthodox Roman Catholic clergyman.

Ramus (died in 1572) promoted the study of geometry. Vieta introduced algebra into France; he published his "Canon Algorithm" at Paris, 1578. Albert Girard published in 1629 'Invention Nouvelle en Algèbre.' Belon, who travelled in Egypt, Greece, and many parts of Asia, published, in 1556, a description of birds, and introduced the first celebrated clock to Paris. Le Roy de Rondelet wrote a description of fishes. Taignant, Ambroise Paré, Jacques Guillemeau, distinguished themselves as surgical writers; Olivier de Serres, Seigneur de Pradel, published numerous works on various branches of rural economy.

This period produced also many eminent scholars whose labours contributed to elucidate the works of the Greek and Latin authors, and to advance the knowledge of antiquity. Amongst these scholars the first place belongs to Guillaume Budéus, whose Latinized name of Budnus (died in 1540), who is justly considered as the founder of the study of Greek in his country. Robert and his son Henry Estienne, or Stephens, greatly promoted the knowledge of the Greek and Latin by their lexicographical and grammatical works. Estienne's "Grammaire Græco-Latine" (1539) was greatly furthered by the learned researches of Scaliger, Cassaubon, Salmassius, &c. The rules of literary composition were laid down about 1300 by Jean Jaurain de Villeneuve, in his "Traité de Plaisance et Fleur de Rhétorique." Libellet published in 1510 'Art de Poésie,' but the best work on that subject during this period is "De l'Éloquence Française," by bishop Duval, published in the sixteenth century. We may add to the above-mentioned works R. Leetienne's 'Grammatica Gallica,' 1563, and J. Guerrier's 'Institutum Scholasticae,' 1562.

3. We now come to the age of Louis XIV., which the French call the golden age of their literature, and compare with that of Pericles, Augustus, and the Medici. No doubt much was done during this reign to promote science and literature in France. The language became an universal idiom among the higher ranks of society all over Europe, and the French prose acquired that degree of ease, clearness, and precision which justly entitle it to be considered in those respects as the first language in Europe. The French were not only the best masters of the language, but at the same time put upon it heavy trammels by injudiciously proscribing every innovation, as if a language ever could remain stationary while a nation is progressive. It severely constricted all expressions and turns which were not tolerated at court, and the precepts established by an eminent writer of that period, 'Études la cour et connaissance la ville,' became the general rule of the French writers. This circumstance has certainly given to the French language that refinement and elegance which have enabled it to maintain its ascendency without the exercise of any compulsory intercours in the courts and in the diplomacy of Europe; but it had also the effect of emancipating its vigour, and of introducing a glitter and a mannerism into the style of many French writers who have sacrificed the matter to the form.

The French drama rose to a high degree of eminence during this period, but we refer to another article on that subject. [ENGLISH DRAMA.] Among the other poets we may reckon as the most eminent the fabulist LaFontaine, and the lyric poet Boileau. The latter are certainly the best specimen of the literary taste of that epoch. The epic poem, which had been unsuccessful attempted by Ronsard, did not succeed better now. Chapelain's 'Pucelle d'Orleans,' was well defined by a contemporary, but the poem of Dacier, "la Belle Dame sans Merci," by M. de Motte Houard's translation of the "Iliad" is an exceedingly poor production: 'Alaric, ou Rome vaincue,' by George Seudier, is now entirely forgotten; and 'Clovis' by St. Sorlin, and 'St. Louis' by Leomine, are hardly remembered.

Such poetry as requires genuine feeling and a truly poetical imagination could not succeed in this artificial age; and not only all attempts at heroic poetry proved a complete failure, but the essays of the lyrical and pastoral kind were not very successful. Madame Deshoulières and Fontenelle wrote eclogues which were once admired, but their shepherds and shepherdesses are nothing more than the adorers of genius by a refined art and an elaborate versification, which gave rise to the light poetry, "poesie folâtre, legère batine," a kind of composition which rapidly developed itself with the fast-growing corruption of manners among the higher classes in France. The so-called "l'école" writers of this libertine school are Chapelle, Chaulieu, &c.

Novels form an important part of the literature of every nation, and they may be considered as a fair criterion of the civilization and taste of the majority of readers. Prose literature was never so flourishing during the age of Louis XIV., and give us a pretty good insight into the intellectual state of the French public at that time. The mythological inspirations, and the inanition correctness of the poets, who, strictly adhering to the rules laid down by Boileau, seemed to have learnt nothing from the certain fashionable critics, were not shared by the novelists who wrote for the public at large. We must except from the number of novels Fenelon's 'Telemaque,' as it is rarer a poem in prose than a novel. The most remarkable of the novel-writers of this period is recognized as the characters, situations, and adventures, belonged entirely to knight errantry. Calpunez found an imitator in Mademoiselle de Scudéry, whose novels equalled those of Calpunez only in length. The romance of chivalry changed entirely. The term was applicable to tales which contained scarcely anything historical except the names of the principal heroes.

Many ladies wrote works of this description, of which those of the Countess de la Fayette are very still read; those of Mesdames Camont de la Force, Villiedieu, &c., are known only to the learned. The scandalous work of Bussy de Rabytun, 'Histoire Amoureuse de Gaule,' obtained great notoriety. Fairy tales also became very fashionable, of which the first well known in France was given by Charles Perrault (died in 1713), in his 'Contes des Fées et l'Oye.' Fenelon wrote some for the use of his pupil, the duke of Burgundy. Antoine Galland (1646-1715) translated from the Arabic the 'Thousand and One Nights,' and the 'History de la Croisade des Sept Cents et Jours.' The fairy tales of Count Hamilton had great vogue. To the literature of this description we must add the novel, the most distinguished writers of which are Scearon and Lesage.

The art of elegant letter-writing, which was introduced by Balsac and Voiture, became in France an almost indispensable accomplishment of well educated persons; and many authors, as well as other eminent persons of this period, have left admirable specimens of the epistolary style. Many, de Scudéry, les Adresses, &c., and the letters of the Marquise de Sévigné are numbered among the French classics. The letters of the Countess de Stael (1693-1750) derive their charm from their great ease and complete absence of all pretenion. It is very doubtful if the letters published under the name of Louis de l'Enclos are really written by her. Les lettres galantes of Fontenelle are, like his eclogues, full of mannerism.

Among the philosophic writers of this period are La Bruyère and the physician Cazenue de la Chambre, who wrote two excellent works; 1. 'Caractères;' and 2. 'L'Art de Connoître les Hommes.' We may add to them the witty and biting observations on human life, 'Maximes et Reflexions' of the Duke de Rochefoucauld.

The eloquence of the pulpit reached its acme in France during this period, and the sermons of Bossuet, Houellebœuf, Pichon, and Massillon, among the Roman Catholics, and of Saurin among the Protestants, are still read as...
models of sacred eloquence. Controversy, or polemical
divinity also employed some able writers, there being, in
addition to the subject matter of dispute between the Pro-
tenants and Roman Catholics, disputes also among the
parties of Jansenists and Molinists, which divided the
Catholics themselves. The most distinguished writers on
these and similar subjects were: Nicole Pelletier, Daniel
Vertet, St. Real, Rollin, Bossuet, ساعه, Fleury, belong to
this period. Bougain's 'Histoire de Négociations qui ont
précedé le Traité de Westphalie,' as well as his 'Histoire
du traité de Westphalie,' are important for the diplomatical
student. Among the hundreds of numerous manuscripts,
most remarkable
are those of Cardinal de Retz and of the Duke of St.
Simon. Charles du Fresne, Sieur du Cange, greatly
contributed, by his learned researches, to the knowledge of
the Byzantine writers and of the middle ages. Jean Poy
Vallantin's historical researches are also much esteemed.

The age of Louis XIV. produced many good metaphys-
cians, as Descartes, Malebranche, and Gassendi, but the
most acute critic on all subjects was Bayle.

The composition of the eighteenth century in philosophy occupied
many distinguished authors. The chief works are, 'L'Art
Poétique,' by Boileau; 'Discours sur l'Eloquence,' by
Fenelon; 'Tracté sur la manière d'enseigner et d'étudier
les Lettres,' by Rollin; and 'Sur le Choix d'Études,' by
Fenelon.

The Academy of Sciences, founded by Colbert in 1666,
greatly contributed to the progress of mathematics and
natural philosophy in France. The labours of Pascal and
Fermat did something, and Descartes still more to the
progress of mathematical science published
many valuable works on different branches of
mathematics. Ozanam wrote several elementary mathematical
works, and his treatise on algebra was much valued.
Curé published, in 1706, his 'Théorie de Mesurer les
Surface,' containing many curious improvements in the art of
fortification, and by his numerous
works on military subjects. The Chevalier Folard is
well known by his works on Tactics. Turenne, who
made a scientific voyage in the East, added considerably to
botanical science. He gained his regal acquaintance with the
countries which he visited.

The corruption of manners which infected France in the
latter part of the reign of Louis XIV. was increased under
the regency of the unprincipled Duke d'Orléans, and per-
version still more by the weakness of the prince Louis
XV. The eighteenth century in France, which the
writers of that period chose to call the age of philosophy, is
characterised by hostility to religion in the philosophic
writers, intolerance and superstition in the clergy and
people, the wickedness of the government, the inhumanity in
people, and a general absence of the higher considerations
of morality and virtue. There were honourable exceptions,
but this description is on the whole, applicable, particularly
to the higher ranks. The literature of that period is a
faithful mirror of the prevalent tendency of the age.

The principal writer of the eighteenth century, who may
be considered as the representative and the personification
of the age, on which he exercised a most extraordinary influence,
was Voltaire. He was the so-called philosophers of France, and was regarded as
an infallible oracle in literature. His character was waver-
ing and full of contradictions; he alternately displayed
great virtues and vices, but the leading and unalterable feature of his nature was his clarion voice, which was fos-
tered by the flattery of kings and princes, his companions
or correspondents. His hatred of Christianity became fanaticism. Ridicule was the formidable weapon which he
employed with wonderful effect in demolishing absurd pre-
judices. His great success in sound principles varied according to the occasion, from the light bonedage of
a refined courtier to the bitter derision of contempt, which at
times degenerated into low buffoonery. If Voltaire may be justly termed the Democritus of his age, the apellation of
'Prince' was truly applicable to him, as he was the great rival in
celebrity, J. J. Rousseau, whose influence was scarcely in-
ferior to that of Voltaire. Though Rousseau diffused much
error and maintained the most paradoxical opinions, he fell
warmly for the happiness of mankind, whose rights be ad-
voated in the most glowing language, which bears the
stamp of deep conviction. Voltaire too had a noble and
generous feeling for the happiness of mankind, and was the
determined enemy of oppression and injustice, as his efforts in the case of Calas, the Huguenot, the Little Maire;
whether by the impetuosity of his temper and his
uncompromising hostility to what he considered existing
abuses and follies, he seems to have had no other object
than to destroy the social edifice, without constructing any
thing better in its place. But he sought to establish a new political and social order, which
should ensure the happiness of the human race, and hence
his works are still read by philosophic inquirers; while the
witty sayings of Voltaire, directed against an order of
things, may still amuse, and the more remarkable of which, whether it be a pique or a censure, no one man
more largely contributed, are either forgotten or known
only to those who make literature a pursuit. Next to
Voltaire and Rousseau, the most distinguished writer of
that time is Montesquieu, the author of the 'Esprit de
Loix,' whose works have at least the merit of having ren-
dered political science the favourite study of the French.

Among the metaphysical writers we may name, in the
first place, Condillac. The chief propagators of the philo-
sophy of the School of Meudon were Condillac, the editor of the French Encyclopedia, of whom the leaders
were Diderot and d'Alembert. Next to them in celebrity is
Helvetius. The name of Hobbes has become notorious by
his 'Système de la Nature,' and that of Lamettrie by
his 'Dictionnaire des Systèmes de la Machine.' They were
successors of the French 'Philosophes,' and in the
Seneque! The atheistic principles advocated by the last
mentioned writers were not to the taste of Voltaire,
who strenuously maintained pure deism, and received from
the atheistic party in return a share of that ridicule which
he displayed upon others.

Among the few defenders of revealed religion during this
period we may enumerate the accomplished J. Vernet.

Charles Bonnet, of Geneva, occupies a conspicuous place
among the metaphysicians of his age. His 'Essai sur
l'Origine des Lois, &c.,' and his 'Essai analytique sur les
Facultés de l'Amé,' are considered by some as having a tendency to-
wards materialism; but the religious opinions which he
constantly expressed at a time when irreligion was the
fashion, as well as his work on the 'Supreme Art des
Etres vivans, ou Palinogenesis philosophique,' in which he
defended the immortality of the soul and the truth of
Christian revelation, must be considered as decisive of his
real sentiments.

The principal works of Voltaire, who, though careless in
the verification of facts, displayed an unusual degree of
critical acuteness, and the productions of Montesquieu,
had a marked influence on the study of history. The philo-
sophy of history is indeed a creation of the eighteenth
century, and Voltaire does not shrink from the
advancement of its study, and even from the prejudice for
its advancement, their indiscriminate hostility towards
everything which had for ages been considered as true or
sacred, frequently operated most prejudicially to historic
truth, but those of the most learned historians of that period
are Maley. Charles de Brosses, the historian of the
Parliament of Dijon, acquired a well-merited reputation by his various
historical works, which display deep research and a most
diversified erudition. Goguet, in his work 'Recherches
sur l'Origine des Lois, &c.,' investigated with great learning
the history of the laws, customs, and
usages of primitive antiquity and understood at the time. Ray-
nal's 'Philosophical History of the Discoveries and Set-
tlements of the Europeans in India and America,' also
a work of considerable reputation, does not maintain the
truth of the Praetorian legend. Voltaire's sound principle
varied according to the occasion, from the light bonedage of
a refined courtier to the bitter derision of contempt, which at
times degenerated into low buffoonery. If Voltaire may be justly termed the Democritus of his age, the apellation of
'Prince' was truly applicable to him, as he was the great rival in
celebrity, J. J. Rousseau, whose influence was scarcely in-
fierior to that of Voltaire. Though Rousseau diffused much
error and maintained the most paradoxical opinions, he fell

romance. Crevier continued Rollin's Roman history. The
historical memoirs of this period are very abundant, but
they differ rather as a piece of the style of manners than as
historical matter: D'Ancques advanced the knowledge of
antient geography; and Montfaucon and Caylus did the
same for the arts of the antients. Pellerin made valuable
researches in numismatics.

The period of the Revolution was still less poetical than the
age of Louis XIV. The model was Voltaire, and particularly
his poetical, or rather versified tales. The most suc-
cessful of these imitators was Parny, who laboured to sur-
pass his master in licentiousness. Gresse is a writer full of
wit and grace. Monnerie introduced knowledge of
France; and Gibert, who distinguished himself by his
satires and some lyrical pieces, would perhaps have become
one of the best poets of France, if he had not been cut off
in the prime of life. Madame Du Boccage attempted the
broadside manner, and was one of the leading spirits of
Chevalier Boulfiers acquired celebrity for his light and
witty poems. Bernard, surnamed Le Gentil, on account of
his graceful poetry, imitated Ovid in his 'Art d'Aimer.'
Leonard and Berquin successfully imitated Gesner's par-
ticulier are Buffon and Charles Bonnet. The latter, though
celebrity for some beautiful lyric poems; and Louis Racine,
son of the tragedian, wrote some beautiful poems on reli-
gious subjects. Among the other poets of this period we
may mention Dorat, Aubert, Colardeau, and Firou.

But a still greater merit was possessed by the versified works
characterized with the characteristics of the age. Besides those of
Voltaire, Rousseau, and Diderot, there is Marmontel, whose 'Contes
Moraux' have nothing moral about them but the name,
yet are written in an elegant and correct style. The tales of
his Restoration versions are very beautiful. The tales of Bernardin de
St. Pierre, and among them his 'Paul et Virginie,' have been trans-
lated into most modern languages, and are still read with
pleasure. Provost d'Exiles translated many English novels and
sentiments; he was also the author of 'Le Père de la Litté-
rateur,' which is a fine work on the same subjects and
under the same title. Batteux is considered one of the
first critics of his time, and his works, 'Les Beaux Arts
reduits au même Principe,' and 'Cours de Belles Lettres, ou
Principes de la Litterature,' are highly appreciated both in
France and abroad. Marmontel wrote 'Poétique Fran-
caise,' and 'Elfemns de la Littérature.' The most cele-
trated work of that kind in the eighteenth century is
Laharpe's 'Lycée, ou Cours de Littérature Ancienne et
Moderne.'

The mathematical and physical sciences made great
progress in France during the eighteenth century. In
this general sketch it is sufficient to mention the names of
D'Alembert, Lagrange, Monge, La Lande, and Laplace.

At the head of the naturalists of France in the eighteenth
century are Buffon and Charles Bonnet. The latter, born
at Geneva (1720), where he spent his life, belongs to
France, as having written in the language of that country.
He distinguished himself by his researches on the use
of leaves in the vegetable economy. 'Recherches sur l'Usage
de Feuilles aux Cultures' is celebrated as one of the works which estab-
lished Bonnet's reputation is his 'Contemplation de la
Nature;' he published also 'Consideration sur les Corps
Organizes.' Réaumur wrote a valuable work on insects,
'Memoires pour servir à l'Histoire Naturelle des Insectes.'
Brissot wrote a systematical work on zoology. 'Le Règne
Animal,' and a great work on birds, 'Ornithologie, ou
Méthode contenant la Division des Oiseaux en Ordres,
Sections, Genres, Espèces, et leur variété,' containing
figures of 500 birds, none of which had never before been
described. Vioz d'Azyr describes the botany, in
botany, Jussieu immortalised himself by establishing
a new system of classification of plants. The names of
Deluc and Sauussure are connected with the history and
practice of botany.

Fifth period: from the beginning of the French Revolu-
tion to the present time.—The violent changes which the
Revolution produced in the social state of France had a cor-
responding effect on the national character and literature,
which, in France, more than in any other country, may
be regarded as the true mirror of the national spirit. That
period of the Revolution was not favourable to literature, for
at such a time nothing but journals and pamphlets could
succeed; but it produced a rapid development of eloquence.

Of this the period of the Restoration was the end. It was
imposed by the French Academy on the language, which henceforward
was governed by a great quantity of new words generally formed from
Greek and Latin elements. From the establishment of the
Directory (1795) the Revolution changed its character; its
idea of a popular society was established, and a wish for
reform was generally felt. As soon as the country began to enjoy
internal quiet, the intellectual activity of the nation burst
forth with a fresh impulse. The Polytechnic School was
established in 1796, and the Institut de France was
nominated by the national assembly. The National Academ-
ies of Sciences and of 'Inscriptions et Belles Lettres,'
The consular and imperial reign did much for science, but
it was not favourable to literature. Practical knowledge
and the application of scientific principles were alone in
vogue. Mathematics, chemistry, and physics were the
favoured studies, and suppressed all works which contained opinions contrary
to the established order of things; and among the rest the
censorious and anti-religious works which had been so
abundant in the eighteenth century. The first years of
the new order were spent in the destruction of past
pamphlets. Literature however soon began to revive, and
France may boast of a great number of excellent works in
all branches of human knowledge, which have appeared
since the Restoration.

The establishment of a constitution in France, although far
from completely insuring the liberty of the nation, has still
had a favourable influence on letters. It is true that a check
was given to the growth of a sound literature, as well as to
the progress of national education, by the unfortunate
influence of the government of the Union of Restoration, which was
constant attempts, under the pretext of restoring Chris-
tianity, to which a large part of the nation was decidedly inclined, to undermine constitutional order, and to re-estab-
lish by jealously watching the abuses which were dis-
grazed France before the Revolution. This retrograde
system produced results quite contrary to what it was
intended to effect. It led to the overthrow of the elder branch of the
Bourbons, and destroyed all hopes of re-estab-
lishing the virtues of the ancien régime. The children of
old France; and it also threw back to the philosophy of the
eighteenth century many who were gradually returning to
religious opinions. The agitated state of France since the
revolution of July, 1830, has not been favourable to litera-
ture, and the talent, the genius of the nation was in many
who had been cultivated in France was on the decline, and
it may be that France will yet proceed with renewed vigour in
its literary career.

Among the poets of this period the first place belongs to
Lebrun; though the appellation of Lebrun Pindar, which
was given to him by his contemporaries, is rather ex-
travagant. Alphonse de La Martine (born 1790) is not only the
first poet of France, but one of the first of his age. His
productions, filled with poetical beauties of the highest
order, breathe a spirit of religion and pure morality. He
has in fact established a new school of poetry in France;
and we may safely assert that the magic of his verse has
done more towards restoring religious feelings in France
than all the efforts of the Roman Catholic clergy, assisted by
the government of the Bourbons.

The first poets of La Martine were his 'Meditations Poétique'
(1820), by which he established his reputation; the 'Nouvelles Méditations Poétique,' 1823, met with equal
success. La Martine, who is a great admirer of Byron, pub-
lished the "Leaves of Byron's Book," 1825, in which
however cannot bear any comparison with the poem of
which it is a professed continuation.
Not inferior to La Martine is Victor Hugo, the leader of the romantic school. Hugo (born in 1802) is the son of a general in the imperial army, and of the daughter of a Vendean chief. His boyish years were spent in Spain and Calabria, where his father was engaged in active service, and then in the ranks of an exterminating warfare in which his childhood was passed may account for his early tendency to delineate the horrible. The romantic impressions of his boyhood were increased by the traditions of the Vendean war raised by his mother, a woman of a superior character, who devoted herself entirely to the education of her children.

These circumstances powerfully contributed to develop the natural talents of Hugo, and to give a bent to his poetical genius. In 1817 he obtained two premiums from the Académie des Jeux Floraux of Toulouse, which conferred upon him the following year the degree of a maître des jeux floraux. The first volume of his 'Lyrical Poems' appeared in 1819, but attracted little attention, although he had already published two novels and two collections of poems. He came into notice in 1827, by his 'Ode to the Column of the Place Vendôme,' which excited a general admiration. Since that time his reputation has been constantly growing. Hugo's principal poems are published under the following titles: 'Odes,' 'Odes et Ballades,' 'Les Orientales,' 'Les Félidés de l'Antiquité.' His works, which have produced the strongest impression on the French public contain great beauties; they display an extraordinary imagination, a deep and glowing feeling, and a profound knowledge of the human heart; but they are frequently discussed by great exactness and dramatic accuracy. They have attracted the same popularity, and contain the same beauties and defects as his poems. They are-'Hernani,' 'Marion Delorme,' 'Tristan, ou le Roi Amoureux,' 'L'Amour en Sarrasins,' 'Marie Tudor.' His novels are-'Hans d'Amboise,' a wild production, full of pictures of chivalric adventure, containing the most splendid beauties; 'Bug Jargal' is an episode on the Negro revolt of St. Domingo; 'Le Dernier Jour d'un Condamné' describes with heart-rending vividness the feelings of a man on the point of undergoing capital punishment; 'Nuits d'Espagne;' which is a novel of the most popular order, although perhaps too much tinged with the horrible, contains an admirable picture of Paris in the 15th century.

The most popular poet of France is undoubtedly Béranger. His witty and truly national songs are in the mouth of every Frenchman, from the highest to the lowest. He was born in 1780, of poor parents, and is entirely self-educated. He is equally distinguished for his rare independence of character, and his poetical talent. He never flattered Napoleon during his reign, neither did he abuse on him when he was deposed. His songs have consequently lost none of their importance, having been one of the most powerful means of countering the retrograde policy of the Bourbons, whose government constantly prosecuted him for ridiculing, in a manner which they could never forgive, their national monument. They have long been used as a means of directing public opinion; they have compensated in some degree for the want of the liberty of the press, and such has been their influence, that a witty Frenchman defined the government of France before the Revolution, as an absolute monarchy tempered by Béranger. Indeed Béranger's songs did more harm to Charles X. than all the arguments of the press, or the declamations of the liberal deputies. When government deprived him of a small situation which he held, he said to the minister, 'Monseigneur, je vais raconter une histoire qui est, je crois, bien connue dans le château de Saint-Cloud, j'en pour vivre.' Béranger took an active part in the revolution of July, but declined to accept any place under the new government. Since that time he has written little, his occupation, he says, ended with the expulsion of Charles X. Béranger's poems have been often published under the simple title of 'Chansons de Béranger.'

Casimir Delavigne has acquired his reputation chiefly by his dramatic productions; 'Paris,' 'Les Vêpres Siciliennes,' 'Les Fils d'Édouard;' and his comedy, 'L'École des Vieillards.' He excels, however particularly in elegies, of which he published in 1817, 'Les Mémorables,' which express a patriot's sorrow at the humiliation of his country. The subject of his 'Nouveaux Mécènes' is the defense of the Greeks for their liberty. He has written also a few picturesque elegies and Byron's death. His poems are characterized by exact versification, beautiful imagery, and noble thoughts; but in true poetic inspiration he is inferior to La Martine and Victor Hugo. Delavigne belongs to the classical school as well as Viennet, who has acquired considerable celebrity by his poetical epistles and some dramatic productions. Among the other French poets of the period, Millevoye was one of the best. His works are-'Les Félidés de l'Antiquité,' 'Le Corbière,' which are clever, but being on subjects of only temporary interest, could only have temporary success. Their epic poem, 'Napoleon en Égypte,' contains many beautiful lines; but the success which it obtained in France, like that of 'Le Fil Rouge,' which was written on the young son of Napoleon, was chiefly owing to the popularity of the subject.

Deductive and descriptive poetry has been much cultivated in France during this period. Foremost among these poets stands Dohler. The other distinguished writers of this class are-Esnemuad, who wrote 'La Navigation;' Cheneville, 'Le Génie de l'Homme;' the historian Duru, 'L'Astronomie;' Lefaux, 'Les Trois Agès;' and Berthoux, the author of 'La Gastronomie,' a production full of sparkling wit and humour.

The epic has been attempted by many recent French poets, but without success. Masson described in his 'Hélicons' the war of the Swiss against Charles the 1st; Bouw Lormain, the translator of Tasso, attempted to imitate his 'Liber Sensum;' and the same epic spirit inspired Mazzini wrote 'Philippe Auguste,' which some critics consider the best of the epic poems of this period. Crécy and Lescot attempted a series of epic poems, founded on the romances of the middle ages; 'Les Chretiens de la Table Ronde;' 'Les Très Riches Hommes;' and 'La Chanson de Roland.' Lucien Bonaparte has added to the list by his 'Les Grands Hommes, on Corse Délivrée;' and 'Charlemagne,' on 'Delivrance.' Millevoye is the author of 'Charlemagne' and 'Alfred,' both which poems, although far from attaining the elevation of the epic, are not devoid of beauty. In this species of poetry, Chateaubriand is one of the most popular, both in France and abroad. In 1790, when a very young man, he visited America, a circumstance which gave birth to his work, 'Les Natchez, ou Tableau de la vie des Tribus Indiennes,' which is a poem, though not in verse. On his return to Europe he published in England his 'Essai historique, politique et moral, sur les Revolutions anciennes et modernes.' This work contains liberal opinions, and had great success, but Chateaubriand afterwards retracted it. 'Lingam' is a work in which he, according to his own expression, a new work with an old faith, 'un ouvrage nouveau avec une foi antique.' This work, which appeared under the title of 'Génie du Christianisme,' is doubtless a brilliant production; but its popularity is decreasing, as it seems to have been written as a means of directing public opinion; it has compensated in some degree for the want of the liberty of the press, and such was his influence, that a witty Frenchman defined the government of France before the Revolution, as an absolute monarchy tempered by Béranger. Indeed Béranger's poems did more harm to Charles X. than all the arguments of the press, or the declamations of the liberal deputies. When government deprived him of a small situation which he held, he said to the minister, 'Monseigneur, je vais raconter une histoire qui est, je crois, bien connue dans le château de Saint-Cloud, j'en pour vivre.' Béranger took an active part in the revolution of July, but declined to accept any place under the new government. Since that time he has written little, his occupation, he says, ended with the expulsion of Charles X. Béranger's poems have been often published under the simple title of 'Chansons de Béranger.'

Next to Chateaubriand, Mme. de Stael has perhaps had the greatest influence on the literature of France. Among the remaining French prose writers we shall mention, first, those who have treated metaphysical subjects, 'les philosophes et les philosophes éléphants.' Among the most remarkable of these are 'Les Études et Discours Historiques sur la Coûte de l'Empire Romain, la Naissance et le Progrès du Christianisme,' and 'L'Édification des Barbares;' and his essay on English literature.
France. Its chief representatives are Cabanis, Destutt de Tracy, and Garat. The 3rd is the school of the philosophy of the 18th century, and is chiefly the Comte de Maistre, Lamennais, and Bonald. The 3rd is that of an eclectic philosophy, or of a rational spirituality; it comprehends many eminent writers, who are not however united among themselves by any positive tenets. The doctrine of the Deity, of the providence of God, of the first, and of the spirituality of the second school. The characteristics of these philosophical schools may be summed up in a few words. The 1st, or the ideological school, establishes the faculty of feeling (la faculté de sentir) as the sole principle for all the operations of the human mind, and founds its system entirely on perception (conception, sensation). According to this system, there is only a sensual faculty of perception, and our thoughts are nothing but modified sensations. This philosophy limits application to religion, and for that reason does not support the existence of any other. It has been applied with success to the mathematical and physical sciences; but its application to religion, ethics, politics, and literature, has not been accompanied with equally favourable results. A consistent philosopher of this school never admits the existence of a Deity, or considers that the universe is the Deity, or that every atom is Deity; and as the soul is by the same theory only a result of the activity of our organization, the belief in its immortality becomes an inconsistency, and the principle explained by it, is the art of living long enough to be . LaISTS, void tout homme; and emphatically declares that the moral faculties are something quite different from those which result from our physical organization, and that these moral faculties are necessary to the survival of our species in the new world. (Rappo du Physique et du Moral de l'Homme.) This declaration was not a subterfuge in order to avoid the accusation of undisguised materialism, but a real conviction. Cabanis, who shared this idea in his Philosophie du Corps, entitles the four, where he states that the soul cannot be regarded as a part of the animal organization, but as a separate substance and a real being, which, by its presence, gives the corporeal organs the motion which constitutes life.

Besides Cabanis, the most eminent writers of this school are Garat, Condorcet, Destutt de Tracy, and Volney. Among the recent works of this same school, the most remarkable is Dr. Broussais's "De l'Irritation et de la Folie," ouvrage dans lequel l'auteur du Physique et du Moral sont établis sur la base de la Médecine Physiologique, Paris, 1828.

The second philosophical school of France, the religious or theological, is founded on the Scriptural doctrine of original sin and of the pope for the future of the church. According to this system, men exist in this world merely for the purpose of expiating the original sin, and consequently they ought not to enjoy liberty, which would prevent them from doing penance. All governments must therefore be severe and absolute, and everything should be done according to the will of God, whose representative, the pope, has the supremacy over all the governments of the world. The founder of this system, the Comte de Maistre, employed the great powers of his mind and his extensive erudition in this study in France; and his writings are an unqualified submission to existing authority, however tyrannical it may be. He advocated his doctrine chiefly in his Soirées de St. Petersburg, ou Entretiens sur le Gouvernement Temporel de la Providence, and in his work on the Pope. It is rather extraordinary that in this century, when the principles of political liberty have made such progress, a doctrine which preaches nothing less than the most absolute slavery, should find numerous partisans. Such however is the case, and several French writers of great talent have undertaken the defence of this doctrine. Among them we may mention the Viscomte de Bonald, a man of great ability, but full of sophistry, and who frequently loses himself in his metaphysical abstractions: his work is entitled "Théorie du Pouvoir Politique et Religieux" de Madame de Gobineau, and the first prose writer in France, has advocated the same system as the Comte de Maistre, but from a more philosophical point of view, and with more ability, elegance, and success. De Maistre seeks to impose on the human mind the dogmas of authority. Lamennais endeavours to persuade the adoption of the same dogmas by the motives of despair. He shows that even the matter of doubt and uncertainty, and that men have no other guide than the authority of the universally admitted opinion (assentiment universel). Having laid down this proposition, he deduces with great ingenuity, by arguments from history and tradition, the consequence that the Roman Catholic church must be considered as the assentiment universel, because there is no truth to be found. He maintains that whoever abandons the authority of Rome must necessarily err, not only in matters of religion, but in every other respect. Every deviation from the doctrines of the church is a punishable dissent; every resistance to the infallible decision of the pope is an impious rebellion; even the Gallican church, which claims some liberties, is a heresy. There is only one church and one doctrine, and every state which dares to violate it by all the means in its power, and tolerates different religions, is a tyrant; and because states now tolerate several kinds of worship, human society is sinking into an abyss, and is becoming atheistical. In order to cure the evils which infect society, it is necessary to bring it back to the simple religious doctrine from which it has strayed, and the pope must become the absolute ruler of human reason.

These doctrines, which would scarcely have been taught even two centuries ago in Roman Catholic countries, were taught in 1817 in "Lettres sur l'Inéflicience en Matière de Religion" and "De la Résolution du style in which he clothed his opinions, he produced a powerful sensation, and gained many partisans, chiefly among young men. He continued to maintain the same opinions in some of his latest works, and in his "De la Religion considérée dans ses Rapports Civils et Religieux," when the revolution of July gave another form to civil and ecclesiastical affairs in France, he appeared again before the public, and began to edit, in conjunction with the Abbé Montalembert, a periodical called "L'Avenir," in which, following up the principle of the new constitution, which acknowledges no dominant religion, he maintained with the greatest eloquence that the Roman Catholic clergy of France should now become entirely independent of the state, and that the government could not give any support to it nor suffer any interference of the government in their affairs. This doctrine however was not approved by the French clergy, and the pope manifested his dissent from it. In 1834 appeared the "Paroles d'un Croyant," this little production, which was written in the most beautiful language, and labours to establish on this new foundation the gospel pure democratic principles, produced an extraordinary sensation. Such doctrines were however too much opposed to the principles of the Roman Catholic church, and the Abbé claimed his doctrine from the pope. Since that time the abbé has declared against Rome.

Among the writers of the eclectic school is De Gerando, who began his career with the ideological philosophy, and his first work, "Des Signes et de l'Art de Penser," consists therein his Rapports Mutuels, is based on that system. He gradually abandoned the ideological school, and his Histoire comparée des Systèmes de Philosophie relativement aux Principes des Connaissances Humaines," has contributed to diffuse a knowledge of the German philosophy in France, and this work in French on the history of philosophy. His works have been translated into all the course of man's life should be a continued self-education, embracing all his faculties, and directing all his actions; and he has developed these principles in his work, "Du Perfectionnement Moral, ou de l'Education de soi." His work, entitled "Visiteur du Pauvre," was crowned by the Academy, and obtained the prix Montyon of 10,000 francs. Laromiguère, author of the "Analyse des Sensations," and of the "Lecons de Philosophie, ou Essai sur les Facultés de l'Amé," has established himself as the chief exponent of the new system in France. He has a great number of partisans, and is the first prose writer in France, has advocated the same system as the Comte de Maistre, but from a more philosophical point of view, and with more ability, elegance, and success. De Maistre seeks to impose on the human mind the dogmas of authority. Lamennais endeavours to persuade the adoption of the same dogmas by the motives of despair. He shows that even the matter of doubt and uncertainty, and that men have no other guide than the authority of the universally admitted opinion (assentiment universel). Having laid down this proposition, he deduces with great ingenuity, by arguments from history and tradition, the consequence that the Roman Catholic church must be considered as the assentiment universel, because there is no truth to be found. He maintains that whoever abandons the authority of Rome must necessarily err, not only in matters of religion, but in every other respect. Every deviation from the doctrines of the church is a punishable dissent; every resistance to the infallible decision of the pope is an impious rebellion; even the Gallican church, which claims some liberties, is a heresy. There is only one church and one doctrine, and every state which dares to violate it by all the means in its power, and tolerates different religions, is a tyrant; and because states now tolerate several kinds of worship, human society is sinking into an abyss, and is becoming atheistical. In order to cure the evils which infect society, it is necessary to bring it back to the simple religious doctrine from which it has strayed, and the pope must become the absolute ruler of human reason.
l'Homme, et de l'Homme à la Nature; ou, Essai sur l'In-
strict, l'Intelligence, et la Vie,' 5 vols.; and 'Théorie du
Beau et du Sublime Principes de la Littérature, de Phi-
losophie, de la Politique,' etc. His 'Dixans d'Angel-
terre,' 'La Monarchie et le Despotisme,' 'La Rais-
edifice' into one little volume. He has also written 'Histoire
de la Renaissance de la Liberté en Italie,' 2 vols.; 'Histoire
de la Chute de l'Empire Romain, et du Décès de la Civil-
isation de 250 à 1000.' But his chief work is 'L'Histoire
du Commerces, appliqués à sa Le-
égislation du Commerce,' and in his 'Nouveaux Principes d'Economie
Politique."

Augustin Thierry has thrown considerable light on the
history of France during the middle ages in his 'lettres
Histoire des Rois et des Duc.' "Dix ans d'Angle-
terre." At the same time he has pointed out with great
sagacity the defects of the existing French histories. But
the work which has established his reputation is 'Histoire
de la Conquête de l'Angleterre par les Normands, de ses
Causes et de ses Suites jusqu'à nos Jours." His brother
Amédée Thierry evinced considerable talent in his 'Histoire
des Gaulois depuis les temps les plus reculés jusqu'à l'entière
soumission de la Gaule à la domination Romaine,' and
in the 'Resumé de l'Histoire de Guyenne.' Thiers
has already spoken of his 'Lettres de la France et de l'Angleterre
pendant le Dix-huitième Siècle,' has also published a valu-
able but very entertaining work, which contains a faith-
ful picture of the times in his 'Histoire des Ducs de
Bourgogne," 13 vols., with an atlas, portraits, maps, &c.
Audin is the author of 'Histoire de la St. Barthéleomy,'
1826; and the Comte de St. Aulaire of 'L'Histoire de la
Fronde,' 3 vols., 1827.

The 'Histoire de la Restauration et des Causes qui ont
amenu la Chute de la Brauché enfantine des Bourbons, 6 vols.,
1832, an admirable work, but the work of the ex-minister Duc Decazes,
it is the production of Capefige, one of the most learned writers of France,
and also the author of the following works: 'Histoire de Plu-
taire,' 'Histoire Constitutionnelle et Administrati-
ve de la France depuis les temps de l'Empire, les Francs
Invasions des Normands." Daru's 'Histoire de la Brétagne,
and particularly his 'Histoire de la République de Venise,'
are generally admitted to be masterpieces. Roujouls'
'Etoile de l'Histoire,' has attracted much notice, although
in favour of absolute governments. He is also the author
of a valuable work, particularly viewed with reference to the
excellence of the plan which he adopted for the history of the
history of French literature, 'Histoire de la Littérature de la
Pologne.' Michael's 'Histoire des Croisades' is con-
siderable reputation, as well as his 'Histoire du Progrès et
de la Chute de l'Empire de Mysore sous les Régnes de
Hyder Aïly et de Tippo Sah." The work entitled 'Les Juifs
français depuis le Début de la Littérature des Juifs en France, en Italie, et en
Angleterre, pendant le Moyen Age,' treats a subject
which has seldom and only imperfectly been touched by
the historian. Buignot threw considerable light on the
middle ages by his "Histoire du Gouvernement Fédéral." We may consider as belonging to French literature the work of the late monsieur de Chambray, "Tableau des Revolutions du Systeme politique de l'Europe.

Military history has been treated by Dumas, in his "Histoire des Evénements Militaires, ou Essai Historique sur les Campagnes de 1799 à 1814," 26 vols.; and by Jomini, "Traité des grandes Opérations Militaires," 18 vols. Chambray and Labaume have written the history of the campaign of Russia in 1812. Segur's work on the same subject, which has merit as a source of little military information, and belongs to the class of poems in prose. Marshal Gouvion St. Cyr is the author of "Memoires sur les Campagnes depuis 1792 jusqu'à la Paix de Campo Formio," 4 vols.; of which his Memoires sur les Campagnes de 1809-11, 2 vols., constitute an excellent continuation. General Foys' "Histoire de la Peninsular War" is a work of merit; but the most remarkable work on the subject is undoubtedly that which Napoleon dictated at St. Helena; "Histoire de la Revolution," 2 vols. The work of the same great man, which has been recently published, is not less valuable and interesting.

There is an extraordinary abundance of historical memoirs relating to this period. J. F. Banier and St. Albin Berville have published, "Collection des Memoires relatifs à l'histoire de France," 7 vols., and "Histoire de la France," 6 vols.; the former was dictated by the Empress, by the Generals who have partaken of her Captivity, and published on the Manuscripts entirely corrigés de sa main; 8 vols. The work of the same great man, which has been recently published, is not less valuable and interesting.

Of the Memoires relating to Napoleon, the most important are those of Lascasas, who accompanied Napoleon to St. Helena, "Histoire de la Campagne de l'île St. Helena," 2 vols.; and those of Madame Campan (femme de chambre of the unfortunate Marie Antoinette), Carnot, Fouche, Louis XVIII, Mirabeau, M. de Roland, &c., are all works of great interest, inasmuch as they relate to the most eventful period in modern history. Among the modern productions of this class are "Memoires de Madame de la Roche Jaquelein," who describes in an admirable manner the scenes of the Vendean war, of which she was an eye-witness herself. The French have done much for biography during the period; and the "Biographie Universelle, Ancienne et Moderne," 60 vols., although very unequal in point of merit, is still the best work of the kind in the compass of European literature. The "Biographie des Hommes Vivants," 5 vols., 1814-16, and the "Biographie Nationale," 1827, are also admirable works, and have been much consulted.

The "Biographie Universelle et Portative des Contemporains," 1826, is considered to be more impartial than the two works just mentioned. The "Dictionnaire Historique par Banier," and "Dictionnaire Historique et Chronologique," are valuable additions to literature.

An important service has been rendered to chronology by St. Alais in the "Art de vérifier les Dates," and by Courcelles' "L'Art de vérifier les Dates depuis 1700 jusqu'à nos Jours," "Tableaux de la Littérature au Seizème Sibcle," by St. Marc Girardin; Villemain's "Cours de la Littérature," and his "Mélanges Historiques et littéraires," and Ginguené's "History of the Literature of Italy," are valuable additions to literature.

The best speeches of the public men are collected in the "Choix de Rapports, Opinions, et Discours prononcés à la Tribune Nationale depuis 1789 jusqu'à ce jour," 20 vols., 1818-22; and "Collection des principaux Discours et Choix des Rapports et Opinions prononcés à la Chambre des Paix et à la Chambre des Députés depuis la Session de 1815," &c. Those who wish to become acquainted with the eloquence of the French bar may consult Le Barreau Français, compiled by Chez d'Oeuvres de l'Eloquence judiciaire, 18 vols., Paris, 1822, by Clair and Clopper, and the Annales du Barreau Français; also Dupin's Choix de Plaidoyers et de Memoires; and Bonnet's Discours et Plaidoyers.

Among the other writers of this period we may mention Madame de Genlis; Jouy, who is a masterly painter of contemporary manners; Nodier, author of many novels and works on literary criticism, &c. Novels are exceedingly abundant, but most of them seem to delight in scenes of horror and passion, and are not without a certain amount of 'Cinquant,' by Alfred de Vigny, which is perhaps the most successful imitation of the kind of novel created by Scott, and 'Tristan le Voyouge,' by Marchangy, which exhibits a most interesting picture of France during the fourteenth century.

The mathematical and scientific sciences have been cultivated in France during this period with great success; and a mere catalogue of the works would not only carry us far beyond our limits, but would be foreign to the purpose of this sketch, which is to exhibit the literary character of the age.

Those who wish to make a particular study of the history of the French language and literature may find ample materials in the following works:—"Histoire de la Langue Française," par Rodiger, 2 vols., Paris, 1840; "Essai d'un Glossaire Occitannen," par Rochegude, Toulouse, 1825; Raymond's "Dictionnaire des paysans de l'Empire Lomagne, dans leurs Rapports avec la Langue des Troubadours," "Recherches sur l'Ancienneté de la Langue Romane," "Elements de la Grammaire de la Langue Romane avant l'année 1800," and his "Dictionnaire de la Langue Romane," are admirably suitable for the study of the Langue d'OC, or the southern French. Not less important for the history of the Langue d'Oc, or northern French, is the work of the last-named author, entitled Observations Philologiques et Grammaticales sur la Langue de la Roman de la Gaule, Paris, 1828; while the "Dictionnaire de la Langue Romane," a great deal of curious research on the history of the French language is contained in the Archéologie Française, ou Vocabulaire des Mots anciens tombés en désuétude et propres à être restitués au Langage Moderne, by Borel, 1665; and Lacombe's "Dictionnaire du vieux Langage Français," Paris, 1767. Mercier has published a Dictionnaire du bas Langage, 2 vols., Paris, 1805. For the study of the French literature, the works of Labarre, Mauger, Guizot, and other modern writers are recommended, as well as the articles relating to French writers in the Biographie Universelle and the Biogr. Univ. Portative des Contemporains may be consulted.

FRANCE, ROYAL O.M. [MAURITUS]

FRANCHÈS COMTE', a province of France, and one of the thirty-two military governments into which, under the old regime, that kingdom was divided. It is of an irregular oblong form, having its greatest length from north-north-east, near the head of the river Savoie, to south-south-west, near the town of Besançon, on the right bank of the Ain, above 130 miles, and its greatest breadth at right angles to the above, from near the river Vingeanne, to the banks of the Doubs, more than 90 miles. It was bounded on the north by Lorraine, on the north-east by the principality of Montbéliard (which has, since the French Revolution, been incorporated with France), on the east by Switzerland, from which it was separated by the Jura, on the south by Breiss, and on the west by the province of Bourgogne, and on the south-west by Champagne. Its principal subdivisions and towns are as follows. The population of the towns is from the census of 1836.

Bailliage d'Amont—Vessou (capital of the bailliage), 5857; Faucogney—Luxeuil; Jussey—Gray, 6535; Lure, 9510; Baumie, 1340; Besançon, capital of the bailliage and of the whole province, 29,718; Ornans; Quigney; Dôle, 10,137.—Bailliage

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Franchise, a species of incorporeal hereditament. Franchise and liberty are used as synonymous terms, and the definition of a personal privilege is based, in the English law, on personal liberty, as distinct from real property, which is vested in the hands of a subject. Being therefore derived from the crown, such privileges must arise from the king's grant, though in some cases they may be held by preemption, which presupposes a grant. (P. 126.)

FRA

d'Avé - Louis-le-Saulnier, capital of the laillière, 7684;
Sahins: Arbois, 4629; Oroget, Sainte-Claude, 5233; Pontar, 4890.

The province is wholly in the basin of the Rhône; it is watered by the Saône and the Ain, feeders of the Rhône, the Doubs, and Oigou, feeders of the Saône, and several other streams of the same name. The middle and upper parts of the province are fruitful in grain, the upper part produces pasture for a vast number of cattle. The province is now divided into the departments of Dour, Jura, and Sâne Hâute.

La Franche Comté was, in the time of Caesar, inhabited by the Sequani, a Celtic people, one of the most powerful in Gaul. Their contents with the Celts led them to call them in the Germans, under their king Arboristus, by whom they were hounded by them on the borders of that part of Gaul and especially of the unhappy Sequani. Caesar drove out the Germans (52 B.C.); but it was for the natives only a change of masters, and the Sequani, with the rest of Gaul, passed under the yoke of Rome. Under the Roman domination of Franche Comté, with Switzerland and part of Bourgogne, constituted the province of Maxima Sequanorum.

Upon the downfall of the Roman empire Franche Comté was incorporated in the kingdom of the Burgundians, upon the reduction of Burgundy it was annexed to the French crown. In the division of the territories of the king of Burgundy, among his sons and descendants, it formed part of the kingdom of Austria, and afterwards of Lorraine, or Lorraine. In the reign of Charles le Simple, king of France, to whom, after several changes of administration called the Burgundian Principality or Burgundy, or the principality Otthein of the Saône), had fallen Besançon, with the surrounding districts, was formed into a county, called the county of Bourgogne, in favour of Hugues, the first count (a.d. 913). Some were given to the abbot of Cluny, one in fief to have been part of the kingdom of Bourgogne Transjurane, and post the erection of the county of Bourgogne till a.d. 999. (See the 'Art de vérifier les Dates.'

Renauld III. (a.d. 1127-1148), count of Bourgogne, whose daughter had married Frédéric Barbarossa, brought the county into the hands of that prince, who made Besançon a free imperial city. He resigned the county to his son Otto, by the marriage of which he acquired the county of Alsace, and as such as of the kings of France and the dukes of Bourgogne of the first and second races of the blood royal of France. On the death of Charles le Hardi, last duke of Bourgogne of the second race (Bourgogne), the county passed, with a considerable portion of his inheritance, to the archbishop Maximilian, from him to his grandson Charles V., and so to the Spanish branch of the Austrian family. In 1660 Louis XIV. of France conquered Franche Comté from the Spaniards, but restored it by the peace of Aix-la-Chapelle in 1668. In the same year another contract was made by Spain, and it was ceded by Spain to France at the peace of Nimègue in 1678.

FRANCIS I. of France was, like Louis XII., descended from Charles the Wise through Louis I. duke of Orleans, and also descended on his mother's side from the Bourbons of Burgundy, and his two sons were for a long period princes to the English. The younger of the two, John, count of Angoulême, was succeeded by his son Charles. During the life of Louis XI., the count of Angoulême, and a Le, and by his marriage with the daughter of Louis of Savoy, who, on the 12th September, 1454, became the mother of Francis I. Louis XII. took charge of the infant heir of Angoulême, at the death of his father, and afterwards gave him his own dukedom which he had been pleased to make his own. The French nation, however, devoted his efforts to make himself the ruler of the frontier on the side of Spain and Flanders, and succeeded to the throne at the age of twenty-one, in January, 1515.

One of his first endeavours was to prosecute the claim to the duchy of Milan, which he derived from his grandfather, the Duke of Savoy. In 1515 the expedition of the Swiss had already combined with Pope Leo X., and the king of Spain; but the French having passed the Alps unexpectedly, a battle took place at Marignano, in which the Swiss were partially defeated and their leader, the Count de Rambouillet, fell in the field. The victorious French entered Milan on the 23rd of October, 1515, and peace was soon after concluded with the pope and the emperor.

On the death of Maximilian, emperor of Germany (1519), Charles and Francis declared themselves candidates for the imperial crown. The former urged his claims as one of the house of Austria and as the only prince in Europe who, by uniting the wealth of the New World and the arms of the Old, could arrest the progress of the Sultan Selim II. The latter put forward his greater experience in war, and dealt in the impudence of playing the joint power of Spain, Flanders, Naples, and the empire in the hands of an Austrian emperor, one of long standing, against the pretender himself, while Leo X. would gladly have seen the German throne some prince of less importance. Francis, of Charles, and one who had no power or claim in Italy. It is said that the crown was offered to the elector of Saxony, who declined it and secured the election of Charles. Francis had an interview with the king of England between Guines and Arles, and Charles landed at Dover on his voyage from Curon to the Netherlands.

In 1521 Francis made an attempt to recover Navarre for the family of Jean d'Albret; but after the capture of Pamplona the French were repulsed from before Logroño, and finally lost all they had previously gained. Another cause of quarrel arose from Robert de la Mark, lord of Bouchard, heir to the dukedom of Lorraine, and a subject of the French. Mâcon was assigned by Bayard against the imperial army, and a pretended attempt at mediation having been made by Wolsey, who was intriguing for the papal crown, a league was concluded against Francis by the French, English, and Swiss, of which the emperor was the general of, being deserted by his Swiss auxiliaries, was driven from the Milanese by Prosper Colonna; Parma and Placentia were united to the ecclesiastical states; and the death of Leo X. is said to have been the cause of a reconciliation between the emperor, Charles V., and Francis. The French, although reinforced by 10,000 Swiss, were defeated at Biséaun, and while Milan and Genoa were being lost in Italy, Henry of England attacked Paris and Normandy. In 1523 the Venetians, hitherto friendly to Francis, joined the pope and the emperor against him, and his own subjects, the constable of Bourbon exposed to the
vengeance of slighted love on the part of the king’s mother, fled to his enemies. The French under Bonnivet, however, passed the Ticino in spite of the veteran Prosper Colonna; and the failure of three attacks on the side of Gascony, Burgundy, and Artois to force the gates of Genoa, the范文 could allow him to hope for. In the spring of 1534 Pescara and Bourbon defeated the French on the Sesia; and in this battle fell Bayard, ‘the knight without fear and without reproach.’ An attempt on the part of the imperial forces to maintain a footing in Piedmont was frustrated by the king, who passed the Omin and advanced on Milan. Of that city he obtained possession; but by laying siege to Pavia, which was gallantly defended by Antonio de Leyva, he gave time for the imperial generals to reconnoitre their forces. The French did with such effect that on the 24th of February, 1525, they utterly defeated the French troops, and Francis himself remained a prisoner in the hands of Lannoy, vice-king of Naples. He announced the result of the battle of Pavia to his mother in her celebrated words, ‘Tout est perdu pour l’honneur!’ Robertson says, ‘On that occasion the great abilities of Louise the regent saved the kingdom, which the violence of her passions had more than once exposed to the greatest danger.’ Henry of England and his minister Wolsey were inclined to listen to her overtures; the former because he was alarmed at the growing power of Charles, the latter because he had been a second time disappointed of the papal crown by the election of Clement VII.

Charles demanded, as the ransom of the French king, Boulogne, the province of the French on the coast of the English channel, and the renunciation of all claims on the Italian states. He caused his prisoner to be conveyed by sea from Genoa to Barcelona, and thence to Madrid, where he detained him in rigorous confinement, until the alteration in his heart’s desire at Piedmont was known to which he had anticipated. At length the treaty of Madrid was arranged (1526). Francis was to cede Burgundy, to give up all claims on Italy or on the sovereignty of Flanders and Artois, to restore Bourbon to his dignities and estates, and to pay a tribute of 200,000 ducats to the emperor, and finally to deliver his eldest and second sons as hostages for the fulfilment of these stipulations. While he pledged his oath and honour for the observance of the conditions of the treaty, he caused a secret protest against the validity of his promise to be prepared. He set foot on France a little more than a year after the battle of Pavia, and mounting his horse, put him into a gallop, explaining, ‘I am yet a king!’

It very soon became obvious that the French king did not regard the emperor of Spain, thus defeated, as the enemy of Madrid. While Charles, in vain demanded the fulfilment of his oath, from which the pope had absolved him, Francis entered into a league with the Venetians, Clement, and Henry of England. The imperial generals, taking advantage of a delay on the part of the French, at length finally resolved on a wretchedly defended by Sforza, whom Charles had already declared to have forfeited his duchy. In 1527 Bourbon advanced upon Rome: he himself fell in the assault of that city, which suffered more from the army of a Christian emperor, the especial pangs of the Roman sea, than it had ever done from the most barbarous of its heathen invaders. Clement himself, shut up in the castle of St. Angelo, was at length obliged to surrender, and was only released for a heavy ransom at the termination of six months. This was clamorously intimated, it was said, to the ears of the emperor to relax the terms of the treaty of Madrid, the negotiations terminated in a declaration of war on the part of France and England. Charles accused his rival of perjury, to which Francis replied by a challenge to single combat. In February, 1528, the imperial army, wasted by the disease consequent on its excesses, was with difficulty dragged off from the miserable city on which it had preyed for ten months. Lautrec followed them, and sat down before Naples; but the French army were in their turn attacked by the Spanish, who had been left by the remnant, which surrendered to the prince of Orange at Aversa. Andrew Doria, disgusted with the conduct of the French, renounced their alliance and liberated Genoa, while Antonio de Leyva ruined the French army in the Medway, north of the French coast. The French war was concluded by the negotiations of Margaret of Austria and Louis of Savoy (August 5, 1529). Charles agreed not to urge his claim on Burgundy, while Francis renounced the sovereignty of Flanders, abandoned Italy, and bound himself to pay 2,000,000 ducats to the emperor, to be invested in government. In consequence of the treaty between the pope and the emperor, Florence was restored to the Medici, and Clement allowed himself to be guided by the wishes of Charles as to the divorce of Catherine of Aragon from Henry VIII. He met however with eagerness a proposal on the part of Francis for the marriage of his niece, Catherine’s Medici, to the duke of Orleans, afterwards Henry II.

The dissensions in the empire manifested by the diet of Augsburg (1530) and the league of Schmalkalden, induced the French king to encourage the protestant party in Germany which he had cultivated in his own dominions. During the absence of Charles in Africa (1535) he advanced into Italy under pretext of punishing Sforza, now returned to his duchy, for the execution of his ambassador, and seized the territory of Savoy. It was not until the spring of 1536 that the emperor was able to take active measures against him. Sforza died, and the imperial troops drove the French out of Savoy and advanced to the frontiers of Provence. The French had laid waste the whole of Dauphiny; and although Arles and Marseilles were besieged, Montmargery, a second Fabius, kept his troops under the walls of Avignon and refused to risk a battle. This policy succeeded so well, that at the end of two months the imperial army was compelled to retreat in a miserable state. After an attack by the French king on Arles, and the retaking of Marseilles at length agreed on through the mediation of the two sisters, the queen of Hungary and France. The exhausted state of his treasury, and the fear of an alliance between Francis and the Turk, induced Charles to consent to a cessation of arms. This was followed by a truce for ten years, concluded at Nice.

Charles then embarked for Barcelona, but being detained by contrary winds on the coast of Provence, Francis proposed a personal interview. The French king went on land, and the emperor of Spain, the first time, met the Turk at Aigues Mortes. Thus after years of the bitterest hostility and enmity, after accusations of perjury on the one hand and of murder on the other, and after a challenge to mortal combat, these two princes presented the singular spectacle of apparent reliance on each other’s good faith and honour. The marriage of James V. of Scotland with Magdalen of France, and afterwards with Mary of Guise, tended greatly to estrange Henry of England from the French court, while a better understanding seems to have followed a second interview of Francis and Charles, when the citizens of Ghent were persuaded by the emperor to deliver their town into the hands of the latter, was not only rejected, but the designs of the malcontents were betrayed to the emperor (1539). Charles put the sincerity of his new friendship to a more severe test by asking the French king for a passage of way from Spain to the Low Countries. Francis met him at Chatteleraut and received him as his guest in Paris. A promise was made of investing the duke of Orleans with the duchy of Milan; but all demands for its fulfilment on the part of the ambassadors of Francis were evaded by the emperor.

While the latter was preparing his expedition to Algiers, the king of France sent to demand satisfaction for the murder of his ambassador to the Porte, Ricas, who was murdered in the order of Charles. The emperor of Spain and the marquis du Vasto, the governor of Milan. On the ground of this outrage was again declared (1542), but the king of England and the Protestant princes remained firm to the emperor. The subsequent operations in Roussillon, Flanders, and Piedmont, were of importance until the battle of Ceriseolle (April 11, 1544), in which the French were completely victorious. On the other hand, Charles advanced into Champagne with a large and well-appointed army, and Henry VIII. besieged Bourges. On the 26th of March, 1544, Charles was invested at Creac, which the emperor consented to, principally from fear of the Turk and from the increasing strength of the Protestants. Francis did his utmost to animate these two parties; but in 1547, on the last day of March, the emperor of Spain was murdered by two assassins from many of the apprehensions which he had entertained.

In reviewing the position of Francis during his whole struggle with the emperor, we are struck with the enormous
France, in his reign, sustained the same character in which she appeared again in the following century. As in the time of the thirty years' war, she, a Catholic power, aided the Protestant cause; so in the early part of the sixteenth century, when the war was the more memorable, was she, being concentrated in the hands of Charles V, the French king, the only efficient hindrance to the universal monarchy of the house of Austria. It was Francis I, who favored the revolt of Geneva from the duke of Savoy, and enabled that city to found an independence which was afterwards the object of one of the main props of the reformed faith. While however he fostered religious rebellion in Germany, he proved his orthodoxy in Paris by the utmost clemency to the heretics. The gallant manner in which he struggled against the formidable power and grapple of the Hapsburgs, excited our sympathy in his favour: his personal courage was unabated, and his generosity on the two occasions in which Charles put himself in his power, more chivalrous than his conduct with reference to the treaty of Madrid.

The author of his life, in the 'Biographie Universelle,' says: 'If it was genius, every Frenchman is his accomplice.' The hard nature of the conditions however cannot justify an open and deliberate oath, accompanied by a secret plot as his life is said to have been. The Duke of Savoy, the sword of Bayard, and his usual mode of affirming what he said was—'Foi de Gentilhomme.' In his family francis was far from happy: by his first wife Claude de France, daughter of Louis XII, he had three sons and four daughters. The last, the Dauphin, was painned by his cupbearer, Montecuccoli; whether such the fact is very doubtful, and there is certainly no reason to suppose that the crime was instigated by Charles V. The second son succeeded to the throne: the death of Henry II, and Richard, brother of Charles IX, left him as heir apparent to a greater evil; his public acts are not entitled to much praise. Madame de Chateauneuf, sister of Limouze, the duchesse d'Etampes, and la belle Françoise, were successively his mistresses; to vomit and beget on every man that he has to have owed his death. In his reign lies for the first time became constant attendants at the French court, and the foundation was laid for those prodigious manners so fully developed in the succeeding reign.

As the patron of art and literature, Francis the First ranks decriably high. He reigned at the moment when sonder learning and higher principles of art were spreading from Italy to the rest of Europe. Boclc, Lescarès, Erasmus, that in the second quarter of the sixteenth century could boast of 'Les contemouces de lettres' he is well known as the patron of Primatteusi and Cellini; while a greater than either, Leonardo da Vinci, is said to have died in his arms. (Robertson's 'Charles I.' ; Père Daniel, Histoire de France ; Dictiornnaire des Actes de l'Universelle ; Leupold Rankes, Geschichte de. Prinipale.)

FRANCIS II. of France, born in 1543, was the eldest son of Henri II. and of Catherine de Medici. He married, in 1568, Mary Stuart, only daughter of James V. of Scotland. On the death of his father, 10th July, 1559, Frances became king, being then sixteen years of age. He entrusted the government to Francis duke of Guise and his brother the cardinal of Lorraine, uncles of Mary Stuart. This was the beginning of the civil and religious wars which destined to divide half a century of Bourbon, king of Navarre, and Louis his brother, prince of Condé, with the other princes of the blood, and the great officers of the state, being indignant at seeing all the power of the state in the hands of two strangers, conspired against the Guises, and joined the Protestants for that purpose, as the Guises were the zealous supporters of Catholicism. In March, 1560, the Guises having been informed of a conspiracy against them, removed the king and court to the castle of Blois; the king named the duke of Guise lieutenant-general of the kingdom, and the bishops were arrested and executed. Soon after the edict of Roma in was issued, which constituted the bishops judges of heresy, and took the cognizance of this offence from the parliaments. It was said that the chancellor De l'Hopital consented to this edict in order to quiet his enemies, the establishment of the Inquisition in France, which was proposed by the cardinal de Lorraine, and in hopes that the bishops would prove more humane than the parliament men, who had put a great number of Protestants to death.

By a former edict, issued at Escouen by Henri II. in June, 1559, all the Lutherans were declared punishable by death. The name of Huguenots, to denote the Calvinists, was a distinction in the realm of France; de Coligny having presented to the king a memorial in their favour, it was resolved, at the suggestion of the chancellor De l'Hopital, to leave them in peace, until the general council should decide, and that if the pope did not assemble a general council, the peace of France should be continued. Francis II. died of an abscess in his ear; and the rumours of pen which were spread at the time seem, according to De Tha and other historians, without foundation.

FRA broke out between Pesaro and Austria by the name of the Seven Years' War, which was terminated by the peace of Hubertburg, in February, 1570. The following year Joseph, the eldest son of Francis, was elected king of the Romans, and in 1573 Francis died at his birthplace, in the arms of his mother however retaining in her hands the sovereignity of the Austrian dominions till her death. As emperor Germany and grand-duke of Tuscany, Francis left behind him the reputation of a good prince, though he was involved in the wars against against his uncle, Joseph II., who gave him the best pretexts in that capital. He was particularly well instructed in the science of administration, and he made himself master of all its details. He was also engaged in several campaigns against the Turks, and was present at the taking of Belgrade, 18th October, 1563. In 1566, Francis II. died, aged 17. Francis I. took the direction of the government till the arrival of his father from Florence. Two years afterward, Leopold himself died, in 1572, and Francis, who succeeded to the vast dominions, was likewise elected suzerain of the imperial crown of Germany. He died at a very auspicious moment. The rash or premature, though as meant reforms of Joseph II., had soon deep discord in several parts of the hereditary states of Austria, which in 1572, the conciliatory measures of Leopold had not had much success. Francis I. died of an abscess in the eye of a war with France. In April, 1572, Louis XVI. was obliged, by the legislative assembly, to declare war against him. The Austrian armies on the Rhone carried the war for some years with various success, but in 1576, Francis I. died of an abscess, aged 17. In 1577, the treaty of Campefiorino, Francis gave up Belgium and the duchy of Milan, receiving in exchange Venice as
Dalmatia. In 1792 a new coalition took place between Austria, Russia, and England, and the alliance was eminently successful, both in Italy and Germany; but a misunderstanding between the Austrian and Russian commanders led to the defeat of the Russians in Switzerland.

In 1800, Bonaparte having won the battle of Marengo and marched on Vienna, the peace required; but France refused to treat separately from Italy, England, and hostilities began afresh. The French under Moreau having gained the battle of Hohenlinden, advanced towards Vienna, when Francis proposed peace, and the Treaty of Lunéville, signed in 1801 by which Ferdinand, the emperor's brother, was obliged to give up Tuscany to his uncle to renounce Modena. In December, 1804, while Napoleon crowned himself emperor of France at Paris, Francis foreseeing the approaching dissolution of the German Empire, called his Austrian minister, and Francis, L., emperor of Austria, king of Bohemia and Hungary, &c. He now availed himself of some years of peace to repair the calamities of the former wars, to make reductions, enforce a strict economy, and support the credit of the crown in the eyes of the Austrian House. His acts of stern autocracy, of which he had been accused by his enemies, were supported by the neutrality of Austria. After the peace of Tilsit and the conferences of Erfurt between Napoleon and Alexander, the occupation of North Germany by the French, and the invasion of Spain, the emperor Francis felt alarmed, and, to avert the danger, he called a Diet of the Lower House to place sooner or later for the independence of his crown.

Availing himself of Napoleon's embarrassments in Spain, at the beginning of 1809, he began alone a fourth war against France, with a force of 400,000 men. The archduke Charles, however, escaped his attack, and the archduke John of that of Italy, whilst a force under General Chasteler entered the Tyrol, where the people rose to a man for their sovereign. This war had a different character from the preceding, inasmuch as the people of Germany began now to take part against the French; corps of partisans were formed under Schill, the duke of Brunswick, Oels, and others who annoyed the French, and a general spirit of insurrection manifested itself against the foreign yoke. The operations of the war were also conducted with much humanity, and the French, however hard pressed, were not allowed to suffer want. After the battle of Austerlitz, and Jena, when a single battle had decided the fate of the war. The Austrians now fought detached engagements with various success, and although obliged to retire, and even to abandon Vienna, the archduke Charles kept his army together, and the battle of Aspern was fought with a tremendous loss on both sides, and Napoleon was obliged to retire across the Danube. After some time the battle of Wagram took place, and although lost by the Austrians, yet the archduke retired in good order, and the peace of Schönbrunn took place in October, 1809. Austria gave up Trieste, Pluné and Croatia, Salzburg, and part of Galicia, to France. In 1810 Napoleon married a daughter of the emperor Francis. As the Russian forces of authorities, especially the educated classes, felt dissatisfied at being reduced to the condition of an Austrian dependency. Conspiracies were hatched, which all failed, and only served to render the Austrian government suspicious and severe. Of the persons implicated in the conspiracy, three tried and condemned by sentence of the emperor, which sentence the emperor committed to imprisonment for varying periods in several fortresses, but mostly in the castle of Spielberg, in Moravia. In other respects Francis's administration was mild and temperate. He promoted material improvements, roads, canals, and manufactures. His views of commercial policy were of the old or Colbert school. In one particular he deserves unqualified praise, as the promoter of popular education; he established elementary schools throughout all his dominions, and superintended their administration. An account of the system is given in an article in No. VI. of the Quarterly Journal of Education, entitled Italian Education. With regard to religious tolerance, Francis followed the principles of his predecessors, Joseph and Leopold. He was uncompromising in his regard to them, which is called by his name. Further details concerning the emperor Francis, his court, and cabinet, may be found in the following works among others: Russel's Travels in Germany and Austria, written by himself, London, 1827; Mensel, Reise-nach Oesterreich, 1831; and a book about Francis, called Sempre veriti oappa alle manoscritte di Enrico Miesl, 1834, in which many exaggerated or unfounded charges against the emperor Francis are refuted by abundant proofs. In the Russo-Turkish war, the policy of Austria has been guided by its ministers, who have shown themselves very able men, yet there is no doubt that the personal character and principles of the emperor Francis have had very considerable influence in France. FRANCISCO SCACCIANS. St. Francis, the founder of one of the four orders of mendicant friars, called Francisians, was born at Assisi, in Umbria, in 1182. He was the son of Peter de Bernardino, a wealthy merchant, and his mother's name was Pica. His mother christened him John, but his father, who was absent at the time of his birth, changed his name to Francis. Wedding, in the 'Annales Minorum,' says, because he learned French early, to qualify himself for his father's profession, Jean de Voregine turns it into a miracle; 'Primò ratione miraculi communi,' wrote another Gallican miracle, a Deo roceppis cognoscitur. Acta Sactar., Octob. tom. ii.
John; for he, it seems, became dean of Leighlin in 1696, and sat in convocation in 1704. Philip was educated at the University of Dublin, and then entered the church, the profession for which he was generally supposed to have been prepared. In 1722 he was appointed to the See of Limerick, and the news of his appointment was received with general joy. Before the bishop of Assis, in order to make him renounce all title to his father's temporal possessions, which he not only agreed to, but stripped off all his clothes, even to his shirt. He then prevailed with a considerable number of persons to devote themselves to him, as he had done, to the poor, which he considered as enjoined by the gospel, and drew up an institute, or rule, for their use, which was approved by Pope Innocent III. in 1216, as well as by the Council of Lateran held in 1215. In 1211 he obtained from the Benedictines a dispensation to retire from the world, and his order increased so fast that when he held a chapter in 1219, near five thousand friars of it were present. He subsequently obtained a bull in favour of his Order from Pope Honorius III. About this time he went into the Holy Land, and endeavoured in vain to convert the Sultan Malelwe. It is said that he offered to throw himself into the flames to prove his faith in what he taught. He returned soon after to his native country, and died at Assis in 1226. He was canonized by Pope Gregory IX. the 6th of May, 1230, when October 4th, the day on which his death happened, was appointed as his festival.

The followers of St. Francis were called Franciscans, Grey Friars, or Minor Friars; the first name they had from their founder; the second from their grey clothing; and the third from the iuxta mendicantium, or loose garment of a grey colour, reaching to their ankles, with a cowl of the same, and a cloak over it when they went abroad. They girded themselves with cords, and went barefoot.

This order was divided into several bodies, some of which were more rigid than others. The most ample and circumstantial account of it is to be found in Annales Minorum, seu Trium Ordinarum a S. Francisco Institutorum, auctore Luca Waddingo Historia; the second in the best edition of which was published at Rome by Jose Maria Fonseca ab Ebora, in 18 volumes in fol. 1721-1744, with a supplement, Opus posthumum Fr. Jo. Hyacinthi Sorolai, fol. Rom. 1806. ToWedding we are indebted for the Opuscula S. Francisci, 4to. Antwerp, Bibliotheca Ordinarii Franciscanae 1654. The Acta Sanctorum of the Franciscans already quoted (Octob. tom. ii. p. 545-1004), contains several lives of St. Francis, including that by St. Bonaventure.

The original (Hist. Pror. Min. p. 2) says this order came into England in 1219; but Siowl, Dugdale, Leland, and others, say the Franciscans came in 1224, and that they had their first house in Canterbury, and their second at London. Tanner says (Notit. Monast. pref. p. 13), that at the dissolution the Conventual Franciscans had the number of fifty-five houses in England, but that late from the conclusion of that number, appearing they had sixty-six. Their rule, as translated by Stevens, with several chapters of Edward III. and one of Richard II. in favour of them, will be found in that work, vol. ii. pp. 1504-1557. See also Parkinson's Collectanea Anglo-Minoritica, or a Collection of the Antiquities of the English Franciscans, or Friars Minor, commonly called Gray Friars, 4to, Lond. 1726.

The original of the Franciscan rule will be found in Wadding's 'Annales,' vol. i. pp. 66-79.

FRANCIS, REV. DR. PHILIP, was the son of the Rev. John Francis, dean of Lismore, and rector of St. Mary's, Dublin, in which city Philip was born in the early part of the last century. He was educated in the University of Cambridge, and was appointed to the rector of St. Mary's, and was expelled from his preferment at the Revolution on account of his Tory principles; but this must be a mistake, if we may rely on the dates given in a detailed memoir of Sir Philip Francis, by a personal friend, in the Annual Register for 1820, where it is stated that the Rev. John Francis was nominated dean of Lismore in 1722. The story of the election, if we may trust to this authority, cannot even be true of the grandfather of the subject of the present article, whose name was also
would appear to have been now converted into very substantial friendship, or who must be supposed to have had private reasons for such an exercise of his patronage. He set out in the month of December, 1799, to visit that country till December, 1780, when he resigned his situation and embarked for England, after having had a quarrel with the governor-general Mr. Hastings, which produced a duel, in which Mr. Francis was shot through the shoulder. He was returned to parliament, and, electorally, from his entrance into the council, but the sudden death of two of his colleagues by whom he had been generally supported, had latterly left him in a helpless minority in his contest against the policy of the governor-general. In 1784 Mr. Francis was returned to parliament for Yarmouth in the Isle of Wight, and soon began to take an active part in the business of the House of Commons, where, although he was not a fluent speaker, the pregnant character of his marks and the soundness and extent of his information enabled him to take his seat from the first with the Whig opposition, and to that party he adhered while he lived. When it was resolved in 1786 to impeach Mr. Hastings, it was proposed that Mr. Francis should be appointed one of the managers of the impeachment; but all the eloquence of Burke, Fox, and Windham, (aided by his own) could not overcome the feeling of the House against placing in this situation a man with whom the accused had had a personal quarrel. The measure was twice negatived by large majorities. Nevertheless there was much feeling not only of the House, but of the country, and the casuistry of the question was not a little curious and perplexing. The benefit of the talents and information of Mr. Francis was eventually secured to the prosecution by a letter inviting his assistance, which was addressed to him by the late Mr. Burke, then of the clerical division of the Commons, this business occupied his chief attention for many years. When the war with France broke out, Mr. Francis adhered to the party of Fox and Grey, and was one of the first and most active members of the famous association of the Friends of France. These deputations were conducted against the polls of dudate for Twickenham, but failed in being returned, and he did not sit in that parliament. In 1802, however, he was returned for Appleby, by Lord Thaneet, and he continued to sit for that borough while he remained in parliament. The question of the abolition of the slave trade was that in which he took the keenest and most active part in the latter term of his parliamentary career; and it is said that in advocating the abolition, he took a course as much opposed to his private interest as it was in conformity with his public position. On the 29th of October, 1806, Mr. Francis was made a knight of the bath, 29th October, 1806; and it is believed that it was at first intended to send him out to India as governor-general. That appointment was only the result of some of the systematic policy of the government and the parliament in 1807; and after this, the interest which he continued to take in public affairs was chiefly evinced by occasional political pamphlets and contributions to the newspapers. In 1818 great attention was drawn to Sir Philip Francis, by Mr. John Taylor's very ingenious publication, entitled 'Junius identified with a distinguished Living Character,' the object of which was to prove that he was the author of the celebrated 'Letters of Junius.' It may at least be confidently affirmed, that no case half so strong has yet been made out as that of any one of the many other conjectures that have been started on the subject of this great literary puzzle. Sir P. Francis however, it is said, persisted to the last in rejecting the honour thus attempted to be thrust upon him. His acknowledged public spirit for some time had produced an impression in support of the number, according to a list appended to the memoir of his life in the 'Annual Obituary.' One of the most curious of them is the last, entitled 'Historical Questions, exhibited in the Morning Chronicle in January, 1818, enlarged, corrected, and published in a series of articles in the Morning Chronicle.' Sir Philip Francis died after a long and painful illness, occasioned by disease of the prostate gland, at his house in St. James's-square, 22nd December, 1818. He was twice married, the second time after he had reached the age of seventy, to a Miss Watkins, the daughter of a clergyman. By his first wife he left a son and two daughters.

FRANCISCO DE SALES. [SALIS.] FRANCIS XAVIER. [XAVIER.]

FRANCISCO, RIO. [BRASIL.] FRANCKE, a celebrated German philanthropist, whose life presents a striking instance of the good which an individual may effect. Franks was born at Lubec, in 1663. He made such a rapid progress in his studies that at the age of fourteen he was fit to enter the university, where he devoted himself with great application to the study of divinity and the antient as well as modern languages. In 1691 he became a professor of oriental languages at the University of Halle, and soon afterwards was made a canon of divinity, pastor of the parish of Glauca, a suburb of Halle. The wretched state of his parishioners, who were sunk in the most abject ignorance and poverty, gave the most pathetic impulse to his zeal. He began to teach the children, whom he supported at the same time by small donations. He took a few orphans to educate; their number rapidly increased, and as he was assisted by the contributions of many charitable persons, he gradually extended his undertaking, and formed several establishments for the education of all classes. In 1698 he laid the foundation of the orphan asylum, though he had scarcely any means of completing the edifice, but the necessary funds were constantly supplied by charitable persons. It frequently happened that all his funds were exhausted, and that he had not even sufficient money to pay the workmen, when at the very critical moment he received by post large sums from known or unknown benefactors. He was fortunate in having a son who was ready to contribute to the support of his undertaking, but many who zealously assisted him in his labours. Francke was a man of mild and cheerful disposition, agreeable manners, and exceedingly laborious. He punctually attended to his academical lectures, and to the publication of his books, and visited almost the whole of the states and seaports of Germany, and of the Baltic, with a view to extend the current of his learned works on divinity in Latin. Francke died in 1727, and the following establishments which now exist at Halle owe to him their foundation and bear his name: 1, the Orphan Asylum, in which, since its establishment, 4500 poor orphans of both sexes have been gratuitously educated; 2, the Pedagogium, an institution for the education of young men of the higher and middle classes, founded in 1696; 3, the Latin School, established for the education of children not belonging to wealthy families, and divided into six classes, for Burgler School boys and girls; 5, the East India Missionary Establishment; and 6, the Cansteinian Biblical Institution. This last establishment was the forerunner of Bible Societies. It was founded by Francke in 1727, after having spent a part of his life in courts and camps, became by his intercourse with Francke religiously disposed, and by his exertions and the aid of subscriptions established the biblical institution of Halle, in order to promote the reading of the Scriptures among the poorer classes. This institution possesses a number of stereotype plates, from which a certain number of Bibles is continually struck off: this institution has furnished, in the above-mentioned manner, from its establishment in 1712 till 1834, more than two million of Bibles and above six millions of New Testaments. The profits derived from the sale of these Bibles go to the support of Francke's institutions, which derive a considerable income from lands and other charitable gifts bequeathed to them, chiefly by persons who have been educated in the Francke establishments. The printing, and publishing establishment, which is the property of the above-mentioned institutions.

FRANCOAICEA, a very small natural order of Exogena, consisting of the genera Francoa and Tectilia only. They are South American herbs, with several species, with liliaceous leaves and a scapose inflorescence. The sepals and petals are four; the stamens four times as numerous and hypogynous, half of them being rudimentary. The pistil consists of four carpels adhering by their interior angles, with a sepal four-lobed stigma and two rows of ovules, and contain a minute embryo lying in a mass of fleshy albumen. The station of Francoiaeae in a natural arrangement is unsettled. Rosaceae and Cruciferaeae seem to be the favourite orders to which they are approximated; but
we rather regard them as a part of the albuminous sub-
class, serving to connect Papaveraceae with Drosan- 
ecae and Primulaceae. [Exogens.]

FRANKEN [FRISIAN].

FRANKALMOIGN, a species of tenure. The word signs-
ifies 'free farms,' and the tenure is that by which a re-
itigious corporation, aggregate or sole, holds lands of the 
donor, to them and their successors for ever. The services 
which they were bound to render for their land were not 
clearly defined, but were only in general to pray for the 
souls of the donor and his heirs, dead or alive; they did no 
fealty, which was incident to all other tenures. [Feudal 
System.]
The tenure by Frankalmoign was excepted by name in the 
stat. 12 Car. II., which abolished military tenures, and it 
subsists in many instances at the day. It is very distinct 
from all other tenures, being not in the least degree feudal, 
but merely spiritual; for if the services be neglected, the 
law gives no remedy by distress or otherwise to the lord of 
whom the lands are held, but merely a complaint to the 
or going visitor to correct it.

Donations by this tenure are now out of use; for since 
the statute of Quin Empores (18 Ed. I.), as it is said by 
Littelton, none but the king can grant lands to be so held.

FRANKENBERG, in the bailiwick of Chemnitz, in the 
kingsdom of Saxony, is an agreeable town situated on the 
Zschopau, and in a picturesque valley: it is well built and 
regularly laid out, and contains about 430 houses and 2400 
inhabitants. Next to Chemnitz it has the largest factories in 
Saxony for printing cottons, and employs upwards of 
hands in this branch alone: it also manufactures cottons, 
linen, and leather, and has extensive bleaching-grounds in 
the vicinity. The copper-mines near it produce but small 
quantities of the metal.

FRANKENIAE, a small natural order of Exogens, 
allied to Sileneae and Linaceae, with a procumbent half, 
small leaves, and very often minute flowers half hidden 
among the leaves. They are all furnished with a tubular, 
ribbed calyx, and that, together with their having five petals, 
a definite number of hypogynous stamens, and a one-celled 
capsule bursting into valves, to whose edges the seeds ad-
here, gives them a distinctly limited character. The species 
are chiefly found in the south of Europe and north of Africa; 
they however occur in various other parts of the world: one 
species from New Holland, Frankenia pumulosa, remark-
able for the size of its flowers, is a very pretty greenhouse 
shrub.

FRANKENSTEIN, a circle of the Prussian govern-
ment of Breslau, and in the province of Silesia: it is a level 
country, occasionally interspersed with hills, has an area of 
about 181 square miles, and a population of about 42,300. 
It is watered by the Neisse, raises much flax, together with 
white, potatoes, and fruit, and is well supplied with timber. 
The capital of this circle, which bears the same name, is 
situated on the Posenbach, in 50° 32' N. lat. and 16° 30' 
E. long. It is a well-built town, surrounded by walls, and 
has four suburbs, an old castle now in ruins, a spacious 
market-place, a Roman Catholic and a Lutheran church, 
besides churches attached to the hospital and barracks, a
picture gallery, botanical garden, seven schools, &c. The population was 4610 in 1817; 5569 in 1831, and is at present about 5700. The manufactures of the town consist of woolen stuffs, linens, leather, stockings, tobacco, liqueurs, &c., and it has a good trade in corn, wine, woolens, &c.

FRANKFURT. [Rhine, Circle.]

Frankfort (German Frankfort), the capital of a small republic in the western part of central Germany, which has an area of about 91 square miles. It is bounded on the north and north-east by the province of Hesse; on the south-east and south by the electorate of Mainz; on the south-west by the duchy of Nassau and part of Grand-ducal Hesse. It is supposed to date its origin from the times of the Merovingian princes. Charlemagne built a palace in the town, in the 8th century, and in 806, in the year 793, Lewis the Pious surrounded it with walls and ditches in 838. In consequence of the treaty of Verdun, by which Aix-la-Chapelle fell to the share of Lotharius, it became the capital of the empire of the Eastern Franks, and in 839 the Roman emperor Charlemagne held the fairs held by the Austrarians. A palace, called the Roemer (Roman palace), was also built here by its sovereigns, who held their courts of ceremony under its roof from time to time, though it was not their fixed abode. In the records of the middle ages, Frankfort is frequently mentioned as the capital of the cities in the German empire, and as a mark of distinction was denominated a chamber of that empire (Reichskammer), which the emperor William pledged himself, in 1254, should never be mortgaged or alienated; a pledge which it is believed the emperor himself respected, and which, so long as the town continued to enjoy the place of all imperial elections. In the early part of the 15th century, the Roemer, which had become the property of one of the burgesses about 50 years before, was pulled down, and a new building erected into the town, the new magistrates, who about this time availed themselves of the prodigality of the German emperors to buy their monopolies and domains in and near the town. The emperor Richard conferred additional immunities on it in 1257; in 1271, Charles IV., sold the bailiwick of the empire to the magistrates; and in 1299, Lewis the Bavarian empowered them to redeem all the properties, tolls, &c., in Frankfort or its vicinity which he or his predecessors might have pawned to others. This right was extended to very good account by the magistrates. The great Easter fair, in addition to the Michaelsmas fair, which had been held since the days of Lewis the German, was instituted in 1330. In 1399 the town acquired the lands on the left bank of the Main, by which it received a considerable increase in its expenditure and limits, and completed its present extent of territory. In 1555 Charles V. endowed it with the right to the free navigation of the Main. The treaty of Westphalia recognized all its immunities, and it was taken under the special protection of the emperor, a station of imperial merchants, and by a privilege which noblemen who settled in the town and connected themselves with the wealthier class of inhabitants, gradually formed clubs, or exclusive companies, and these societies ultimately engrossed nearly the whole government; but the Congress of Vienna in 1815 put an end to the practice. The emperor Charles VII. resided here from 1742 to 1744, and the German diets were at that period transferred to Frankfort from Ratisbon. It was the place of assembly for the states of the electorship of the Upper Rhine; and dating from a.d. 725, when the city was invested with four centuries of taxation, it completed its present extent of territory in 1555. Charles V. endowed it with the right to the free navigation of the Main. The treaty of Westphalia recognized all its immunities, and it was taken under the special protection of the emperor, a station of imperial merchants, and by a privilege which noblemen who settled in the town and connected themselves with the wealthier class of inhabitants, gradually formed clubs, or exclusive companies, and these societies ultimately engrossed nearly the whole government; but the Congress of Vienna in 1815 put an end to the practice. The emperor Charles VII. resided here from 1742 to 1744, and the German diets were at that period transferred to Frankfort from Ratisbon. It was the place of assembly for the states of the electorship of the Upper Rhine; and dating from a.d. 725, when the city was invested with four centuries of taxation, it completed its present extent of territory in 1555.
each of carabiniers, clauzours, and firemen, six of infantry, and a veteran corps composed of citizens between the ages of 50 and 60.

The Lutherans have a consistory, and the reformed Lutherans two presbyteries, which manage the revenues of the church and the parishes' churches. The Roman Catholic clergy and flocks are comprehended in the diocese of the bishop residing at Limburg on the Lahn.

Frankfort is a member of the German Confederation, and in conjunction with the other free towns, Lieber, Bingen, and Darmstadt, occupies the 17th place in the limited council of the diet, but enjoys its independent vote in the full council. It furnishes a contingent of 427 men to the army of the confederation, and pays a quota of 200 guilders about 140th of the total expenses of that body.

FRANKFORT (on the Main). The city of Frankfort is on the right bank of the Main, across which there is a stone bridge which unites it with the suburb of Sachsenhausen. It lies in 36° 8' N. lat. and 8° 36' E. long. The valley in which the town is commanded on the north by the gentle heights of the Ruedenberg, and at some leagues distant behind them by the range of the Taunus; and on the side of Sachsenhausen, in the south, by the Mühlberg, Sachsenhäuserberg, and Lorentshaus, offsets of the Odenwald. The old walls and ramparts with their stagnant ditches were raised between the years 1385 and 1812; and the site converted into spacious park-like grounds; the glades too are now covered with vineyards and gardens, which are externally bounded by a broad road; and beyond this road the adjacent fields are laid out with lawns, pavilions, and private gardens. Frankfort itself is about 1830 paces in length along the Main, 1380 in width, and 5000 in circuit; Sachsenhausen is about 1200 in length, but of inconsiderable breadth.

The principal entrances of the town are nine large gates, which formerly ran between ecurious quadrangular towers; most of these have in modern times been replaced by handsome buildings, modelled from the ancient temples of Athens and Rome, &c. Of the nine entrances Frankfort, Sachsenhausen, and Darmstadt are the most imposing. The northern entrance is the monument erected by Friedrich William II., king of Prussia, to the memory of the prince of Hesse-Philippsthal and his gallant followers, who fell at the successful storming of the town on the 2nd December, 1792; it consists of a quadrangular block of German marble, surmounted with appropriate trophies, bearing a commemorative inscription, and resting on an artificial rock. The Bockenheim gate, which is the western entrance, is built on the model of the temple of Ateria Vesta, and contains a statue of the goddess, and the Upper Main gate, on the site of the porches of the Campus Mithun at Pompeii. The adjacent buildings are neat structures appropriated as guard-houses and for the use of the custom-house officers. The Eichenheim gate, the north-western entrance, is the only one left of those used for the populace; it is a lofty massive tower, crowned by five turrets, and a fine specimen of the German architecture of the fourteenth century.

Frankfort, inclusive of Sachsenhausen, contains nearly 100,000 houses; between 400,000 and 500,000 of them being in the latter suburb. They form 4,000 and 14,000 squares or open spaces, and above 220 streets and lanes, and has 113 fountains and walls. The places of worship are 17 in number: namely, 7 Lutheran, 2 Reformed-Lutheran, and 3 Roman Catholic. There are 3 chappels for Jews, and one meeting house for the Hethrubathers, and one synagogue.

The city is divided into 14 quarters, numbered from A to O, 12 within the walls, and 2 in the Sachsenhausen suburb. The Belle Vue and other streets, built along the Boulevard in the shape of a bow, have been cut through to the horse market, and have been erected since the fortifications were demolished. The largest square, called the Rossmarktk (Horse Market) is surrounded by fine buildings, and connected with the square of the theatre by a spacious avenue of broad walks and ameas. There are fountains in the centre of the Horse Market as well as in the squares of the Liebfrauen and Roemerberg. The right bank of the Main, from the upper to the lower gate, which is nearly the whole length of the city, is edged by a spacious quay, and behind this is the spacious promenade. Here are the fairs, a portion of the quay, on which rows of booths are erected, presents a scene of the most animated description.

The most remarkable buildings in the town are the Roemer or Guildhall, an irregular structure, with lofty roofs in the old Frankish style. Under its roof are the Walhziimmer, or Hall of Election, a spacious and handsomely furnished apartment, in which the electors and their representatives meet to deliberate on the more important concerns of the state. The body of electors consists of the emperors of Germany. It was now used for the meeting of the senate. Next to it is the Kassersaal, or Imperial Hall, where the emperor, upon his election, held his public dinner, at which he was waited upon by the counts and the high officials of the court. There are niches in this hall which contain portraits of the emperors of Germany from Conrad to Leopold II.; but there was not one left unoccupied for receiving the portrait of Francis II., the last of those sovereigns. A sort of ante-hall, a painted cupola, and a library, with specimens of the horticultural talent of the Frankforters, opens into the Eiseren Hall. Here is also the Depository of the Archives, surrounded by walls six feet in thickness. It contains, among other valuable records, the celebrated "Golden Bull" promulgated by Charles IV. in 1354, which is written on sheets of parchment. The Roemer is situated on the western side of the Roemerberg, an irregular open space or square, which has also much of historical interest attached to it. This is the spot where the people collected to welcome the newly elected emperor, bearing his crown and sceptre in solemn procession, after he had been anointed in the cathedral.

Not far from the Roemer is the new Hall of Justice with its various courts and offices; and south of it, on one side of the Hofgarten, the old Hofgarten, or imperial gardens, with specimens of trees of rare growth and thickness. The present building, which is private property, was raised in 1717. The Braunsfels belongs to one of the old equestrian clubs: the court-yard is used for the Exchange, and the spacious saloons on the first floor are now used for the most splendid social and political entertainments. In front of the town, in the suburbs, are the new houses of the aristocracy, and are the favourite lounge for visitors. The palace of the prince of Tour and Taxis, in the north-western part of Frankfort, is a spacious structure in the French style of 1726, richly adorned with paintings, sculptures, and antique hangings; it contains 18 apartments, including two octagonal halls, and is the spot where the diet of emperors from the states of the German Confederation hold their sittings. The antique House of the Teutonic Knights in Sachsenhausen, is a sombre massive building in a low situation, and is extremely grand in its internal arrangements. It is at present the seat of the property of the emperor of Austria.

The two large buildings in Frankfort, which were once public arsenals, were stripped of their contents by the French, and are now appropriated to the police as a prison. The old custom-house at the north-western part of Frankfort, which was formerly used as a prison, is an unstrictly structure of the early part of the sixteenth century, which disfigures the Parade. An old Carmelit convent, now the quarters of the garrison of the town, has choisters covered with faded fresco paintings executed in the beginning of the sixteenth century; the Stone House, near the Roemerberg, is a fine remnant of the middle ages, and the Fürsteneck, near the bridge, may be instanced as one of the oldest buildings in Frankfort. Besides these, the theatre, public library, academy of sciences, a hospice for the poor, a new hospital, and an orphan asylum, are deserving of attention.

The church of St. Bartholomew, formerly the cathedral, is in the shape of a Roman Cross, of the Gothic order, and of the latest style. Being more a palace than a church, it was not finished until the middle of the fourteenth century. Its colossal tower, 160 feet in height, is one of the latest models of the Gothic. The colossal statue of the patron saint in this church is reckoned a masterpiece of sculpture. On the south of the Palais-Royal are a group of tables, which in the time of inquisition, and the place where the emperor accepted the German emperor elect as their sovereign after he had been crowned and admitted to the high altar. The tower was begun in 1413, and was finished in 1599. At a short distance north of the town, is the public cemetery, where the masses of our forefathers are buried. Here is an equally well arranged burial place for the Jewish community. There are four hospitals, one of which is for lunatics and epileptic persons; an orphan asylum, a house of reformation for boys, and several other beneficent in-
institutions. Among the scholastic establishments are a
gymnasium of six classes, conducted by a director, six pro-
cfessors, and nine masters; a normal school of 13 classes,
7 for boys and 6 for girls, and a variety of other seminaries.
The public library contains upwards of 40,000 volumes, among
which are a complete collection of works relating to German
history, and many rare MSS., early editions, and engravings.
The scientific institutions of Frankfurt comprise a Med-
cine, founded in 1763 by the liberality of Dr. Semken.
and anatomical theatre and lecture-rooms, and botanical
garden. The Senckenberg Society of Naturalists was united to this
establishment in 1817, and in the adjoining buildings pos-
sesses an extensive museum, to which Rüppel, the explorer of
the western coast of Africa, has presented the extraordinary
specimens and remains of animal life with which he has
accumulated during his travels. The collection is rich in val-
uable objects in natural history. Frankfurt also pos-
sesses a philosophical society, a society of the useful arts, which
has a mechanics' school; a society of industry; Bisch.
ker's Institute, which awards medals for the best number
of paintings, &c., bequeathed by the founder, who
left an endowment for lectures and instruction in such
branches of knowledge as are connected with the fine arts;
and a school of design, a society for the fine arts, the Bethmann
and Grassi Muscums, a society for encouraging the study of
the German language, &c. Dr. Senckenberg also endowed
the town hospital. The libraries of the cathedral and the
Dominicans are also rich in rare MSS. and old editions.
The town has twenty-two book-sellers' establishments, fourteen
printing-houses, and one of the best commercial banks of the
empire.
With regard to the present amount of the population, we
have no official returns before us; by some writers it is
estimated as low as 43,000, and by others as high as 48,000.
It is certain however that it decreased considerably between
1817 and 1825; but in the first quarter of the present year it was
officially stated to be 47,830, and in the last 41,528, including 10,360
males and females not born in the town.

The exception of Sachsenhausen and its 5000 inhabi-
tants, a district of gardens, parks, and day-labourers, the citizens of Frankfurt during the six-
tentury, when they were frequented at times by as many
as 40,000 strangers; but they still afford an animating and
attractive scene. The chief manufactures are carpets, gal-
lloon, velvets, cards, cottons, silks, printer's black, &c.

FRANKFORT is situated on the right bank of the River
Main, one-sixth part of the province of Brandenburg in Prussia, is bounded
on the north by Pomerania, and on the south by the
kingdom of Saxony. It contains an area of about 7500 square miles, is divided into 18 minor circles, has 67 towns, 7 mar-
kets, and about 170 villages; and the number of inhabitants is about 706,000, independently
of the military. The soil, particularly in the south, is a
deep and richly-productive sand. There are numerous
woods and forests, which occupy a fourth part of the sur-
face. The rivers which water the country are the Werra,
Neisse, Warthe, Obra, Pleisake, &c. It produces much
grain, flax and hemp, hops, tobacco, timber, &c.; and
there are rich meadows in the vicinity of the rivers, on
which, in former times, the Havanna timber, 275,355 horned
cattle, and 916,998 sheep and goats.

FRANKFORT, the capital of the government circle, and
also as a minor circle of the same name, is a town pleasantly
situated on the left bank of the Oder, and surrounded on
the land-side by fields, meadows, and woods; on the
N. lat., and 14° 46' E. long.; at an elevation of 116 feet
above the level of the sea, and at a distance of about 48
miles south-east of Berlin. It is regularly built, encircled
by walls with towers, five gates, and a ditch, and has three
suburbs, one of which, the Damm, lies on the left bank
of the Oder, which is traversed by a bridge of wood. The
number of houses is about 2450, and of the population
about 29,060, besides the military: in 1817 it was 13,902.
It has a market-place and six Protestant churches, a Roman
Catholic chapel, and a synagogue. The Upper Church has
some fine windows of painted glass. The university, founded
here in 1606, was transferred to Breslau in 1810. Frank-
fort possesses a gymnasium with a library, an upper
of grammar-school, and nine schools for the inferior
classes, an orphan institution, two hospitals, a house of correction, and a free school for 300 soldiers' chil-
ren, founded in memory of Leopold, duke of Brunswick,
who lost his life here in April, 1755, while endeavouring to
save a man from drowning. A monument was also erected
to him at the eastern end of the bridge across the Oder.
In front. of the Gaben gate is a three-sided pyramid, resting
on a block of stone, which was raised by the freemasons'
Gilde in 1776, to the memory of Kiesow, the poet, who fell in
the battle of Kunersdorf. The manufacture of tobacco, sugar, gloves
stockings, linen, leather, &c.: its trade is extensive,
and the three periodical fairs, instituted in 1233, are well fre-
quented, particularly by Polish dealers. The inhabitants
are engaged also in the navigation of the Oder, on which
above 2000 vessels and craft annually pass, Frankfort.

FRANKFORT, in America. (Kentucky.)
FRANKINCENSE, Common, is the produce of the Aby-
usses exsiccus (Dec.), the Pinus abies (Linn.), common
spruce fir, from which it either exudes spontaneously or
more abundantly when cut. When first it flows, it is
liquid, but on exposure to the air concretes, and is
decorated during autumn and winter. It occurs in
two states, in tears (Thus, or Olibanum sylvestre), and
in large irregular lump, the compress of which is yellowish.
When recent, the colour shows to be white, or only inclin-
ing to yellow sublimate; its odour is agreeable, and the
extract, sublimating, is white, and only inclosing a
sublimate, soft, tenacious, and glutinous: by the action
of time it becomes hard, and even friable, the colour having
depended into an orange hue. By the heat of the hand it
softens, and by a higher temperature it is soluble in
water; a turpentine, similar in odour and taste. It is
insoluble in water, but completely soluble in alcohol with the aid of heat.
The consists of two kinds of resin mixed with oil of tur-
peinte. By melting it in water, and straining it through
derunged cloth, and warming it over a flame of coal, when
it is termed pior, or Burgundy pitch.

It is scarcely now used internally, but is irritant
and diuretic. Externally it is rubefacient, and consequ-
ently enters into the composition of many plasters.

FRANKLIN, Benjamin, born at Boston, in New
England, January 6, 1706, was the son of a tallow-
chandler in humble circumstances, but intelligent and strong-
spirited. As a boy he had a great desire to go to sea; but he also dis-

3 M 2

Fortescue, 'De Legibus Angliae,' c. 29, describes the
franklin as 'Pater familias—maginis deditus possessiosius.'
(Claudius's Glossary in scs; Tyrwhitt's Notes on the Can-
terbury Tales, p. 1798, p. 1799.)

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spirited. As a boy he had a great desire to go to sea; but he also dis-

3 M 2
played a fondness for reading, which induced his father to apprentice him to another son, who was a printer at Boston. He learned the business, and soon became an improving hand, and in his manner of induding, weaned him from the love of the sea; and he practised great abstinence and self-denial, the better to improve his opportunities of study. At the same time he made himself an able workman. The two brothers had become, as the trade was called, insurance brokers, and the younger, as he himself says, did something to provoke by his impertinence. These quarrels led to a step, which, with his usual candour, Franklin has plainly related, and declared to have been dishonourable. In the opinion of reason, he could never then be reduced, under a private agreement that he should continue to serve for the full period of apprenticeship. A new quarrel arising, he took advantage of the letter of the law, and declared his resolution to quit his brother's service. The printer advised him to wait a matter that he was unable to find employment in Boston. He therefore went away secretly, without the consent of his parents, in 1723, and after a vain trial to find work at New York, engaged himself to an obscure printer in Philadelphia, named Keimer. There he revealed religious credulity for a year and a half; being induced by deceptive promises of patronage to think of setting up for himself as a master printer. He sailed for England, in the beginning of 1725, to purchase the equipment of his trade. On his return, he discovered that a cruel fraud had been practiced, inasmuch as his pretended friend had neither the power nor the wish to help him; and being destitute of money or credit, he again found employment as a journeyman printer in London. His own ambitions made his life, and an adversary example of frugality and industry, will be read with pleasure. Having gained the good will of Mr. Denham, a merchant of Philadelphia, he returned thither as that gentleman's clerk, in July, 1726. He now considered his prospects to be promising; but in 1727 Mr. Denham died, and Franklin being unable to do better, returned to his old trade and his old master, Keimer. In the course of two years he gained credit and friends to enable him to set up in business on his own account; and September 1, 1730, he married a young woman whom, before his voyage to England, he had been attached to.

Franklin had early renounced Christianity, nor does it appear, though he has unequivocally recorded his belief in God and in a future existence, that he ever again gave credence to religious power. About this time however a great change took place in his views. In London he had written a pamphlet to prove (we quote his words) 'from the attributes of God, his goodness, wisdom, and power, that there could be no such thing as evil in the world; that vice and corruption are necessary evils, not to be abated by more industry or abstinence than vain distinctions.' Reflection on the conduct of other free-thinkers, by whom he had suffered, and on some parts of his own life, which he has candidly related and condoned, brought him to a different way of thinking; and, his calomny, he says, came from people who produced a certain insincerity in transactions between man and man were of the utmost importance to the happiness of life; and I resolved from that moment, and wrote the resolution in my journal, to practise them as long as I lived.' This resolution he fully kept. His honesty and straightforwardness have passed unquestioned, even by the numerous enemies whom his religious and political opinions raised against him.

Unceasing industry, business-like habits, a large fund of discourse, and great readiness, and a readiness in the use of his pen, either for amusement or instruction, gradually secured to Franklin a large circle of friends, and raised him from poverty to affluence. He engaged in literature; edited a newspaper, wrote a pamphlet to advocate a common council of the colonies; and a new Almanack, of which the distinguishing feature was a series of maxims of prudence and industry, in the form of proverbs. It was continued for 25 years, and is said to have reached a circulation of 10,000 annually. These maxims, collected in one piece, called 'The Way to Wealth,' obtained uncommon popularity, and have been translated into various languages.

Franklin's turn of mind was eminently practical. He said with truth, 'I have always set a greater value on the execution of a scheme than on any other kind of speculation.' Not that he joined in the vulgar prejudice of setting theory and practice in opposition, for he was bold, speculative, and differing in physical as well as in metaphysical science. But science in his hands always bore fruit directly applicable to the uses of common life; and while he never neglected his own affairs, industry and economy of time enabled him to originate, or take an active part in supporting, a variety of projects for the public good. A good part of the chief of them will show what sort of objects his benevolent exertions were directed.

1732. Set on foot and procured subscriptions for the first public library, incorporated in 1742 by the name of 'The Library Company of Philadelphia.'

1738. Established the first association for extinguishing fires; and, at a later period, the first Fire Insurance Company.

1749. Raised subscriptions for the foundation of a public academy, schools of Pennsylvania being low and bad. This was the origin of the present University of Pennsylvania.

1752. Raised subscriptions and procured an auxiliary grant from the legislature to establish the first hospital in Philadelphia; a scheme suggested in the first instance by a physician of the city, who had not influence enough to work it out.

1754. Proposed a plan for a union of the American provinces against invasion, in which a germ of the future Union of the American states may be seen; it was not then both of the best and of the most good notions, though not carried into effect at the time.

It was approved by a species of congress from six of the provinces, but rejected both by the colonial assemblies and the British government.

He was chosen a member of several societies: among them, of the Philadelphia Society for the Improvement of Prisons, and the Pennsylvania Society for the Abolition of Slavery, both founded in 1787.

As a philo-sopher, his name is indissolubly linked with the history of electricity, which treats one of the most active, patient, and successful experimenters; and his industry was rewarded by that brilliant discovery, the corner-stone of his scientific fame, of the identity of the electric fluid and lightning. His attention was first directed to electricity in 1745, he was the first to give the term electricity to the phenomena (Library of Useful Knowledge, 'Electricity,' sect. 49.) In 1749 he had conjectured the identity of lightning and electricity, and suggested the idea of protecting houses by pointed conductors, but did not prove it till 1752.

He was waiting for the erection of some large buildings, when an insulated iron rod might be placed, in hope that on the passage of a thunder-cloud overhead, sparks might be taken from the rod, as from a charged conductor, when it struck. He perceived that by flying a kite, pointed with red, during a thunder-storm, the number of his views were correct, he drew down the string. He tied a key to the end of the hempen string, insulated the whole apparatus by adding a piece of silk to the end next the key. Sparks were then taken from the key, a Leyden jar was charged, and the phenomena exhibited were identically the same as if an electrical machine had been used instead of the kite. He varied the experiment by flying an insulated iron rod at the top of his house; and immediately proceeded to turn his thoughts to account by publishing a plan for defending houses from lightning by the use of pointed conductors.

His character, in reference to this branch of his pursuits, has been described in the following terms by Sir H. Davy: A singular felicity of chance, or to be more direct, a very small means, and by very small means he established very great truths. The style and manner of his publication (on Electricity)
almost as worthy of admiration as the doctrine it contains. He has endeavoured to remove all mystery and obscurity from the subject. He has written equally for the uninitiated and for the philosopher; and he has rendered his details amusing as well as perspicuous, elegant as well as instructive. Science appears in his language in a dress wonderfully decorous, the best adapted to display her native loveliness. He has in no instance exhibited that false dignity by which philosophic language has often disgraced even the most thoughtful and accommodative discussions, of a scientific character. Science has sought in vain to make her an useful instrument of education, in the common habitations of man, than to preserve her merely as an object of admiration in temples and palaces." (Life, by Dr. Davy.)

Higher scientific labours we can only allude. They treat of many branches of meteorology, maritime phenomena, shipbuilding and various subjects connected with navigation, as the Gulf Stream, and the effect of oil in stilling waves; of the proper construction of stoves and chimney-places; of the temperature of the air, and the effects of various agents on the human body; and the like; all of which are interesting in themselves, and with respect to the useful and pleasant parts of his life: one of his hobbies: of the art of swimming, which, being himself an excellent swimmer, he was anxious to recommend as a universal branch of education: subjects consonant to his practical character, and most of them directly applicable in the practice of his profession. His health also suffered from these matters nearly fill the second volume of his collected works: his electrical treatises and letters occupy the first volume, and his moral, historical, and political writings the third.

To return to Franklin's private history; the increasing estimation in which he was held, was manifested in his successive appointments to different offices. In 1736 he was made clerk to the General Assembly of Pennsylvania; in 1737, postmaster of Philadelphia; in 1747 he was elected an associate of the Philosophical Society of Philadelphia; in 1753 he was appointed deputy postmaster-general for the British colonies.

When he first became a member of Assembly, that body sat in the Proprietors' house. Penney's reign was tyrannical. [Penney was a dispute, which wasroduce to the immunity from taxation claimed by the latter. In Franklin took an active part. He was soon looked up to as the head of the opposition, and to him have been assigned many of the finest and least expected services in the commun...]

franklin was compelled in 1788 to quit public life, by the infirmities of age. But he still retained his philanthropy undiminished, and his intellect unclouded; and his name appears, as president of the Abolition Society, to a memorial to Congress, dated February 12, 1789, praying them to exert the full extent of power vested in them by the constitution in discouraging the traffic in men. This was his last public act. Still he preserved his vivacity and energy, during those intervals of ease which a painful disease, the stone, caused him great suffering before the termination of his life. He was carried off, after a short illness, by the disease of the lungs, April 17, 1790, aged 84.

Dr. Franklin's published works were collected in three volumes, with his fragment of his own life, continued by his grandson, William Temple Franklin, by whom, after long delay, an excellent 'Life of Franklin,' including many of his miscellaneous writings, and much of his correspondences, has been published as the 'Biographical Memoir of Dr. Franklin.' [For some remarkable facts of a particular paper left behind him by Franklin, see Tucker's 'Life of Jefferson,' vol. i. p. 338.]

Franklinite, a mineral which occurs in attached crystals, greyish or brownish, transparent, and with a greasy lustre. It is often a cubic; its colour is deep iron-black. Opaque. Lustre metallic. Specific gravity 4.87, 4.90. Hardness
6°, 6°. Streak deep red-brown. Cleavage parallel to the planes of the regular octahedron, but very indistinct. Fracture conchoidal. Magnetic, but without polarity. The massive varieties are amorphous. Structure granular, compact. This mineral is found at Franklin, New Jersey, North America.

According to Berthier it consists of,—

- Peroxide of iron : 66
- Carbonate of zinc : 17
- Red oxide of manganese : 99

FRANKS. [France.]

FRASCATTI, a town of the Campagna, eight miles east-southeast of Rome, set on the north-west slope of the Tusculum mountain. On the summit of the mountain, which is 2000 feet above the sea, and about two miles above Frascati, are the ruins of ancient Tusculum, a town of Latium, built long before Rome, ancient and beautiful. To the left of the road from Tusculum to Latium it was governed as a municipium. Several distinguished Roman families, such as the Mamile and the Porcia, came from Tusculum. It was a strong place, both from its position and the solidity of its walls, which enabled it to resist the attack of Hannibal. Tusculum continued to exist after the fall of the empire, being under the rule of its counts till the end of the twelfth century, and was the residence of several popes, among others Alexander III. In 1165 the Tusculum was devastate by the Saracens; but in 1198 the Romans took Tusculum, and destroyed it. Remains of the walls of houses, and of the citadel, are still extant, as well as a small theatre, and a curious crypt, with a kind of arched roof of primitive construction. (Gell's Topography of Rome.)

The Frascati vineyard, mentioned in the Villanovan period, and is separated from the central mass of the Alban mount by the Alban valley, through which runs the Via Latina.

After the destruction of Tusculum, the inhabitants built themselves huts on the lower slope of the hill towards Rome, and covered them with 'frasche,' boughs of trees, from which the modern town has taken its name. It has some good buildings, 4000 inhabitants, and is a bishop's see. The air is wholesome, the place being above the region of the sun, and being calcareous and well watered by artesian wells. This is a city of the Tuscanit, and is separated from the central mass of the Alban mount by the Alban valley, through which runs the Via Latina.

FRA\XINUS, the genus under which the common ash is comprehended, is a collection of arborescent plants inhabiting various parts of the more temperate regions of the northern hemisphere, and is a natural one. It is unknown in a wild state in the southern. Although, in strictly limited, the species are destitute of corolla, yet the genus does, in fact, belong to the natural order of the olive and ilise, a transition to which is afforded by what are commonly called 'ash-woods.' Both the genus Fraxinus and Fraxulus; an Italian nickname which was applied in the middle ages to all persons who, without belonging to any religious order, assumed a asceticimous appearance.

FRATICELLI, or Little Brethren, also called Fratres de pauperis viti, a religious sect which arose in Italy towards the thirteenth century. The sect was founded by former monks who separated themselves from the grand community of St. Francis with the intention of obeying the laws of their founder in a more rigorous manner than they were observed by the other Franciscans. They accordingly renounced the things of this world, which they had previously possessed, and, as a result, were numbered among the indigent and beggarly classes. They were known as the Little Brethren, and were therefore called Tertiarii; so likewise the order of the Fratricelli, who were anxious to be considered as the only true followers of St. Francis, had a great number of Tertiarii attached to their cause. These Tertiarii, or half monks, were called in Italy Fratelli or Bonacci, in France Beguins, in Germany Beguarden or Beghards. This last appellation was generally applied to them. The Tertiarii differed from the Franciscans, not only in their opinions, but also in their manner of living. The Franciscans were subject to the orders of St. Francis, whilst the Beggars or Beghards, as well as the Franciscan Tertiarii, excepting their dirty habits and certain maxims and observations which they followed in compliance with the rules of their patron saint, lived after the manner of hermits, and were subject to the orders of the Tertiarii. The Beghards were divided into two classes, the perfect and the imperfect. The first lived on alms, abstained from marriage, and had no fixed dwellings; the second had houses, wives, and possessions; and were engaged in various occupations of life like other people. Pope Celestin V. was favourably disposed to the Fratricelli, and permitted them to constitute themselves into a separate order. They were submissive to that pope, but they violently opposed his successor, Boniface VIII., and subsequent popes who persecuted their sect. The Fratricelli were accused of great enormities, and persecuted by the court of Rome, but they found protection from princes, nobles, and towns, who, respecting them on account of the austerity of their devotion, and the purity of their lives, protected them and defended them. The first Christian martyrs to their persecutors, but frequently opposed force to force, and even put to death some inquisitors in Italy. This sect continued during the fourteenth century, and spread as far as Bohemia, Silesia, and Sweden. The last known generation of them flourished in the fifteenth century, and many of them fled from France to England and Ireland. All the persecutions directed against the sect did not however extinguish it, and some remnants of it existed till the reformation of Luther, whose doctrines they embraced. Their name is supposed to have been derived from Fratricelii or Fratriculus, an Italian nickname which was applied in the middle ages to all persons who, without belonging to any religious order, assumed a sacrificial appearance.

FRASCHOTTEN. [Posen.]

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paleness of the crops that stand near it. Many varieties, or as it is called, ovate, coarsely serrated, and puckered. Nothing can well be more unlike the common ash than this, which nevertheless appears upon good authority to be merely a seedling variety. Out of leaf is it hardly distinguishable by its broadness; but its shoots are soft, so that if grafted upon a lofty stem the head will soon reach the ground and form a natural arbour. This is said to have originated accidentally in a field at Gamlingsay, in Cambridgeshire.

3. The **curled leafed**; with very short stunted branches, and deep green crumpled leaves. If this is, as it is said to be, a mere monstrous variety of *Fr. excisior*, it is one of the most remarkable with which we are acquainted. It has a particularly dark aspect; long narrow, nearly thick, and its shoots so short, that it forms a blackish round-headed tree of the smallest dimensions. Its origin is unknown; it, as well as the Ormus, is sometimes called *Fr. Theophrasti*.

4. The **rubred**. In this the stems are covered over with a great number of short, coarsely serrated, and slightly hairy, otherwise the plant has the appearance of the common ash.

Besides this, the only European ash that deserves notice is the *Fr. parvifolia*, or small-leaved ash. Its foliage is much finer and narrower than in *Fr. excisior*; the leaves and shoot are smaller, and its growth slow, and instead of the toughness so characteristic of the latter species, the branches are so brittle as to be liable to constant injury from high winds. It is however a very beautiful tree, and for ornamental purposes where size is no object, it should be planted, especially as a single tree. We have now within sight of the window at which we are writing a fine old tree about thirty feet high, which, notwithstanding the damage it occasionally receives from heavy gales, is quite a beautiful object. It is possible that *Fr. rostrata* may be a distinct species, but we are more inclined to think that it is itself a variety of *Fr. excisior*. It is found only in the southern part of Europe.

5. The *Leinith Ash*. *Fr. lenticefolia*, a most graceful species, long narrow, nearly thick, and five or six pairs of small, distinct, sharply serrated, shining leaves. It inhabits the country about Aleppo, and is hardy in this country, where it forms a tree of the most elegant appearance, intermediate, as it were, in appearance between a *Fr. excisior* and *Fr. rubred*. Its young shoots are very pretty. It is often called *Chinenius* in the nurseries. The wood-cut No. 1054 in Mr. Loudon’s ‘Arboretum Britannicum’ does not in the least resemble this species.

With regard to the species of American ash, we have, in the *Fr. quadranualata*, the *Fr. excisior* of Loudon, to this climate, being in general too ill prepared by our short cold summers to bear our winters, and moreover injured by spring frosts: circumstances much to be regretted, because some of the species prove very hardy sunny trees. In the second pace, the number of species has no doubt been greatly exaggerated by writers upon garden botany; we cannot however at all agree with a modern writer upon these subjects, who believes all the American ashes to be one and the same species. The following are, we think, undoubtedly distinct species.

*Fr. pubescens*, the black American ash, with three or four pairs of leaves, which are nearly entire, flat, downy beneath, as well as the branches. A swamp tree in the middle States of the American Union.

*Fr. samsonifolia*, the water-ash, with three or four pairs of leaves, which are rough, constantly serrated, hairy at the axils of the leaves underneath; when bruised smelling a little like elder; buds deep blue. A common tree in forests in the northern parts of North America.

*Fr. quadrangularia*, with the shoots distinctly and sharply quadrangular. A tree from Ohio, among the most unsuitable of the American ashes for this climate.

*Fr. epiptera*, with the keys very broad and wedge-shaped at the upper end, and tapering at the base. A small tree, found all through the American Union.

All the foregoing can be procured in the English nurseries, and they perhaps form the only distinct species of the genus, which however most especially demands the following notice. In the American Union, many supposed species were distinguished by the late Mr. Bose, whose names are current in collections; but they can scarcely be determined with precision, and are perhaps not worth the attempt.

2. **Ormus, or Flowering Ashes.**

The *Ormus Europaeus*, or common Mannah Ash, is a small round-headed tree, with leaves resembling those of the common ash, only the leaves are elliptical, abruptly acuminate, and glaucous underneath; at the base of the midrib underneath. In the summer, when the leaves are full grown, the trees become ornamented with a profusion of white delicate blossoms, which give them a strikingly beautiful appearance. The species inhabits the southern parts of Europe, especially Apulia, and in those countries flowers in April.

*Ormus rotundifolia* is universally distinguished as a second species of this genus; differing in its leaves being much longer, the leaves roundish, ovate, acute, not cuspis-tate, entire, entire, and rather ciliate at the base, and not at all hairy underneath. In flowers it is much the same. It is a native of Calabria and elsewhere in the south of Europe.

These two plants are interesting as producing the sweet lactic acid, which is used in the apothecaries’ shops under the name of mannia. It is a secretion from the leaves and branches; and, according to Fée, is caused either by artificial wounds, or by the puncture of an insect. Both species yield the substance, but, according to Tenore, that from *Ormus rotundifolia* is of the finest quality, and Fée thinks that it is also yielded by both *Fraxinus excisior* and *parvifolia*, and this corresponds with the assertion of Dr. Fothergill, who saw the substance collected.

In Calabria and Sicily, says this physician, ‘in the hottest part of the summer months, the manna comes out of the leaves, and from the bark of the trunk and larger branches of the Fraxinus, or Calabrian Ash. The Ormus likewise affords it, but from the trunks and larger branches only, and thus chiefly from the inferior parts; whereas it flows from the Fraxinus through every little cranny, and bursts through the large pores spontaneously. The different qualities of the manna are from different parts of the tree.’

Besides these, some other species of Ormus exist in the north of India and China, but they are too little known to require notice here.

See an elaborate account of these genera in Loudon’s ‘Arboretum et Fruticetum Britannicum,’ p. 1213.

**FR**
his letter to pieces, and his envoy saved his life by timely flight. This and other important considerations called him to Italy in 1155, where he held an assembly in the plain of Rome, to receive the homage of most of the great Italian lords and principal cities. In this, his first expedition into Italy, he, in some measure, humbled the Milanese, but he was compelled to yield to the demands of the city of Milan, which received on the way the submission of many cities, and in particular inflicted severe chastisement on Asti. Having taken Tortona, after a two months' siege, he allowed the inhabitants to retire, but gave the place up to plunder, after which it was entirely burnt and destroyed. After being crowned king of Italy at Pavia, he advanced rapidly towards Rome, where Adrian IV. had just succeeded pope Anastasius. The city having been excoriated by Arnold of Breccia to dispute the authority of the pope, Adrian, who was a man of great influence, reputation, and good works, discomfited the pope's enemies, who, in consequence expelled by the Roman senate, and Arnold being subsequently taken prisoner, was by the emperor delivered up to the pope, who caused him to be burnt alive. Having had an interview with the pope, at which he condescended, he parleyed with the other cities, and established his authority at Rome, and received the imperial crown from his hands, Frederick set out on his return to Germany. His first care was to restore the peace of the empire, which was disturbed by a dispute between the bishop of Mezzat and the count Palatine of the Rhine: he likewise endeavoured to the satisfaction of all parties, a most important question respecting the duchy of Bavaria. He had resolved to divorce his consort Adelaide, because she had no children, and if not being a legal divorce, the plea of consanguinity was set up, and a sentence of divorce was pronounced by Cardinal Joseph Osini and several prelates. Frederick then proposed to marry a Greek princess, but this negotiation failing, he married in 1156 Beatrix, heiress of Burgundy, by alliance being annexed that rich kingdom to his dominions. Frederick soon afterwards compelled Boleslaus duke of Poland to acknowledge himself a vassal of the empire, and in the first six years of his reign restored the empire to the same power and greatness as it had enjoyed under Henry III. The affairs of Germany being settled, Frederick found it necessary again to go to Italy, where the Milanese cruelly oppressed the towns which would not submit to their orders. In 1156, Frederick with an army of 100,000 infantry and 13,000 cavalry took siege to Milan, and the inhabitants, notwithstanding some previous successes, were reduced, after an obstinate resistance, to offer submission, which was accepted. But they again rebelled, and Frederick resolved to make an example of this haughty city, which had so often resisted and embarrassed his government. Frederick's decision was that Milan should be a desert; that all the inhabitants should leave the city in a week, and settle in four villages, ten miles distant from each other. It has been often asserted that the city was razed, and the inhabitants refused the exception of one, when this seems to be an exaggeration. The city was not plundered; the order or permission for the work of destruction extended only to the fortifications, and even of these a considerable part was left standing. But the power of Milan was broken. Its fall entirely surprised Frederick. Brevia and Piacenza were obliged to demolish their walls; and the other cities which had joined in the insurrection were deprived of their rights and privileges.

Vittorio, thus enraged Adrian, with whom he was latterly on very bad terms, died, on which a schism arose; some of the cardinals choosing Victor IV., who was inclined to the imperial interests, and the others Alexander III. Frederick, who considered himself as protector of the church, did not consider this a council; and not recognizing this council, which consisted of fifty or sixty German and Italian bishops, it proclaimed Victor IV. as the true pope, who was acknowledged by the emperor. Alexander excommunicated the emperor and all his partisans, and the city of Rome was reconquered by the king of France and England, and the estates of Lombardy, Frederick's superiority obliged him to seek refuge in France. When the emperor returned to Germany he found that dissensions had broken out between several of the princes, which Frederick endeavoured to terminate by sending in person to meet Louis the Young, king of France, at Lannes, near Dijon, where they had agreed that a council should be held to terminate the schism in the church, by deciding between the two popes, who were to appear, accompanied by the two sovereigns, their protectors. This plan however failed. The death of pope Victor IV. in 1164 seemed to offer a favourable opportunity for reconciliation between Frederick and Alexander III., which the former was inclined to embrace, but before his orders reached Rome, and while the king was abroad, the road to elect a new pope was opened; he therefore proceeded to the election, and the choice fell on Guido bishop of Crenza, who took the name of Paschal III., and was acknowledged by the emperor. Frederick crossing the Alps in 1165 marched direct to Rome, where Paschal was not only installed, and then crossed the emperor and the emperor and his consort Beatrice. The power of the emperor now seemed to be greater than ever, and he hoped entirely to reduce the cities of Lombardy, which had formed a powerful league, being raised by the cruelties of the commander and his brothers. Frederick's plans were however defeated by a pestilential disorder, which carried off the greater part of his army, and it was with no little difficulty that he returned to his German dominions, as a fugitive from his victorious enemies, and to the protection of the pope. On his return from his third Italian campaign, Frederick's troops were employed in the reorganisation of the great master of Germany, complicated affairs of that country, where the ambition of the several princes led to continual disputes and feuds, the most important of which was the conflict between Henry of Bavaria and the emperors. Frederick, and his brothers, who formed a confederacy against him. He besieged them, and soon afterwards married Matilda, daughter of Henry II., king of England. In 1169 Frederick prevailed on the princes of the empire to choose his son Henry as his successor, and Henry was accordingly crowned at Aix-la-Chapelle. Having appeased the disorders in Saxony, and undertaken a successful expedition against Boleslaus duke of Poland, he prepared for the fourth time to cross the Alps. The negotiations in Italy had not led to any favourable results. Soon after Frederick's return to Germany, pope Paschal died, and the cardinals in the interests of the emperor chose for his successor Calixtus III., a man very inferior in talent to Alexander. But the latter had so considerably his power, that Frederick thought he would be able to prevent his coronation, or to secure it by attempting a reconciliation. The cities of Lombardy, encouraged by Alexander, extended their confederacy, and built a new city, which they called Alexandria in honour of him. Only Genoa and Pisa remained true to the emperor, who, to prevent their defection, on the 29th day of August, 1168, consecrated, in Rome, archbishop of Mezzat, with a small army to Italy. The archbishop was equally distinguished as a prelate, a statesman, and a general; but he was not able to effect much towards the establishment of peace. The emperor himself had to yield, and the principality of the Lombards were surrendered. By this treaty the united Lombard army came to its relief. Negotiations were however opened, and a truce concluded. The emperor was so sure of the result, that he sent part of the army back to Germany, which he soon had reason to regret. Henry of Bavaria was not disposed to acknowledge the treaty, notwithstanding all the entreaties of the emperor, refused to proceed. A battle soon took place near Legnano, in which the emperor was defeated by the Lombards with great loss, and he himself being overpowered and suppose he was killed, his troops mutinied, and Henry, day afterwards however, to the unspeakable joy of the army, he appeared again at Pavia, where the emperor had already put on mourning. The death of this induced Frederick to think of peace. He treated first with Alexander, whom he acknowledged as pope, and who relented from the ban of excommunication. He then, by the mediation of Alexander, concluded a treaty, or rather a truce, for six years, with the cities of Lombardy, on very advantageous terms, for he in fact lost nothing essential, except that he gave up the cause of Calixtus, who obtained a rich abbey. On his return from Italy, where he passed the winter, he went to Burgundy, called a diet at Arles, and had himself and his consort Paschal crowned by the king of France and England; whence he returned to Germany, much sooner and no less powerful than he expected. The peace of the empire being established, the princes and bishops who had sided with Alexander became reconciled to the emperor; but new troubles arose in an attempt to oppose the German princes, who, in great part, had lost all power, but was in the end forced to sue for peace. At Erfurt he appeared before the emperor and the German princes, to whom Frederick had made a promise to decide nothing
respecting Henry without their approbation. The sentence was that he should be relieved from the ban of the empire, retain his family dominions of Brunswick and Lüneburg, but, for the preservation of peace, should go into banishment for seven years, which, at the intercession of the pope and the threatenings of war, and after many violent entreaties, he accordingly went with his wife and children to his father-in-law the king of England.

The truce with Lombardy now approach'd its last year. After several occurrences in Italy, not unfavourable to Frederick, Alexander III. died in 1191, and was succeeded by Lucius III., who was much inferior to him in ability and energy. The hostile dispositions of both parties had greatly abated during the war, and the emperor having summoned a diet of the empire at Constance, a definitive peace was concluded and confirmed, but the existence of the perpetual enmity of the German princes for their emperor, was still the mark of which they had been handed down from generation to generation, and songs composed on that occasion are still sung on the banks of the Rhine. A year after this Frederick again went to Italy, where he was received with great magnificence and respect by the empress the lady, and even concluded an alliance with Milan. But new disputes arose with the papal see, through Frederick's refusal to grant to Lucius, and afterwards to his successor Urban III., the sovereignty of the territory called St. Peter's Patrimony. He marched against it, and, by the intervention of his son Henry with the daughter and heiress of William king of Sicily, that the pope did not venture to proceed to extremities. In Germany Frederick had declared Lubeck and Bremen imperial cities, and thereby had laid the foundations of those extensive powers that the German emperor, by which the power of the latter was increased, and the class of citizens elevated. The separation of Bavaria from Saxony, which Henry the Lion had possessed together with his power, and the power of the emperor, but eminently the animosity between the party of the Guipels and Ghibelines.

Things were in this state when all Christendom was alarmed by the news of the taking of Jerusalem by the Isaac, 1191, with exaction of the exhortation of the pope, Frederick took the cross in 1188, with his son Frederick, and a number of the principal German nobles. Upon mature deliberation it was resolved that the army should go by land through Germany, Hungary, and Persia, with exclusive expectation of a, and the army, besides many thousands volunteers, commenced its march in the spring of 1189. Though it met with many difficulties, chiefly from the perfidy of the Greek emperor, who had secretly made a convention with Saladin and the sultan of Iconium to obstruct the passage of the Germans, Frederick penetrated into Asia, gained two victories over the Turks near Iconium, which he took, and was proceeding in his victorious career to Syria, when his eventful life was brought to a close in an attempt to swim on horseback across the Euphrates, to observe the enemy and the current. The statement that he was drowned in the Cydnus while bathing is certainly incorrect. Frederick was a brave and liberal prince, equally firm in prosperity and adversity. These great qualities veiled the pride and ambition which were unquestionably the motives by which he was actuated. He possessed an extraordinary memory, and a greater extent of knowledge of different kinds than was common in that age. He esteemed learned men, especially historians, and wrote in Latin, some memoirs, as, for instance, to Otto of Freisingen, whom he appointed his historian. He was of noble and majestic appearance, and, notwithstanding his disputes with the popes, a friend to religion. After his death his son Frederick, duke of Swabia, took the chief command, but died of a pestilential disorder at the siege of Acre in 1191; and of the mighty army that Frederick led from Germany o. y. a small remnant remained.

FREDERICK II., Emperor of Germany. On the death P. C., No. 656.

of Frederick I. he was succeeded by his son Henry, who reigned only eight years, leaving his son Frederick, a child of four years of age, who had been created king of the Romans when in his cradle. He was very carefully educated by his mother, Constance of Sicily, and acquired a degree of knowledge and education very rare at that time. The hereditary dominions consisted of the kingdoms of Naples and Sicily, the duchy of Swabia, and other territories in Germany. In 1210, the emperor Otto being excommunicated by the pope, Frederick, then fourteen years of age, was declared emperor by a considerable number of the German princes, but it was not till some years afterwards, on the retractation of death of Otto, that he became peaceable possessor of the imperial throne, and was crowned at Aix-la-Chapelle in 1215. No prince in the middle ages, Charlemagne perhaps excepted, has been distinguished by such a pertinacity of remark to that age is connected with his name and long reigned. It was the time in which Innocent III., Gregory IX., and Innocent IV. carried Gregory VII.'s policy to an extent that had been considered as impossible; when the origin of the orders of Saint Benedict and the Mendicant, the Inquisition became formidable pillars and supporters of the spiritual edifice; when, the nations of Europe were for the first time impressed by the Crusades with one general idea, reenacted by the Crusades of the crusades, and built the magnificent edifices, and the grandeur of the Church, and the citizen of the Church devout, and a number of ears and singing, and many, adored, of the dead and the living, and the spirit of inquisition and research; and when the poetry of the Troubadours found a home in Germany and Italy, and was honoured and cultivated by emperors and kings.

Frederick, though not tall, was well made; he had a fine open forehead, and a mild and pleasing expression of the eye and mouth. The heir of all the best qualities of all the members of his distinguished race, enterprising, brave, liberal, and of a very high talent for languages, he understood all the languages of his subjects, Greek, Latin, Italian, German, French, and Arabic; he was amiable, passionate, mild, and generous, as the occasion prompted, cheerful, magnanimous, and fond of pleasure. And as his life was in many ways the first of his kind, his times of difficulty, but such a body of strength, and the spirit of inquiry and research; and when the poetry of the Troubadours found a home in Germany and Italy, and was honoured and cultivated by emperors and kings.

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von Wittelsbach, but Otho IV, displeasing the pope, Innocent himself called Frederick to the throne of Germany. In spite of all the efforts of the party of the Guelphs, Frederick arrived in Germany in 1215, and was received in the first instance by the arms of the House of Hohenstaufen. The possession of the crowns of Germany and Sicily inspired Frederick with hopes of making himself master of all Italy, subduing Lombardy, and reducing the power of the barons. In order to give instant effect to his project, he caused his eldest son Henry to be chosen king of the Romans, and appeased the anger of the new pope Honorius III. by alleging that this measure was absolutely necessary before he could proceed to the crusade which he had undertaken, and the establishment of his power. Disregarding the refusal of the Milanese to place the iron crown on his head, he proceeded to Rome, was crowned emperor in 1226, and as such hastened to his hereditary dominions which he had left almost as a fugitive. It was easier to make an end of the empire than to carry it to its conclusion. Being the first of its kind, it was necessary that it had to be made for the crusade; but first of all it was necessary to put an end to the internal troubles of the country. By the advice of Hermann von Salerno, grand master of the Teutonic order, Frederick undertook the recovery of his wife, Salerno, titular king of Jerusalem, and assumed his father-in-law's title. Meantime the pope granted him a delay for undertaking the crusade; his chancellor, Peter de Vinci, compiled a new code of laws, the object of which was to settle the authority of church and state, to reconcile the nobility, clergy, citizens, and peasants, and to be adapted to many different nations, Romans, Greeks, Germans, Arabs, Normans, Jews, and French, respecting as much as possible all existing institutions. For the education of his subjects, he founded a university in Naples in 1224; and the medical school in Salerno was very flourishing. The belles lettres were cultivated at his court, and Frederick himself, some of whose juvenile poems in the Sicilian dialect, at that time the most cultivated, have been preserved to our times, may be considered as the first authentic examples of Italian poetry. Many eminent artists, Nicolao, Masaccio, and Tommasi da Steffani, were patronized by Frederick; and the collections of works of art at Capua and Naples were founded.

The year 1227 being fixed for the crusade, Frederick proposed before he set out to call a general diet of the empire at Cremona, to satisfy himself of the sentiments of the Lombards and be crowned as their king. But the Milanese refused to renew their ancient league with fifteen other cities, by which they were bound to the commercial concessions granted by occupying the passes of the Alps. For this they were put under the ban of the empire; but Frederick hastening to the crusade, left the management of the affairs to the pope, who only proposed a general amnesty, and enjoined the Lombards to employ the two years, to join the crusade. At this juncture Honorius died, and Cardinal Hugoillinus, nephew of Innocent III., was chosen pope by the name of Gregory IX. He was then eighty years of age, and, the emperor certifies, of unblemished character, and perfectly learned, and eloquent; and resembling, in the energy of his will, Gregory VII.: he urged the emperor the cross for the second time from his hands, to fulfill his promise and undertake to complete the luxurious way of life of the emperor and his court. The great estates of the pilgrims had assembled in Italy, but pestilential diseases raged among them, and the emperor himself was ill when he embarked with Louis, landgrave of Thuringia. In three days Frederick arrived, and was obliged to winter at Oranto, where Louis Landgrave died. The fleet proceeded on along the coast of the Morea, and the crusade failed. Upon this Gregory excommunicated the emperor, and laid his dominions under an interdict. Frederick however, notwithstanding the death of his wife Isolante in child-bed, set out on a new crusade in 1228; but Gregory, who had not expected this, and thought it improper for a prince under excommunication to go to the Holy War, commanded the patriarch of Jerusalem and the three orders of knights to oppose the emperor in everything, and caused the estates of the empire to be occupied and laid waste by his soldiers and John of Brienne. Frederick, notwithstanding all this, by an agreement with Kamel, sultan of Egypt, succeeded in making a ten years' truce, and acquired for himself Jerusalem, the holy places, all the country between Jerusalem and Acre, and the important seaports of Tyre and Sidon.

The city of Jerusalem, where Frederick, on the 18th May, put the crown upon his own head because no priest would have the blessing of a man under an interdict, and Frederick was even betrayed to the Sultan, who gave him the first information of it. Frederick hastened back to Lower Italy, and after fruitless negotiations with Gregory re-conquered his hereditary estates and destroyed all the intrigues of the pope, who was at length obliged to cede to him the first-born and the estate of his first wife. On the 20th October, Frederick wrote to the states of Sicily, ' I confess that the pride of the living king could not bend me, but the death of the son deeply affects me; and I am not the first nor the last who suffered injury from my obedient sons, and yet went over their grave.' It is indeed improbable that the emperor, at that almost the same time, when Frederick sent the son of his first wife to prison, and caused him to be formally deposed at the diet at Ments (1233), he celebrated with the crusading archbishops his marriage with Isabella of England. In 1236 he made preparations for a new expedition against the Lombards, in which the friendship of Ezzelino, sovereign of Verona, and that of the Gibelline cities of Upper Italy, was to double the strength of his little army. The new crusade never existed, Frederick died against Frederick, duke of Austria, the last of the house of Hohenburg, interrupted in 1237 the war which was already commenced, and the election of Conrad, his second son, as king of the Romans. After the recommencement of the war against the cities of Upper Italy, and the defeat of the Guelphs, the victory of Corte Nuova, on the Oglio, on the 26th and 27th November, 1237, broke the power of the Lombards; all the cities, except Milan, Bologna, Fiesco, and Brescia, submitted; but Gregory became more and more importunate to have his cause decided in an assembly, enacted the treaty of Enzin, king of Sardina, and prepared to subdue the rest of Lombardy. On Palm-Sunday, 1239, Gregory again excommunicated Frederick, who continued the war, but sustained much injury by the secret perfidy of Ezzelino, of which the emperor died of genuine wound, and which he suddenly, in 1240, turned his arms against the pope himself, penetrated through Spoleto into the states of the Church, and made the pope tremble in his capital. Rome would have proved an easy prey if he could have subdued the last remnant of superstition in his breast; but here, and in his edicts against heretics, we see the ties which still bound Frederick in the fetters of his times. Nor did he know the spirit of Gregory, when he thought he could compel him to make peace. He wished rather, without proceeding to the point of exterminating the chief number of bishops; but finding that only his most determined enemies were invited to it, he warned all prelates against going to Rome; and at last, when all his admonitions availed nothing, he caused the Genoese fleet to be attacked and destroyed by the Venetians, and Enzin, and recovered the ships by land and sea, and put them on board, on their way to Rome, to be taken to Naples as prisoners. This blow at length laid the invincible Gregory on his death-bed on the 21st August, 1241; but by his death, determined the emperor of almost certain victory. While his family was engaged in the contest, Frederick had not been able to contend in person with the Mongols, who had penetrated into Germany, but after their victory at Wahlstadt in 1241, and their defeat at Olmutz, turned back. After the short reign of Pope Celestine IV. and a long interregnum, Frederick as length obtained the...
election of a pope; but Sinibaldus Fiesco, who, when cardinal, had been his friend, became, as Innocent IV., the most formidable of his enemies. He continued Gregory's excommunication and dreading the vicissitudes of the empire in Italy, fled in 1244 to Lyon. Frederick had now the alternates of the imperial crown, the danger of being cast off the seat of a priest, or to commence the unequal conflict with the superstition of the age. The pope renewed the excommunication and summoned a general council to Lyon. Thaddeus of Suessa, the emperor's chancellor, defended his cause. Before this council with overwhelming eloquence and truth, and refuted the most malicious, as well as the most absurd accusations. Frederick, accused of heresy, in vain suffered himself to be examined respecting his faith; however religious and pure he appeared, he was guilty, because it was his custom. Wherefore, he expatriated himself against him the most dreadful anathema—released all his subjects from their oath, declared him to be deprived of all honours and dignities, as a perjurer, peace-breaker, robber of churches, a profaner of sanctuaries, and heretic; and he also declared that those who remained faithful to the emperor should be included in the same sentence. But Frederick showed that he was still emperor: he justified himself, as became a great sovereign, before the princes of Europe; and while Innocent was labouring for the election of a college of cardinals, and the princes were vying with each other to crown the imperial throne, he fought successfully against the Lombards, defeated a conspiracy at his court, and did not lose his courage even when his son Conrad was defeated by his rival Henry. Conrad in the sequel obtained the victory, and held in his hands the imperial crown. In 1245, when he was the ambassador of Peter de Vinears, who had long wavered in his fidelity, and when he found himself discovered, attempted to poison Frederick. This plan was defeated, he was cast into prison, where, in despair, he contrived the means of escape. In this, no one can fail to be observed, that Raumer, in his 'History of the House of Hohenstaufen,' considers this story of the attempt to poison the emperor very doubtful, though he does not believe that Peter was entirely innocent. The emperor, who was not prepared to reproach his enemies with an insurrection, and being defeated in a camp which he had formed before it, lost his army, his treasures, and his friend Thaddeus of Suessa. William of Holland, though only twenty years of age, was at the instigation of Innocent elected emperor by the three Rhinian archbishops; Ennio, his son, was made prisoner by the enraged Bolognese, and Ezelin joined his enemies. His own health now declined, and he desired to die in peace; but Innocent rejected the most reasonable terms of reconciliation. Frederick's spirit was soon weakened by the hopes of vassals; in 1246, it would perhaps have humbled Innocent himself had he not been surprised by death at Fiorentino, in the arms of his natural son Manfred, on the 13th of December, 1250, in the fifty-sixth year of his age, and the forty-first of his reigns.

FREDERICK III., emperor of Germany, son of Ernest, duke of Austria, was born at Innspruck, on the 21st September, 1415. He was not yet of age, when, according to the fashion of those days, he went on an expedition to the Holy Land. In 1430, in conjunction with his brother Albert the Prodigal, he assumed the government of his dominions, the revenues of which did not much exceed 16,000 marks. Being elevated to the throne of Germany, in 1440, on the death of his cousin Albert II., he appeared destitute of aaser, for he was not of age; but he was severe to every thing that took him out of his own narrow sphere, and was especially deficient in attachment to the interests of Germany. It is true there were many circumstances in the state of Germany, and in his own situation, which partly excused him. At the very commencement of his reign he was engaged in war with his brother Albert, who reigned in Upper Austria, and was in danger of losing all his hereditary dominions. In different parts of Germany, there was no man equal to him in power and courage, and more numerous than his to put them down. He called several diets, chiefly to put an end to the schism in the church, which was not effected till 1447, when Felix was persuaded to abdicate, and Nicholas V. was acknowledged as lawful pontiff. Frederick went to Italy, where he received the imperial crown from the pope, as well as the crown of Lombardy, along with his betrothed consort Eleanor, sister of the king of Portugal. But he did not thereby acquire a greater degree of moral energy, or an increase of political independence; nor did he recover any of the rights of the Empire which had been torn from it by various usurpers. In 1443 he revived the archducal title in his family, and busied himself with his botanical pursuits, and endeavoured to revive the power of Turkey became more threatening. He did not make any attempt to rid himself, after the extinction of the male line of the Visconti, the usurper Sforza had established himself. How unfortunate and unstable he was in his external policy appears from his transactions with Hungary and Bohemia, and the manner in which, with a view to recover some crown lands, and to which the house of Austria had been deprived, he interfered in the internal disputes of the Swiss Cantons; but not having a sufficient force of his own, and not being supported by the power of friendship or commerce, he entered into a league with the Dauphin, which, having been taught a lesson by the rich sum of money's value at St. Birc Jacob, in 1444, turned their arms in part against Germany and Austria itself. In Germany he was threatened with still greater danger. In 1449 he was entangled in a quarrel, on account of the succession to the Palatinate, with Frederick, the victorious brother of the deceased Louis, who demanded the Electorate for himself instead of his nephew Philip, and being opposed by Frederick, brought over Mentz, Treves, and a number of Germaul, and was defeated at Zollern. When George Podiebrad a prospect of obtaining the imperial crown. When his ward Ladislaus died, without children, in 1457, Lower Austria came to Frederick. Upper Austria to Albert, and part of Carinthia to Siegmund of Tyrol; and all the threatened danger of the Bohemian death, notwithstanding Frederick's pretensions to Bohemia and Hungary, he had the mortification to see George Podiebrad preferred to him in the former, and Matthias Corvinus in the latter. Scarcely had he recovered from this calamity, when in 1462, at the death of Albert, and raised an insurrection against him in his capital Vienna, and Frederick, being besieged there, was delivered by his opponent Podiebrad. In this distress he at length, for once, manifested resolution, and declared that the palace should be his capital, and his residence, for ever. In 1463, he had been in contentions respecting the duchy of Austria, of the whole of which he obtained possession by the death of Albert in 1463. In 1468 he again went to Rome, and had several conferences with Pope Paul II., as to the means of opposing the Turks: nothing, however, was done, and he suffered them to penetrate in 1469 to Carniola, and in 1475 nearly to Salzburg, almost without opposition. His warlike policy caused the kings of Bohemia and Hungary to quarrel; but they were succeeded by King Matthias, who was the successor of Corvinus, king of Hungary, laid siege to Vienna in 1479, and was only prevailed on to retire by Frederick's announcing all his own pretensions to Hungary, and granting him the investiture of Bohemia, with a sum of money. It is probable that many of the princes, when they discovered his hereditary dominions by the success of his plan for the aggrandizement of his family, by the marriage of his son Maximilian with Maria of Burgundy, the rich heiress of Charles the Bald, which did not take place till 1477, after the death of Charles. In 1485 he had a new quarrel with Matthias, who took from him Vienna and all Lower Austria. Frederick withdrew to his son Maximilian in the Netherlands. In 1486 Maximilian was chosen king of the Romans, but soon afterwards was entangled in a quarrel with Frederick, and in 1487 was condemned by the account of the guardianship of his children. In 1488 Maximilian was taken prisoner, and Frederick resolved to hasten to his assistance. On the death of Matthias in 1499, Frederick recovered Austria, but was obliged to leave the Hungarian crown to Ladislaus of Bohemia. At length, after so many defeated plans, he died on the 19th August, 1493, as some report, from a disorder contracted by a surfeit of melons; according to others, in consequence of an amputation that it was necessary to make for the discharge of the poisoned arrow that was inscribed upon his books and his palaces, A. E. I. O. U., by which he is generally supposed to have meant Austria est Imperare Orbis Universus. When it is considered that Frederick died in the 78th year of his age, after a reign of forty-eight years and a half, and that of that period half was passed in captivity and slavery by his house of Germany, it is surprising how small a share he had in the important events of that long period, which is rendered incommemorable by the taking of Constantinople by the Turks—

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resolved to commence a war by sea against that power; he fitted out eight frigates which had been employed against Sweden, and sent them in 1680 to capture Spanish ships, and they actually took some rich merchantmen. He was now at the height of his prosperity, and the proceedings of this great prince in consolidating the prosperity of his dominions and the welfare of his subjects. He died in April, 1688, leaving to his son a well-cultivated, much enlarged territory, a well-filled treasury, and an army of 30,000 excellent troops. He was not married; first in 1647 to Louise Henrietta, princess of Orange, a most amiable and accomplished person, author of the celebrated German hymn, "Jesus mein Zuversicht." She died in 1667. In the following year Frederick married Dorothea, duchess dowager of Brunswick Luneberg, by whom he had an excellent and virtuous princess, she was not liked by the people, chiefly because she was on ill terms with her step-children, especially the crown-prince. The character of Frederick, both in public and private life, has always been highly esteemed. He was indeed of a kind temper, extremely placable. As a sovereign, he appears to have justly merited the surname of the Great Elector. Some writers have blamed his frequent changes of party; but it must be recollected that a weak state, surrounded by powerful neighbours, cannot always choose its own line of politics.

FREDERICK I., king of Prussia after 1701, but as elector of Brandenburg, Frederick III., was born in 1657, at Köningsberg, and on the death of his eldest brother became heir apparent to the allied states. By education, his education was neglected, and his step-mother even prevailed on the elector, his father, to make a will by which he bequeathed all the acquisitions of territory which he himself had made to be divided among the children of his eldest brother. But to prevent this, and to prevent Frederick from succeeding to the whole of his father's dominions in 1688. After the death of his first wife Elizabeth Henrietta, princess of Hesse Cassel, he married, in 1684, Sophia Charlotte, princess of Hanover, sister of George the Second of England. In 1701 he joined the imperial alliance against France and the emperor, Frederick having obtained from the Turks a subsidy of 150,000 dollars. At the treaty of Ryswick, the conditions of the treaties of Westphalia and St. Germain, relating to Brandenburg, were confirmed. By negotiations with various powers, or by purchase, he obtained new provinces to his dominions, and a respect quick in his temper, extremely placable. As a sovereign, he appears to have justly merited the surname of the Great Elector. Some writers have blamed his frequent changes of party; but it must be recollected that a weak state, surrounded by powerful neighbours, cannot always choose its own line of politics.

FREDERICK WILLIAM I., king of Prussia, son of Frederick I., was born in 1688. At a very early age he manifested a predilection for military exercises: at the age of five years he was sent to Hanover to be brought up with the electoral prince. George, and was educated in the court of his grandfather, where the mode of living was strictly economical, simple, and without the restraints of rigid etiquette, pleased the young prince much more than the formal magnificence of his father's court. He served on a number of expeditions, and displayed himself at the siege of Menin and the battle of Malplaquet. In 1706 he married the princess Sophia Dorothea of Hanover. His character being in many respects directly the reverse of that of his father, he commenced, immediately on his accession to the throne, 25 Feb. 1713, a life of luxury that had prevailed in the preceding reign; he reduced the salaries of persons in office, limited their number, and endeavoured to introduce order into the finances. In his own person, he set an example of the utmost plainness of apparel, and laid aside all the formalities of his position; while the queen and princesses were allowed to wear only dresses of the simplest kind. He devoted himself to public business, examined everything, was easy of access, and received all sorts of persons, no matter how near or distant he was to his subjects; but he was austere and arbitrary, and carried to the utmost extent his ideas of the divine right of kings. Though he repeatedly declared the republican constitution of Holland to be a model for all states, and boasted that he would be the last to change the present system, he did not allow any check on his own power. His reforms in the finances and expenditure enabled him to gratify his most ardent wish, of keeping a great military establishment, and he laid the foundation of that strict discipline and regularity by which the Prussians have always been distinguished. His childish passion for tall soldiers is well known. No expense was spared in order to gratify it; men of gigantic stature were picked up in all the neighbouring states, and many were even kidnapped or forced into his service, by which he involved himself in many serious quarrels. This economy of his internal administration enabled him to reinforce those provinces which were dissoled by the plague, by means of colonists from other states, which he settled on very advantageous terms. He was himself in person a philosopher, and he introduced many new art, and many of the richest manufactories in the Prussian dominions owe their foundation to him. But he had a mortal aversion to all abstract sciences, and even to poetry and literature; and he expelled the celebrated philosopher Wolff from his service. He erected many public buildings at a considerable expense, but built little, and with great economy, for himself and his court. He founded the Medico-Chirurgical College, the Charité, and the Foundling Hospital at Berlin, the university of Berlin, the Academy of Fine Arts, the Academy of Mines, the Berlin Cadet Establishment, the building of the Academy of Sciences, the library of the Brandenburg Academy of Sciences; the emigrants from Salzburg and the Polish dissidents met with a favourable reception in his dominions. On the other hand the Berlin academy and the universities narrowly escaped dissolution. The details of his private life have been preserved at great length by his daughter, the Marchioness of Baireuth; and his character is portrayed in a few happy touches by Voltaire (Mémoires, &c. écrits par lui-même). The public events of his reign were of no great importance. In the treaty of Utrecht, France and Spain recognised his
and not permitted to return to court till the marriage of the princess Frederica to the hereditary prince Frederick of Baireuth. In 1733 his father obliged him to marry the princess Elizabeth Christina, daughter of Ferdinand II, duke of Brunswick-Bevern. Frederick William gave her the palace of Schönhausen, and to the prince the county of Blankenburg. In 1735 the prince appears to have lived happily, chiefly devoting himself to literary pursuits and to music till his accession. Among the persons about him were Bielefeld, Chusot, Subhm, Fouquet, Kloebel, Kesserling, Jordan, and other learned men; Silesia was benefited as much as Prussia, and the painter Poes. He had an uninterrupted correspondence with foreign literati, especially with Voltaire, whom he admired above all others. During his retirement at Rheinsberg, he composed several works, one of which was the "Anti-Machiavel," and "Sempol." His son, the Elector Frederick Charles, the successor, was born in 1740, and was crowned in 1743. Frederick the Great was crowned in 1743. Frederick the Great was crowned in 1743.

In the war of the Austrian Succession (1740-1748), Frederick commanded the army of Prussia and defeated the imperial forces under the Elector of Bavaria at the battle of Kolin on 12 August 1741. He then proceeded to the siege of Dresden, where he was joined by the Elector of Saxony. The siege was lifted on 18 August, and the Prussian army marched on Prague. Frederick entered the city on 3 September, and the Emperor withdrew to Vienna. In 1742, he was given the county of Herrnhut, and in 1743 he was made Duke of Mecklenburg-Schwerin.

In 1744, Frederick invaded Silesia, and was successful in his campaigns. He captured Cölln in November, and then marched on Berlin. The city was taken by storm on 4 February 1745, and Frederick was crowned king of Prussia on 12 February. He then marched on Vienna, but was defeated at the battle of Prague on 17 May. In 1745, he was given the county of Holstein-Gottorp, and in 1746 he was made Duke of Holstein. In 1747, he was given the county of Kurland, and in 1748 he was made Duke of Kurland. In 1749, he was given the county of Pomerania, and in 1750 he was made Duke of Pomerania. In 1751, he was given the county of Mecklenburg-Strelitz, and in 1752 he was made Duke of Mecklenburg-Strelitz.

In 1756, Frederick invaded Silesia again, and was successful in his campaigns. He captured Cölln in November, and then marched on Berlin. The city was taken by storm on 4 February 1757, and Frederick was crowned king of Prussia on 12 February. He then marched on Vienna, but was defeated at the battle of Prague on 17 May. In 1758, he was given the county of Holstein-Gottorp, and in 1759 he was made Duke of Holstein. In 1760, he was given the county of Kurland, and in 1761 he was made Duke of Kurland. In 1762, he was given the county of Pomerania, and in 1763 he was made Duke of Pomerania. In 1764, he was given the county of Mecklenburg-Strelitz, and in 1765 he was made Duke of Mecklenburg-Strelitz.

In 1775, Frederick invaded Silesia again, and was successful in his campaigns. He captured Cölln in November, and then marched on Berlin. The city was taken by storm on 4 February 1776, and Frederick was crowned king of Prussia on 12 February. He then marched on Vienna, but was defeated at the battle of Prague on 17 May. In 1777, he was given the county of Holstein-Gottorp, and in 1778 he was made Duke of Holstein. In 1779, he was given the county of Kurland, and in 1780 he was made Duke of Kurland. In 1781, he was given the county of Pomerania, and in 1782 he was made Duke of Pomerania. In 1783, he was given the county of Mecklenburg-Strelitz, and in 1784 he was made Duke of Mecklenburg-Strelitz.

In 1786, Frederick invaded Silesia again, and was successful in his campaigns. He captured Cölln in November, and then marched on Berlin. The city was taken by storm on 4 February 1787, and Frederick was crowned king of Prussia on 12 February. He then marched on Vienna, but was defeated at the battle of Prague on 17 May. In 1788, he was given the county of Holstein-Gottorp, and in 1789 he was made Duke of Holstein. In 1790, he was given the county of Kurland, and in 1791 he was made Duke of Kurland. In 1792, he was given the county of Pomerania, and in 1793 he was made Duke of Pomerania. In 1794, he was given the county of Mecklenburg-Strelitz, and in 1795 he was made Duke of Mecklenburg-Strelitz.

In 1796, Frederick invaded Silesia again, and was successful in his campaigns. He captured Cölln in November, and then marched on Berlin. The city was taken by storm on 4 February 1797, and Frederick was crowned king of Prussia on 12 February. He then marched on Vienna, but was defeated at the battle of Prague on 17 May. In 1798, he was given the county of Holstein-Gottorp, and in 1799 he was made Duke of Holstein. In 1800, he was given the county of Kurland, and in 1801 he was made Duke of Kurland. In 1802, he was given the county of Pomerania, and in 1803 he was made Duke of Pomerania. In 1804, he was given the county of Mecklenburg-Strelitz, and in 1805 he was made Duke of Mecklenburg-Strelitz.

In 1806, Frederick invaded Silesia again, and was successful in his campaigns. He captured Cölln in November, and then marched on Berlin. The city was taken by storm on 4 February 1807, and Frederick was crowned king of Prussia on 12 February. He then marched on Vienna, but was defeated at the battle of Prague on 17 May. In 1808, he was given the county of Holstein-Gottorp, and in 1809 he was made Duke of Holstein. In 1810, he was given the county of Kurland, and in 1811 he was made Duke of Kurland. In 1812, he was given the county of Pomerania, and in 1813 he was made Duke of Pomerania. In 1814, he was given the county of Mecklenburg-Strelitz, and in 1815 he was made Duke of Mecklenburg-Strelitz.
another victory after a very obstinate combat at Sorr, on the 30th of September, 1745. The victory of the Prussians under Prince Leopold of Dessau, over the Saxons at Kosselseldorf, on the 15th of December, led to the treaty of Dresdennes on the 25, 1745, which concluded upon the basis of the treaty of Berlin; so that Frederic retained Silesia, acknowledged the husband of Maria Theresa, Francis I, as emperor, and Saxony engaged to pay to Prussia one million of dollars. Thus ended the second Silesian war.

During the most disastrous defeat, Frederic devoted himself with unremitting activity to the internal administration of his dominions, the organization of the army, and to literary pursuits. Among the grand improvements which he contemplated was a reform in the judicial proceedings, and he inserted new rules more simple and uniform, in all the different provinces of his dominions. Together with his chancellor Cecchi, he compiled the 'Frederician Coda: a body of laws for the dominions of the king of Prussia,' founded on reason and the Constitution of the country. It is not easy to understand what is here alluded to. Frederic also wrote 'Memoirs of the House of Brandenburg,' a concise account of his house, written in a good style, and which begins in the year 1360. It seems to merit; though the writer may have been at times betrayed by prejudices into unintentional misrepresentations of incidental facts. Another work, a didactic poem in six books, on the Art of War, is his most considerable work, and one of the pieces which he most admired. All these, and all his other works are in French. These recreations did not divert his attention from those paramount duties which he always performed with the most persevering care. Instead of indulging in the pleasures of the chase, he made journals, and purchased domestic property, for the purpose of making agriculture, manufactures, and the arts flourish; and encouraged commerce, the true principles of which however he appears not to have understood. Though possessing no name of a general, he was a man of great lightness of mind, and his subjects, without molestation from the fleets of contending parties. One grand object was to improve his revenues, a measure necessary for the maintenance of his army, which he had increased to 168,000. He expended large sums in the composition, or more properly the existence of his fleet. At the time of the peace of 1748, he was in possession of the palaces of Berlin and Potsdam, and in erecting many splendid edifices in those two places, in which, however, there was this incongruity, that the richest architectural decorations were often lavished on the exterior of buildings which were used for little purposes.

When the war broke out between England and France in 1755, the former concluded a treaty with the king, the chief object of which was to secure Hanover from invasion. This led to a secret alliance between France, Austria, Saxony, and Russia, of which Frederic, having been deeply interested, chiefly through the treachery of a clerk in the Saxon chancery, became apprehensive of an attack, and of the loss of Silesia. He accordingly resolved to anticipate his enemies, and commenced operations by invading Saxony on the 17th of July, 1756. The defeat of the Austrians at the battle of Torgau, on the 27th of the same month, seemed to justify the assertion of thirde Silesian, or, as it is generally called, 'The Seven Years' War.' This contest was the most extraordinary and important in modern times, previous to those of the French Revolution. Though Frederic is the hero, the history of the war is, in fact, the history of continental Europe. Frederic, intending to invade Bohemia, required a passage through Saxony, which the elector king of Poland anticipating, assembled his troops in an entrenched camp at Pirna. Frederic invested it, and having defeated, at Lowositz, the Aus trians defending him, obliged them to retire, compelling all the privates to enlist in his own army. In 1757, he advanced into Bohemia, gained, on the 5th of May, a great victory at Prague, over the Austrians, under Prince Charles of Lorraine and Marshal Brown. The Austrians took shelter in Prague, which Frederic immediately invested, but the approach of the Austrians, under Marshal Daun, changed the face of the campaign. Daun formed an intrenched camp at Kolin, which Frederic attacked, but was defeated with great loss, on which he raised the siege of Prague, and retreated into Saxony. In the mean time the French compelled the Duke of Cumberland to abandon Hanover, of which they took possession; and about the same time the Russians and Saxons were victorious in the north: but though Frederic's affairs were supposed by his enemies to be desperate, he was not dismayed. He first attacked the united French and Austrian army, twice as numerous as his own, at Rossbach, and gave them a total and most disastrous defeat. He then marched into Silesia, where the Austrians had taken Breslau, gained a great victory over them at Lissa, and recovered Breslau. The Russians and Swedes had retreated from the Prussian territories, and the Hanoverians had assembled a large force under Prince Ferdinand of Brunswick, to co-operate with the Prussians. Thus at the close of 1757 the king's affairs were so far restored, that he might have hoped for success in the next campaign, if he could have kept back the Russians; but the enmity of the empress Elizabeth was inveterate. Moreover, the situation which Frederic's conduct had excited in England, and confidence in his ability, induced the English government to grant him a subsidy of 670,000l., which became an annual grant. In the campaign of 1758 the principal event was the sanguinary battle at Zornsdorf, on the 5th of September. Frederic was defeated, but the loss on both sides was immense. In 1759 the king's first object was to stop the progress of the Russians, who advanced to Frankfort on the Oder. On the 12th of August was fought the battle of Kunnersdorf, and once more the king was beaten, though he seemed so sure of the victory, that he despatched a letter to that effect to the queen at Berlin; but in the end, he was obliged to quit the field, and wrote a second letter to the queen, desiring her to send away the royal family, and to conclude terms with the enemy. But Berlin was saved, Frederic's skilful conduct after his defeat induced the Russian general, instead of entering Brandenburg, to join the Austrians in Austria; but soon afterwards, General Fink, with 15,000 men was taken at Angermund by the Austrians, and the enemy occupied the town, and shared the same fate. Frederic, however, received reinforcements, and Marshal Daun was contented to occupy the camp at Pirna and cover Dresden. In the following year, however, some fruitless battles at Gera, and 1762, the two armies exchanged terms of peace.

In this campaign the city of Dresden suffered very severely from a bombardment, by which Frederic destroyed the finest part of the city. On the other hand, the Russians and Austrians entered Berlin, which was saved from plunder by the timely arrival of the French. Berlin was soon evacuated, and Frederic, who was hastening to its relief, turned into Saxony, where he was induced, by the desperate condition of his affairs, to venture to attack the Austrians, who were strongly posted at Torgau. He defeated them after hard fighting, on the 13th of September, 1762, and the two armies were about to retreat. The Russians and Swedes also quit their dominions, and he was able to recover strength in winter quarters in Saxony.

At the commencement of 1761 it was evident that the king of Prussia's situation was most critical. He had assured himself, that after the great losses he had sustained, his army was not equal to what it had formerly been. He accordingly occupied a strong camp in Silesia, where he remained immoveable, watching his enemies, but was unable to prevent the French and Russians from making a joint invasion of the country. The situation was now so desperate, that he appears to have seriously contemplated suicide: in this critical state, the only event perhaps which could have saved him, occurred. This was the death of the Empress Elizabeth on the 4th of September, 1762, and the accession of Peter III., who was an enthusiastic admirer of Frederic, with whom he immediately concluded a treaty of alliance. Peace was also made with the Swedes, and though Peter was soon deposed, yet Catherine, who succeeded him, was so disposed towards the Prussians, that the two nations, by the peace of 1763, guaranteed the whole of each other's German dominions, Frederic only promising to give his vote to Joseph as king of the Romans. The king of Poland was restored to his
as his religion, were greatly influenced by his prejudices for French literature, and especially his intimacy with the admiration of Voltaire. Proud as the Germans in general are of Frederic, they cannot help regretting his rooted love of German literature, to the improvement of which he contributed nothing. It must, however, be said that the German literature, at the time, was in a very low state, and it may be doubted whether the literature and language of Germany did not gain more by the neglect than by the support of Frederic. Frederic was second to none in the expense of literature, and he could do well with others less than his own. His voluminous works, all in French, would have entitled him to distinction in the literary world, even if he had not been a king. Besides the works already mentioned by him, he published military instructions, and some miscellaneous speculations in four volumes of Posthuma's works, in 12 volumes, contain the history of his own acts, the history of the Seven Years' War, and memoirs, from the Treaty of Hubertsburg, 1763, to the end of the partition of Poland.

FREDERIC WILLIAM II., king of Prussia, was born in 1717. His father was Augustus William, second son of Frederic William I., to whom his death in 1730 left him. Frederic the Great, declared him Crown Prince of Prussia. He was a prince soon soiled in mode of life which was not unpleasant to his associates from each other for many years. Frederic II. however pressed his satisfaction to the crown prince, on his great proof of personal bravery in the war of the Bavarian succession.

Frederic William's first wife was Elizabeth Christina Ulrica, princess of Holstein. She was separated in 1760, and afterwards married the Prince Louis of Hesse Darmstadt. His accession in 1760 under favourable circumstances, Prussia was engaged in a war with foreign enemies, and the policy of Frederic II. had made him, in that measure an arbiter in the affairs of Europe, Prussia's errors soon lessened his credit with foreign states, and the treasury left by his uncle was wasted in useless expenditures and extravagance of his favourites. His interference in foreign affairs was serious, but he was quick to yield under a foreign army, under Duke Charles William Ferdinand of Brunswick, to Holland, where the patriots refused to respect the right of the stadtholder, and insulted his wife, Frederic William's sister, on her way to the Hague, for which ever satisfaction had been given. The Prussian army, without opposition to Amsterdam, and the old edict of things was soon restored, upon which a defensive alliance between England, Prussia, and Holland was concluded at the Hague in April, 1758. In the war between Russia and Sweden, the same year, the conjunction with England, prevented any further attacks on Sweden by Denmark. Being jealous of the success of Austria and Turkey in the Turkish war, he concluded a defensive alliance with the Porte in 1790, and guaranteed promises. This measure having given offence to Austria, a Prussian army was assembled in Silesia, on the Bohemian frontier, and an Austrian army in Bohemia. The Emper Leopold II. did not wish for war with Prussia, and in the convention concluded at Reichenbach on the 25th July, 1757, between Austria and Prussia, at the instance of England and Holland, he promised to restore to all his conquests, except the district of Altona, on the condition that peace was made between Austria and the Porte at Stettin. Some differences respecting the points were arranged by Leopold II. and Frederick William at their meeting at Plunzitz, in August, 1794, when they entered into a closer union with respect to the affairs of France.

A part of the Polish nation, with King Stanislaus Poniatowski at its head, proposed to establish a new constitution for the kingdom, and to make the royal dignity hereditary in the house of Saxon. In order to secure foreign aid, an alliance was concluded between Poland and Prussia, by which the latter recognized the integrity of Poland, and promised to assist, if necessary, 40,000 infantry and 10,000 horse of each, that the Russian power should interfere in its internal affairs, after making peace with the Porte, Catherine II., who, taking any share in the war then carrying on by Prussia and Austria against France, had calculated on their effect to reduce Frederic William to the absolute state.
of defending Poland against Russia by virtue of his alliance with that state, or of making a second partition of it, in conjunction with Russia. Frederick William chose the latter, and in January, 1733, sent troops, under General Möllendorf, into Great Poland, which occupied a tract of country of the extent of 1100 German square miles, with a population, including Danzig and Thorn, of 1,200,000 inhabitants. Though the diet at Grodno was obliged to agree to this accession, as well as to a similar cession of territory to Prussia, by the Stettin convention of 1739, the independence of Poland followed. All that remained, after the preceding partitions, was divided between Austria, Russia, and Prussia, by which the latter acquired a large addition of territory, and the independence of Poland was annihilated. The king soon followed, accompanied by the princes. The duke of Brunswick failed in his plan of marching to Paris, and was obliged to retreat. On the 4th April, 1739, Prussia made peace with the Republic of Venice, beyond the Rhine in the possession of the French. To prevent the neutrality of the north of Germany, a convention was made between Prussia and several princes, whose territory functioned as a buffer between Prussia and Austria, and which, the Fuerstenkonzil, as the negotiations, as they were called, were called the Fuerstenkonzil. Frederick II. ordered the Red Eagle and the Blue Eagle to be abolished, and the French system of indirect taxes introduced by Frederick II. was abolished. Many judicious arrangements were introduced, and a new code of laws for the whole kingdom published; but the tolerance promoted by Frederick II. was much restricted, and the peace was prejudicial to the interests of the king, by means of the religious edict of 1788 and other measures. Frederick William died on the 16th of November, 1777, and was succeeded by his eldest son, the present King Frederick William III., whose eventful reign has been distinguished by vicissitudes of ill fortune and success at least equal to those experienced by his great predecessor.

FREDERICK AUGUSTUS I. of Poland. [Augustus III. p. 98.]

FREDERICK AUGUSTUS II. of Poland. [Augustus III. p. 98.]

FRANCIS AUGUSTUS I., king of Saxony, eldest son of the Elector Frederick Christian, born at Dresden on the 23rd of December, 1710, succeeded his father 1726. He married the Archduchess Maria Josepha of Austria, Prince Xavier, till he assumed the government in 1728. In 1754 he married the Princess Maria Amalia of the Duchy of Warsaw. He was bound to take part with France in its war, but sent no troops to Spain; and in the war with Austria in 1769 he furnished only his contingent. In 1762 the French, with the consent of the King of France, occupied the Duchy of Warsaw, and the entrance of the allies into Saxony he retired to Plauen, thence to Ratibon, and thence to Prague; but the menaces of Napoleon compelled him to return to Dresden; he afterwards followed Napoleon to Leipzig. That town being taken by the allies the seven years' war in the January of 1817, Alexander intimates that he considered him to be his prisoner. The result is well known. In spite of his remonstrances and representations, and of the high estimation in which his character was held, he was deprived of a large portion of his kingdom, which was given to Prussia under the title of the grand duchy of Saxony. He returned to his capital on the 7th of June, 1815, founded, in commemoration of that event, the order of Civil Merit, and devoted all his attention to repair the injuries caused by the war. In 1817, 1818, and 1819, with the announcement of his surrendering the government, and in January, 1819, that of his marriage. He died on the 5th of May, 1827, in the seventy-seventh year of his age and the sixtieth of his reign.

FREDERICK WILLIAM CHARLES, king of Würtemberg, was born at Tübingen in 1754, succeeded his father in 1780, and became elector in 1789, and assumed the title of king in 1792. In 1793, he married Augusta Caroline, princess of Brunswick Wolfenbüttel, by whom he had two sons, William, the present king, and Paul, and a daughter Catherine, who was married to Jerome Bonaparte, king of Westphalia. As his father was personally engaged in theSeven Years' War, his early education was directed with infinite care.

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by his mother, Sophia Dorothea, daughter of the margrave of Brandenburg-Schwedt, a high-born and cultivated and ex- 
nient princess. After the peace in 1763 his father was at 
leave to attend to the education of his son, who possessed 
extraordinary natural abilities. He was however brought 
up in many respects on the French model, to which his 
growth in Jacob Ludwig, who was well versed in mathematics, 
natural philosophy, history, and geography, and cultivated his 
taste for the fine arts, especially in his journey to Italy in 
1782; but with too much vivacity for calm examination, 
he often hastily adopted a false view, and was thus led in 
many respects to many errors. In many points he 
took Frederic the Great for his model; as well as seven brothers he entered the Prussian service, and in the 
war of the Bavarian succession attained the rank of major-
general. After his return from Italy, whither he accom-
panied his sister and her husband the Grand Duke Paul 
of Russia, he was made lieutenant-general and governor-
general of Russian Finland. He renounced this connexion 
in 1787, and lived first at Monrepos, near Lassanne, and 
then at Bodenheim, near Montreux. He witnessed at Ver-
ailles the proceedings of the National Assembly. When his 
father, after the death of two of his uncles without 
male descendants, became duke of Württemberg, in 1795, 
Frederic, as crown prince, opposed in 1786 the entrance of 
the French into Franche-Comté, but was defeated. After 
this he lived at that time also in Austria, then at Vienna 
and London, where, in 1797, he married his heart's desire, 
Charlotte Augusta Matilda, princess royal of England, with 
whom he returned to Stuttgart in June the same year.

When he succeeded to the government, in December, 1797, 
he had already concluded with France a treaty of neutrality in 
the war with France, was 153 German (about 8000 Eng- 
sland square miles in extent, with 600,000 inhabitants. In 1799- 
1801 the sufferings of the country were still greater. 
Frederic however, by his interest at the courts of Vienna and 
Paris, managed to bring about a conclusion of separate 
negotiations of peace. In February, 1803, besides the electoral dignity, an ample indemnity for his loss of territory on the left bank of the Rhine. The chief object of his policy was to preserve 
and extend his dominions. On the 3rd of October, 1803, Napoleon arrived at Ludwigsburg, and on the following day 
issued the declaration of war against Austria. Frederic 
was compelled to join France, and furnished 8000 men. By 
steadily adhering to the system of Napoleon he ac-
quired in and after the peace of Presburg the possession 
of all the dioceses of Württemberg, Hanau, and 306,739 
7400 square miles, with 1,400,000 inhabitants. After he 
had assumed the title of king, on New Year's Day, 1806, he 
published the organization of his greatly-enlarged dominions, by which one uniform system of administration 
was introduced into the old and new provinces. Besides 
as this might be (and he is highly commended for it by 
some writers), it certainly did not give satisfaction to all 
his subjects. Accustomed, and indeed compelled, to act 
with energy in his foreign affairs, he sought to make every- 
thing in his unassisted government bend to will, without 
regard to long-cherished prejudices or even to long-estab-
lished rights. He of necessity joined the Rhenish Con- 
federation, was at the meeting of Napoleon and Alexander 
and the greatest princes of Germany at Erfurt in October, 
1806. In the campaign of 1813 furnished his contingent 
as member of the confederation. After the battle of Leipzig 
he formally renounced, in November, 1813, the Rhenish Confederation, and joined the allied powers against 
France. He was a delegate to the congress at Vienna, where he was not received with the cordiality of other 
eminent princes. In the thirteenth article of the act of congress it 
was enacted that representative assemblies should be intro-
duced into all the states of Germany—a benefit for which 
Germany was in great measure indebted to the prince regent 
of England. When he died (though he did not accede to the German Confederation till the 1st of Sep- 
tember, 1815) drew up a constitution, which he presented 
as an ordinance to the states which he had convoked; but 
it was unanimously rejected: the deputies required the 
antient constitution, and speedy relief for the miseries of 
the people. Accustomed to implicit obedience, and not 
a little astonished at this behaviour, he still refused to dissolve it. On August, 1816, he called another in October, and unexpectedly prescribed 
fourteen propositions as the basis of a constitution, which were 
very favourably received by the people. A new constitution 
was readily adopted; but little could be discerned he died, on 
the 30th of October, 1816, 'in the sixty-eight years of his life and the 
nineteenth of his reign. His character was essentially 
despotism, but he had too much good sense and too enlighten-
ment an understanding to be systematically a tyrant. He 
desired the good of his people, of the means of promoting 
which he conceived himself to be the best judge. It must 
be said to his praise that his edict of the 15th of October, 
1806, secured to all his Christian subjects equal security 
for their rights and the free exercise of their religious 
worship. He introduced neither French laws nor French forms of art and literature. As a keen lover of his own 
language German; and Württemberg was happily preserved from 
the degradation of becoming a French province.

FREDERIC WILLIAM, Duke of Brunswick, the fourth 
and youngest son of Charles William Ferdinand, was born 
October 9, 1771, and educated for the military profession. 
In 1786 the king of Prussia named him successor of his 
uncle Frederic Augustus duke of Oels and Bernstadt, who 
died in 1805. He went to Brunswick, spent two years in Swit-
zerland, and on his return was made captain in a Prussian 
 regiment. In the early campaigns of 1804 Frederick was 
in the army in France, and twice wounded. After the peace 
of Basle he obtained a regiment, and in 1804 married the 
princess Mary of Baden, by whom he had two sons, Charles 
and William. After 1806 he took part in the war against 
France, which was the cause of his capture in April 1807. 
In the struggle of the war between France and Austria in 1809, he raised 
a free corps in Bohemia. After the total defeat of the 
Austrians, the duke resolved to leave Germany, and with a 
corps of 700 cavalry and 800 infantry, commenced in July 
that memorable and most(). With extraordinary 
accomplished. After some skirmishes he arrived at 
Brunswick and a battle ensued, in which Reubel's 4000 men only not only 
trounced the 1500 Brunswickers, but left the 
only way open by which they could escape. By a series of 
manoeuvres, Ruhel forced the enemy to break the bridge 
over the Weser, broke down the bridge behind him, and 
completely baffled his enemies, reached Elsfleth on the 6th 
of August, where he took possession of a sufficient number of 
vessels in which he embarked his troops during the night, 
and on the 7th in the morning, leaving English seamen, 
sailed for Heligoland, where he arrived on the 10th, and on 
the 10th proceeded with his corps to England. He 
was received in England with the greatest joy; his troops were 
taken into the English service and employed in the Pe-
nruland, where they distinguished themselves. The duke 
had a pension of 6000£ a year granted by the parliament till 
he returned to his own dominions in December, 1813, when 
he was received with extraordinary enthusiasm, and with 
expectations which he was unhappily unable to fulfil. He 
died at the age of 72; his memory is preserved in the 
history of his age. He was sincerely desirous of promoting the 
wellfare of his subjects; but, wanting to accomplish it at once, 
he overlooked the ordinary forms: finding nothing to 
support him in the constitution of the country, which had 
been completely changed by being surrounded by interested 
or prejudiced counsellors, numerous taxes were levied. His 
military establishment was too great for the duped 
state of the finances, and indifference, if not avarice, took 
place of the affection of the people. The rest is known. 
With his famous Black Hussars he joined the duke of Wel-
Longton in 1815, and fell gloriously at Quatre-Bras on the 16th of June, 1815.

FREDERICK I., king of Denmark, son of Christian I., was born 1473. His father had made him duke of Sleswick, Holstein, Stormar, and Dithmarsch, but his elder brother, King John, stripped him of half his dominions. During the next ten years he returned and reconquered the greater part of Denmark. His conduct was great caution, but that sanguinary tyrant being deposed in 1523, he was declared king in his stead. He was encouraged to lay claim to the crown of Sweden, but prudently made a treaty of friendship with that kingdom, where Gustavus Vasa was too well established to be dispossessed by a severe struggle. Frederick however succeeded in annexing the isle of Gotland to his dominions. In 1527 Frederick embraced the Lutheran religion, and established it in his dominions. He died in 1533, at the age of sixty, and is highly honoured by his subjects, who adopted as their country for the justice and moderation of his government.

FREDERICK II., king of Denmark, was born in 1534, and succeeded to the crown on the death of his father, Christian III., in 1558. Soon after his ascension he joined his brother, the duke of Holstein, in a war against the inhabitants of Dithmarsch, who had declared themselves independent, but were subdued after a brave resistance. In 1563 hostilities commenced between him and Eric king of Sweden, who was now adverse to his prosperity, and carried on a cruel struggle for the possession of the two kingdoms, till Eric was deposed by his own subjects in 1568. In 1570 a treaty advantageous to Denmark was concluded. Soon after this, Frederick married the daughter of the duke of Mecklenburg, and took in marriage the protection of peace and the promotion of the welfare and happiness of his subjects. He enlarged the University of Copenhagen, and patronised learned men, among whom was Tycho Brahe, the celebrated astronomer. He was highly respected by nations, and was received by all European courts with the greatest respect. In 1588 he married Elizabeth, daughter of Christian IV., was born in 1609. He was made archbishop of Bremen, but his elder brother dying before their father, he succeeded to the crown, 1648. The nobles, who had become very powerful, made him enter into an agreement with them on his accession, by which his power was very much restricted. The wars of the last reign having brought the kingdom to a very low condition, one of Frederick's first measures was to make a treaty with the Dutch, whose friendship he gained by seizing a fleet of English merchantsmen, laden with naval stores, which had been sent to England. By this he obtained a subsidy, and an alliance with Holland, though it embroiled him with the Commonwealth of England. In 1657, at the instigation of the Dutch, he declared war against Sweden, whose warlike sovereign, Charles Gustavus, was then the most potent monarch in Europe. Frederick, who had been styled the glove of the Cape of Good Hope, was now to be tested in the iron trial of battle. By his sagacity and energy, and not without the assistance of the Dutch fleet, the mediators powers again interfered, but peace was not concluded till the death of Charles 1670, leaving a numerous family by his queen, a daughter of George duke of Brunswick Luneburg.

FREDERICK IV., king of Denmark, was born in 1671, and succeeded his father, Christian V., in 1699, and immediately attacked the dominions of the Duke of Holstein. He laid siege to Tönning in person, but was soon obliged to return and to recognise his title to those dominions. The war between Sweden, brother-in-law to the duke of Holstein, whose first military exploit was this invasion of Zealand. Frederick was obliged to conclude peace, engaging to indemnify the duke of Holstein for all the loss he had caused him, and to pay him 600,000 rix dollars. When Charles was afterwards a fugitive in Turkey, Frederick joined the league against him, but his troops were totally defeated in Schonen. He then invaded Swedish Pomorania, in which he met with little success; and though he afterwards made himself master of the duchy of Brömseburg, his army, united with that of Saxony, was defeated by the Swedes under general Steenbock, who destroyed the town of Altona. In 1714 and 1718 the Danes were more fortunate, and drove the Swedes from Norway. Peace was concluded in 1720, under the mediation of England, on favourable terms, Frederick retaining the duchy of Sleswick. From him his dominions enjoyed the blessings of peace, and his whole attention was devoted to the advancement of the arts, sciences, and commerce. He died in 1730. He was an able prince, but too much given to enterprize to do great for the resources of his dominions.

FREDERICK V., king of Denmark, born in 1723, succeeded his father, Christian VI., in 1746. Continuing the same policy, he enriched his dominions in peace, increased the wealth of his people and the public revenues, by encouraging manufactures and commerce; entered into commercial treaties with foreign powers, established a Greenland company, laid open the trade to the American coast, and ordered the establishment of Lapland vessels. He likewise patronised learning, and was zealous in the promotion of the arts and sciences. He founded an academy at Soroe, and seminaries at Drontheim and Bergen for the instruction of the lower classes. In 1747 the king married the Princess Caroline of Prussia, daughter of Frederick I., and by his marriage he became the protector of the free state of Holstein, and the ruler of Greenland. In 1748 he married the Princess Anna Amalia of Anhalt Dessau, and succeeded to the throne of Holstein. He was in every respect one of the wisest and best monarchs of his age, and is said to have consoled himself on his death-bed by the reflection that he had injured a single individual, nor had a drop of blood to answer for. He died in 1766, having been twice married, first to Louisa, daughter of George II. of England, and then to Juliana, daughter of the duke of Brunswick-Wolfenbuttel.

FREDERICA. [RIS.] FREDERICKSBURG. [VIRGINIA.] FREDERICKSHAL. [CHRISTIANIA.] FREDERICKSTAD. [CHRISTIANIA.] FREDERICKTOWN. [MARYLAND.] FREDRO, MAXIMILIAN, palatine of Podolia, a celebrated Polish author, who died in 1676. He spent his life in serving his country, in the camp as well as in the council, and occupied many important posts. His active life gave him excellent opportunities for acquiring observations on many subjects connected with war and politics; which he has transmitted to posterity in his works, which are chiefly in Latin. His writings are full of interesting details, his observations and his sentiments on various subjects are remarkably sound; whilst the vigour and copiousness of his style procured for him the name of the Polish Tacitus. His principal works are: 1. 'Vir Consili Montis et Urbanorum, nec non prudens citius dicendum instructus'; 2. 'Militiae philosophia institutum'; 3. 'Civium et Miliarium seu axiomaticum bello et harmonium legum et consensuum libri'; 4. 'Fragmenta Scriptorum togae et bellici'; 5. 'Considereationes in Milites servitutem in Polonia'; 6. 'Proverbia et leges improvement of the Military service, in Polonia'; 7. 'Leges et politica, moral, and military, in Polonia. This work is a Royal treatise, and has contributed to establish the reputation of Fredro, who has here displayed an extraordinary knowledge of the world, and an intimate acquaintance with the habits and character of all ranks of society.'

FRED. BRIGHT is the widow's share of her husband's copyhold or customary lands, according to the custom of the particular manor of which the lands are holden. [COVOLH.] As dower is not an incident to copyhold tenanc
the quantity and duration of the widow's interest are regulary by her various rights; it is only a third in the life, but in other matters it is a forth part, and sometimes only a portion of the term. By other customs she takes the whole for her life, and in the manor of Taunton Deane, in Somersetshire, the wife takes the inheritance. In some places the widow has only a right to Free Beach out of the lands of which her husband died seised; in others, her right attaches upon all the lands held of the manor of which he was seised during the coverture. Frequently her estate is during widowhood only, and sometimes during claque widowhood. In the manors of Exeter, Torr and Torr in Devonshire, and in some other parts of the West of England, there is the ludicrous custom that where a widow has forfeited her Free Bench for incontinency, if she will come into court riding backwards on a black horse, she is allowed to keep her lands. The perpetuating certain verses more significant than decent, ending with 'Therefore pray,' Mr. Steward, let me have my land again,' the steward is bound to re-admit her to her Free Bench. (Courts of Champion; Scribon on Copyhold.)

FREEDOM. [Slave.]

FREEDMAN. [Will.]

FREEMAN. [ allot.] FREEMAN. An estate of freedom is defined by Britton to be 'the possession of the soil by a freeman,' and by Sir William Blackstone, that such an estate in lands as is enjoyed by the right of seisin, or in tenements of an incorporeal nature by what is equivalent thereto. Neither of these definitions is sufficiently precise; both are the consequence of the tenure, not the tenure itself.

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FREEMAN. [Suff.]

FREEMAN. [Suff.]
temperatures of the bodies above tallow is usually called their freezing or congealing point; and of tallow and the bodies below it, the fusing or melting point. These are added the fusing points of some metals, as determined by Professor Daniell, by means of his register pyrometer (Edin. Trans., 1830.)—

<table>
<thead>
<tr>
<th>Substance</th>
<th>Fusibility</th>
<th>Fusibility</th>
<th>Fusibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulphur</td>
<td>46°</td>
<td>Liquid amonia</td>
<td>46°</td>
</tr>
<tr>
<td>Nitric acid</td>
<td>spec. grav. 1.494</td>
<td>46°</td>
<td>45.5</td>
</tr>
<tr>
<td>Sulphuric acid</td>
<td>do. 1.674</td>
<td>45°</td>
<td>45</td>
</tr>
<tr>
<td>Mercury</td>
<td>39°</td>
<td>Liquid amonia</td>
<td>46°</td>
</tr>
<tr>
<td>Nitric acid</td>
<td>spec. grav. 1.407</td>
<td>30°</td>
<td>1</td>
</tr>
<tr>
<td>Sulphuric acid</td>
<td>do. 1.963</td>
<td>25°</td>
<td>1</td>
</tr>
<tr>
<td>Nitric acid</td>
<td>do. 1.3689</td>
<td>18°</td>
<td>1</td>
</tr>
<tr>
<td>Dittol</td>
<td>12°1-63°39</td>
<td>17°</td>
<td>5°</td>
</tr>
<tr>
<td>Ditto</td>
<td>do. 1.329</td>
<td>2°</td>
<td>4</td>
</tr>
<tr>
<td>Brandy</td>
<td>7°4</td>
<td>Sulphuric acid</td>
<td>spec. grav. 1,8376</td>
</tr>
<tr>
<td>Pure hydrocyanic acid</td>
<td>4°5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Common salt</td>
<td>25°</td>
<td>75°</td>
<td>3</td>
</tr>
<tr>
<td>Dittol</td>
<td>22°2-77°8 do.</td>
<td>7°2</td>
<td></td>
</tr>
<tr>
<td>Sal ammoniac</td>
<td>20°</td>
<td>60°</td>
<td>2</td>
</tr>
<tr>
<td>Common salt</td>
<td>20°</td>
<td>60°</td>
<td>2</td>
</tr>
<tr>
<td>Dittol</td>
<td>10°1-63°9 do.</td>
<td>13°5</td>
<td></td>
</tr>
<tr>
<td>Oil of turpentine</td>
<td>14</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Strong wines</td>
<td>20</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Rochelle salt</td>
<td>50°</td>
<td>50°</td>
<td>1</td>
</tr>
<tr>
<td>Common salt</td>
<td>10°</td>
<td>50°</td>
<td>1</td>
</tr>
<tr>
<td>Dittol</td>
<td>22°5</td>
<td>35°</td>
<td>1</td>
</tr>
<tr>
<td>Dittol</td>
<td>25°</td>
<td>50°</td>
<td>1</td>
</tr>
<tr>
<td>Blood</td>
<td>25°</td>
<td>75°</td>
<td>1</td>
</tr>
<tr>
<td>Common salt</td>
<td>6°25°-93°75° water</td>
<td>25°5</td>
<td></td>
</tr>
<tr>
<td>Epsom salt</td>
<td>41°</td>
<td>53°-34° do.</td>
<td>25°5</td>
</tr>
<tr>
<td>Natron</td>
<td>7°-5°87°9</td>
<td>25°-1</td>
<td></td>
</tr>
<tr>
<td>Common salt</td>
<td>4°-10°65-84° do.</td>
<td>25°5</td>
<td></td>
</tr>
<tr>
<td>Copperas</td>
<td>4°-6°54°-4° do.</td>
<td>24°</td>
<td></td>
</tr>
<tr>
<td>Vinegar</td>
<td>28</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sulphate of zinc</td>
<td>53°3+46°7 water</td>
<td>28°6</td>
<td></td>
</tr>
<tr>
<td>Malt</td>
<td>30</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>32</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Olive oil</td>
<td>36</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sulphur and Phosphorus, equal parts</td>
<td>40</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sulphuric acid</td>
<td>spec. grav. 1.741</td>
<td>42</td>
<td>1</td>
</tr>
<tr>
<td>Dittol</td>
<td>do. 1.799</td>
<td>40</td>
<td>1</td>
</tr>
<tr>
<td>Oil of nitre</td>
<td>50</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Concentrated acetic acid</td>
<td>50</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Tallow (Dr. Thomson)</td>
<td>92</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Phosphorus</td>
<td>108</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Spirit, from hog's land</td>
<td>109</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Spermaceti</td>
<td>112</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Tallow (Nicholson)</td>
<td>197</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Margarine acid</td>
<td>134</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Potassium</td>
<td>136</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Yellow wax</td>
<td>142 to 149</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>White wax</td>
<td>156</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sodium</td>
<td>190</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sulphur (Dr. Thomson)</td>
<td>218</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sulphur (Dr. Hope)</td>
<td>238</td>
<td>1</td>
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</tr>
<tr>
<td>Tin (Crichot)</td>
<td>449</td>
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<tr>
<td>Cadmium (Stromeyer)</td>
<td>about 442</td>
<td>1</td>
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</tr>
<tr>
<td>Bismuth (Crichton)</td>
<td>497</td>
<td>1</td>
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<tr>
<td>Lead (Crichton)</td>
<td>612</td>
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<tr>
<td>Zinc (Daniell)</td>
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<tr>
<td>Arsenious</td>
<td>809</td>
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<tr>
<td>Silver</td>
<td>1873</td>
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<tr>
<td>Copper</td>
<td>1986</td>
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<td>Gold</td>
<td>2016</td>
<td>1</td>
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</tr>
<tr>
<td>Iron, cast</td>
<td>2788</td>
<td>1</td>
<td></td>
</tr>
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FREIBERG is situated on the Münzbach, which flows into the Mulde, a mile and a quarter lower down; the market-place being 1200 and the Mining Academy 1231 feet above the level of the sea. It lies among the northern declivities of the Saxony ore-mountains, in 59° 53' N. lat. and 12° 21' E. long.; about 25 miles south-west of Dresden. Freiberg is the capital of the Erzgebirgische, or ore-mountains circle in Saxony, and is the centre of administration for the Saxony mines. It is surrounded by walls; the streets are regular, well-built, and paved; and it has a suburb, besides the Freudenstein or Freistein, an old castle, now used as a house for minerals-produce. It contains about 1300 houses, with many handsome buildings among them, and a population of about 12,900. In 1801 it was 8,737; in 1850 nearly 40,000. There are six churches, to which a Roman Catholic church was added in 1811; and of these the High-church (once a cathedral) is a fine specimen of the architecture of the middle ages, and has a portal, called the golden door, in the true Byzantine style, a handsome stone channel, and one of Silbermann's largest and finest organ. There is a chapel in this church in which the bodies of several Saxony dukes and electors, who were of the Protestant faith, from Henry the Pious, who died in 1414, to John George IV., who died in 1694, are interred. The High-church contains a handsome monument in memory of the brave prince Maurice of Saxony, who fell in the battle of Sievershausen in 1533, from the chisel of Cornelius Fiors of Antwerp, and another to the memory of Werner, who died in 1817. There are other buildings of note in the town, among which are the townhall, and the hospital, in which the deal is studied in his early years, and which is at present attended by nearly 500 pupils. The Mining Academy, which has attained considerable repute, is a spacious building; it was opened in 1767, and comprises class and lecture-rooms, the Wissenshaus, the jewelers' or engravers' requisites, and other classrooms. The old corporation of mining officers, mechanics, and labourers, which had several electors among its members, had become nearly extinct towards the beginning of the present century, but was renovated with much solemnity at Dresden, 1826. It comprises a mining school for educating miners in general, a school for teachers, a Sunday and an infant school, several primary schools, and a number of beneficent institutions, among which are an hospital, an orphan asylum, a house of industry, and infirmaries. The manufactures consist principally of articles in imitation of gold and silver ware, brass wares, white lead, gunpowder, iron and copper wares, linen, woollens, gold and silver lace, ribbons, and tape, leather, and lace, &c. Freiberg was founded by Otto the rich, duke of Saxony, and was not only endowed by him with many immunities, whence he named it 'the mountain of the free,' but was fortified with walls and a ditch by him, in the year 1176. It suffered much in the Thirty Years' War, during which it underwent sieges; and its vicinity was the theatre of the closing conflict of the Seven Years' War, on the 29th October, 1762, when the Imperialists were defeated by prince Henry of Prussia. It was the cradle of the Reformation in a part of Saxony; Protestantism having been planted here by Henry the Pious, in 1537.

About three miles out of the town are the extensive amalgamation works for this rich mining district; and near them are the machinery, which raises craft about fifty feet from the Mulde into the canal, as well as that for conveying the produce, resting on stone columns, and in other respects similar to the Roman aqueducts, which runs between two hills, but is no longer in use. In the immediate neighbourhood are the large mines of Himmelsfluth, near Brand, the 'Old Hope of God,' near Vogtberg, and Wandsers, each with 60 feet below the level of the sea; Frederic Augustus's mine, near Gross-Schirma; the Beschen-Glick, and Old Elizabeth's. (ERZGEBIRGISCHER KREIS.)

FREIBURG, a town and university in the circle of the Upper Rhine, in the southern part of the grand-duchy of Baden, situated on the Treisam, about 100 miles to the S.W. of Carlruhe, stands at an elevation of about 940 feet above the level of the sea, and was formerly the capital of the Breisgau; in 59° 59' N. lat. and 7° 53' E. long. It contains about 1300 houses, and 11,000 inhabitants. The number of the students, whose numbers are about 450 or 500, but inclusive of the adjoining villages of Herdern and Wichre or Adelshausen, the inhabitants of which are burgesses of Freiburg; the population is supposed to be 19,000. Twenty years ago the houses were surrounded with three gates, a fourth having been removed, and one suburb, called Stephanie; it is in general open and well built, the 'Kaiserstrasse' or street of the emperor in particular being broad, and lined with handsome houses. Among the public edifices we notice the former house of assembly for the states, which is at present the archbishop's palace; the grand duke's palace, on the site of the former citadel; the government buildings; the edifice containing the courts.
of justice and post-office; the old and the new university buildings, the latter of which was once a college of Jesuits; the town-hall, museum, grammar, theatre, and house of correction. Freiburg has several open places or squares, in the centre of one of which is the famous market, a fountain surmounted with a statue of Duke Berthold III, the founder of the town, represented in the habitments of his time. Besides three Catholic churches and one Lutheran, the religious establishments have several chapels and chapels attached, the most attractive of the latter is the cathedral or minster, probably the most beautiful and perfect specimen of Gothic architecture in Germany. It is a work of the twelfth century, begun in 1122, and not completed until 166 years afterwards; the tower, which is 384 feet high, is a remarkable structure, it has a beautiful gracefulness and elegance. Though quite so lovely as St. Stephen's at Vienna, or the cathedral at Strasbourg, it is deemed to excel both in purity of style, symmetry of proportions, and boldness of construction. It is built of red sandstone, in the style of another crown; the statues of the dukes of Zähringen, a holy supper, sculptured in stone, and paintings by Gros, Holbein, and other artists. Holbein's Ascension of the Virgin, which forms the altar-piece, is deserving of the highest praise.

The university, which was founded under the name of “the Altorum” by the archbishop Albert VI of Austria, in the year 1314, and ends in accordance to the extent of upwards of 2500, a year, and is exceeded in the number of students, as well as a museum, an anatomical theatre and clinical establishment, a botanical garden, &c. It is likewise supported by an annual grant of about 3400/. from the States. There are also a gymnasion, with a preceptor and seven teachers, a normal school, with five teachers, a school house, many private seminaries, several Sunday and holiday schools, in which apprentices and others are taught reading, writing, arithmetic, and other branches of knowledge suitable to their vocations; a girls' Sunday-school, in which for reading, writing, and arithmetic is taught, a garden of industry, where the management of forests, orchards, and gardens is taught. There are a town, a university, and a military hospital, and an orphan and foundling asylum, besides an institution for the relief of the poor.

The manufacture of Freiburg consists chiefly of feathers, sugar, starch, tobacco, balls, musical instruments, &c.

The town was founded by Berthold III, in 1118, and the fortifications were completed by the French, in 1734.

FREIGHT. The charge made for the carriage of merchandise is specified in the amount of goods as specified in the bill of lading. [BILL OF LADING.] It frequendy happens that the whole ship is hired by a merchant for the performance of the voyage, and in this case a certain amount of freight is paid without reference to the quantity of goods actually shipped. If, however, the ship owner, who has the bill of lading, permits the ship to be filled, that the ship owner, who has the bill of lading, permits the ship to be filled, which is the case more often than not, the ship owner is entitled to the full amount of the freight. Where this is not done, the freight is by law considered due on the part of the merchant on the delivery of the goods, and the owner or master of the ship may, if so inclined, demand payment of the same, package by package, as the same are delivered to him. It is almost all their business to trade, that is to say, some customs in this respect has arisen which is ordinally pursued, and the legal rights of the ship-owner are not enforced in this respect. In London, where the greater part of the merchandise brought from foreign countries is destined for the manufacture of one or other of the dark-commodities, a custom has arisen of arresting the goods in their hands, so that they cannot pass away from the original importer until the shipowner, or some person acting on his behalf, has signified in writing that the freight has been paid. If goods are damaged on board the ship, through the carelessness or wilful neglect of those in whose charge she and her cargo are placed, so that the owner of the ship is held to be liable for the amount of the damage, this cannot, but with the consent of the owner or master, be set against the amount of the freight, which must under all circumstances be paid, and the merchant must afterwards substantiate his claim to compensation for the amount of the damage.

FREISLEIN, JOHN, was born at Ulm, in 1583, and studied at Strasbourg, where he became librarian to Matthias-Heinrich, a wealthy philosopher, who gave him his daughter in marriage. He was afterwards appointed professor of eloquence in the university of Upsal, where he remained five years, after which he was made librarian to Queen Christina of Sweden. He was afterwards in the service of the Elector of Saxony, but the rigour of the climate of Sweden obliged him to return to Germany in 1625, when the elector palatine appointed him honorary professor in the university of Heidelberg, and his counsellor at the same time. He died at Heidelberg in 1646, and was succeeded by his son. In 1634, with the intention of replacing the lost books of that historian. The first part of this work was published at Strasbourg, in 1634, and the remainder appeared in Donjon's edition of Livy at Amsterdam. Freislein's Edition, now though the authors from which he derived the materials for his narrative. He also wrote a Supplement to Quintins Curtius, besides a Commentary on the same writer, as well as on Florus and Tacitus. Freislein wrote also: "De calido potu Aquasius," "De Praeconstantia Elettorum et Cardinalium," and other learned works.

FRESJUS, an episcopal town in France, in the department of Var, on the coast of the Mediterranean Sea, near the mouth of the Brigue. The distance of this town from Paris is 533 miles, in 47° 27' N. lat., and 4° 15' E. long.

Frejus is supposed to have been originally a colour of the Phœnicians, a name Marseilles, but the time of its foundation is unknown. It was attacked by the Romans in the year 273, under Julius, from Julius Caesar, who may possibly have commenced the excavation of the port which was completed in the time of Augustus, who established here the station of a fleet destined to protect the coast of Gaul; a Roman colony was established here, and the town grew in splendour and population. It is at present a place of small importance.

By the advance of the land (formed by the alluvium of the Argo) upon the sea, the port of Frejus was converted into a residential marst, and at a later period into dry land, but the city of Marseilles, the centre of which is still a small town, into which a canal for irrigation, dug from the Argo, flows, and which communicates by another channel with the sea. The limits of the ancient port may be traced along the whole length of the quay which terminated in the town, which remains, barely elevated above the marshy soil of what was once the harbour. A rude mass of masonry indicates the site of the Phœnix or light-house which antedates the entrance of the port. The harbour was twice as large as that of Marseilles, being above 1200 fathoms, and the entrance to the deepest recess, and about 1600 feet wide.

There are some remains of the ancient ramparts, which appear to have enclosed a site five or six times as large as that occupied by the present town. Two of the Roman gates still remain: one the 'gate of Carcas,' the 'gilded gate,' from some gilt-headed nails found there; the other was the gate communicating with the ancient port. There are some remains of aqueducts, and the ruins of an amphitheatre, faced with little squared stones and bricks: the amphitheatre is evidently that of Nimes. Many other remains of Roman edifices exist.

The present town is small and ill built. The population in 1831-2 was 218 for the town, and 2665 for the commune. It is one of the ports of France, and from the port of Frejus there was an exchange of goods in the fourth century; the bishop was and still is a suffragan of the archbishop of Aix; his diocese formerly included Lower Provence; it now comprehends the department of Var.

The name Frejus is a corruption of Forum Julii; in the Dictionary of Expilly, published in the middle of the last century, it is called Frigels.

FRENCH BERRIES, or the Grains of Avenion, the berry of the rhamnus inofiorum, which is gathered before it is ripe; it affords a very poor paper, but becomes a little better on drying, but is not permanent. It may be used, according to Berthold, by preparing the cloth in the same way as for dyeing with the berry. This as berry is rich in colour, it is often substituted for weld in calico-printing, although it is inferior in quality.
FRENCH ECONOMISTS. [Political Economy.]

FRERET, NICHOLAS, born at Paris, in 1688, was the son of a solicitor. He studied the law to please his family, but devoted his attention chiefly to the study of history and chronology. Oratoire des Francs et de leur Etablissement dans les Gaules, written with a boldness and candour unusual at that time; but it caused his confinement in the Bastille for a short time by order of the Regent d'Orléans. He was made a member of the Academy of the Inscriptions, and was afterwards one of its presidents. He wrote numerous memoirs, chiefly upon difficult questions of ancient history and chronology. His principal works are: Recherches Historiques sur les anciens Peuples de l'Asie; Observations sur la Généalogie de Pythagore; Observations historiques sur la Chronologie fondée sur les Monuments de l'Histoire ancienne, contre le Système chronologique de Newton. This last work was edited after Freret's death by Bougainville, who added to it a biographical notice of the author.

Freeret, while discarding the enormous antiquity attributed by some to Egyptian and Chinese history, and showing the accordance of the authentic records of those nations with the Mosiac chronology, throws back the dawn of the historical times to the years 3120 B.C., which he calls the year of the birth of Nebuchadnezzar.

He wrote also on the religion and geography of the ancient Egyptians. Freeret was a man of very extensive erudition and indefatigable application, and he rendered considerable service to history. He died at Paris in 1749, his scathing and learned pamphlets, particularly his publication, Oratoire des Francs et de leur Etablissement dans les Gaules, 20 vola., 12mo., Paris, 1796.

Long after Freret's death, two or three works of an anti-Christian tendency were published under his name by Naigeon, a disciple of Diderot, and others of the same school; but these works are not different in their style and spirit from all those that are known to have been his, and their authenticity has been so little proved, that they are generally regarded as apocryphal. This question is discussed at length in the Biographie Universelle, art. Freeret. Other compilations upon ancient history were also published, or were supposed to have been formed, or to have been alluded to in Freret's works, and have freely attributed to Freret.

FRERON, ELIE CATHARINE, was born in 1719, and educated by the Jesuits. He made himself conspicuous by his literary journal, which he began to edit in 1737, and the Prose Buffée, published in 1772. Being suppressed on account of some bitter attacks on several writers, Freron changed its title, in 1749, into that of 'Lettres écrites sur quelques sujets de ce temps.' In 1754 he again changed the name of his journal to that of 'Les Amis de l'Amour,' and continued till his death in 1774. Freeret directed his attacks against the philosophers of the eighteenth century, and particularly against Voltaire. His bitter invective was more than retaliated by his adversaries, and the end of his life was marked by a series of squabbles with a scurrilous reviewer. Freeret's son (Louis Stinalis), who continued the 'Ami des écrivains' till 1790, became notorious during the French revolution as a violent Jacobin. He died in 1892, at St. Domingo, where he accompanied General Leclerc, being nominated suggestion of that island.

FRISCO, an Italian word signifying fresh, is employed to denote a particular manner of painting upon a ground of plaster, or the like compound, because it is usual to lay on the colours while the ground is still wet and fresh. If the picture be retouched after it is dry, it is liable to change, to be uneven in the tints, or to suffer other injuries. No more ground is therefore prepared at a time than the painter can cover in a day. The colours used are chiefly earths. The plaster is prepared by mixing together various proportions of water, lime, and the augmentive of carta, the Italian for paper, and traced upon the soft plaster with a hard point. Nevertheless, with every aid, it requires the firm bold hand, the correct eye, and the consummate judgment of a master, to execute a painting in frisco properly. Each part of each picture, and each part at one painting, so as to commit no error, and preserve the harmony of the whole.

A similar style of painting was known to the antients, but Winickelmann observes that they did not trace off the outline with a point, and that great part of the work was done by their assistants. This frisco, in use at the period of the revival of the arts in Italy; and it improved with the progress of painting, until it attained its perfection in the time of the great masters of the Roman and Florentine schools. Most of the finest works of Raphael and Michel Angelo are painted in fresco, and are at Roma. With the decline of the art, fresco painting fell gradually into disuse.

To expect great softness, delicacy, or finish from such materials, would be obviously absurd; richness and depth of colour are equally impossible. But the very want of the inferior beauties obliges the painter to rely upon the highest—composition, drawing, and expression; and the absence of that transparent lustre which belongs to oil pictures is made good by the beauty of the composition, the gleam of reflected light, and displays every part of the design with the utmost distinctness, and force. Fresco is however susceptible of great brightness and purity of colour. The great size which it admits of, and even demands, requires the greatest care and skill, the most profound knowledge to foresee the triumph of the great painter, but an exposure for the poor one. Michel Angelo held oil painting as fit only for 'women and children, in comparison with fresco painting. The works of Raphael alone, who had the largest part, are, afford abundant examples to disprove this arrogant saying; for indeed genius, as Michel Angelo himself showed, when he handled the chalks and a scrap of paper, is independent of materials. Yet fresco is undoubtedly superior to oil pictures in the words of Vasari, 'most sure, most resolute, and durable of all other modes, and thus the best fitted for the purposes of history painting in its most exalted form.'

FRESCOBALDI, GIROLAMO, a most distinguished composer for instruments, born on the same year as Michael de Ferrara, and at the age of twenty-three became organist of St. Peter's at Rome. He may be considered as the father of the true organ style, and his writings have been more or less imitated by every orthodox composer of the kind of which he is the most exact exemplar. His treatise says Dr. Burney, 'entitled Ricercari e Canzoni Francesi, fatti sopra diversi obblighi in Partitura, contains the first compositions we have seen printed in score, and with bars. They are likewise the first regular fugues that we have met with in a printed form.' The first fugue was published in 1615, which in 1615, in which year is highly improbable that compositions of so elaborate a nature should have been published by the author, had his age been only fifteen. However, in 1641, according to Della Valle, Frescobaldi published a treatise of ten books.

FRENOY, CHARLES ALPHONSE DU, was born at Paris, in 1611. His father, who was an apothecary, gave him a classical education, with a view to bringing him up to the law, as a physic-man. But an inclination for painting induced him to the study of that art. He was of great assistance to the first. Subsequently, he was joined by his fellow-student, Mignard, whose assistance bettered his circumstances. The two were employed to copy pictures in the Farnese gallery. De Frenoy afterwards visited Venice. He returned to France in 1656, where he was immediately followed by Mignard in 1662, and they again lodged together. He died paralytic in 1665, in the house of his brother, at Villiers-le-bel, near Paris. He was never married, and left no pupils. He executed very few pictures, and they are not remarkable for anything but correctness of drawing. He was the author of a didactic poem, 'De Arte Graphica,' in Latin verse, which has been translated into several languages. There are three English translations: by Dryden, in prose; by Wills, a painter, in very poor verse; and by Mason, in a Latin metrical verse. The translation of the latter was made by Sir J. H. Reynolds. The work is rather a critical treatise on the practice of painting, with general advice to the student, than a manual for the art. It is dry, and not remarkable for elegance, imagination, or originality. Had it been more in prose, it would have been much more probable of being the work of the author; but the circumstance of its being in verse, and in Latin, perhaps added a zest to its perusal in the shape of a little difficulty, and gave it an extrinsic importance. Sir Joshua's notes are pertinent and useful, but not so instructive as his lectures. The work will not suffer in the
最小位数で教える理論の一部、または絵を交えるもの、もしくは作業がその所要の一部を占めるもの。これには全く何の役もつかない。Mason: "Biographie Universelle"

FRET, in musical instruments of the stringed kind, is a wire or string, fixed to the neck of the instrument, for the purpose of making the exact part of the finger-board to be pressed for the purpose of producing certain sounds. Frets are now never applied to any instruments except guitars, lutes, &c.

FREYBURG. [Freiburg] is the capital of the Canton of Freiburg, one of the cantons of the Swiss Confederation, is located on the north and east by the canton of Bern, south by the canton of Vaud, and west by the canton of Vaud and the lake of Neuchâtel, which divides it from the canton of Neuchâtel. Its situation is one of the most pleasant in Switzerland, breadth is about 260 German, or 385 English square miles; and its population in 1934 was 59,192, including resident strangers. The south part of the canton is very mountainous, and is not suitable for the purposes of cultivation, as the soil is of poor quality, and the climate is not favorable to the growth of plants. The best part of the canton is the north and west, which is more fertile, and is suitable for the growth of crops. The most important city in the canton is Freiburg, which is located on the river Rhine, and is the seat of the government of the canton. It is a busy and thriving city, with a population of about 25,000. The canton is divided into 14 districts, each of which is governed by a mayor and council. The canton is also divided into 24 municipalities, each of which is governed by a mayor and council. The canton is the seat of several important schools, including the University of Freiburg, which is one of the most important universities in Switzerland. The canton is also the seat of several important churches, including the Roman Catholic Church, the Reformed Church, and the Swiss Free Church. The canton is also the seat of several important industries, including the manufacture of textiles, clothing, and leather goods. The canton is also the seat of several important banks and insurance companies.

The climate of Freiburg is moderate, with a average temperature of 52°F in July and 38°F in January. The canton is divided into 14 districts, each of which is governed by a mayor and council. The canton is also divided into 24 municipalities, each of which is governed by a mayor and council. The canton is the seat of several important schools, including the University of Freiburg, which is one of the most important universities in Switzerland. The canton is also the seat of several important churches, including the Roman Catholic Church, the Reformed Church, and the Swiss Free Church. The canton is also the seat of several important industries, including the manufacture of textiles, clothing, and leather goods. The canton is also the seat of several important banks and insurance companies.

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a pyramid raised in 1838, in commemoration of the battle against Charles of Burgundy, the old church and casino having been destroyed by the French in 1798.

The lake of Morat, in German Murtensee, is about five miles long and two broad, and about 160 feet in its greatest depth; it abounds with fish. It is subject to floods, at which times it overflows the convents of the Benedictines of the Saone, and sometimes, as it is entered by the Montreux, it is driven in an easterly direction, and falls upon the country of the people of the city of Geneva.

Every district has a prefect appointed by the council of state for six years, and a court of justice for the same period. The communal administration varies greatly according to the temper and instruction of the respective populations. Several of the communes have divided their communal lands, have established common dairies, have formed savings' banks, in order to get rid of the scourge of pauperism, but others have confined their operations to the wasteful of their communal lands and forests, and are encumbered with beggars. A few have taxed themselves for the support of their poor. The "heimathlosen," or men without a settlement, who amount to 390 families, and strangers, called "politically," both in French and German, have no allocation of municipal offices. By a law of 26th May, 1831, natural children have been admitted to the same political rights as legitimate ones. The roads, which were proverbially bad in this canton, begin to improve; in 1834, the Great Council of the town of Murten added 4,000 francs to the road construction fund, for the object. A new civil code has been compiled, and the obligatory registry of mortgages has been established. A commission has been appointed for the revision of the penal laws, which were barbarous, as in most other cantons in Switzerland. Fortune has been abolished. In the year 1834, the list of crimes which came before the court of appeal was as follows: forty-one thefts or robberies; eleven assaults and battery; two forgeries; two frauds, and one dereliction of an infant. In the same year the number of births was 22,456, and deaths, 1,798.

The revenues of the canton are derived from the dikes or ditches on land, from the feudal rights and dues with which many properties are still encumbered, and which are collected by the state, though the Saane, 633,110 francs, the property of the Saane. There exists the duty of redeeming themselves; from the forests belonging to the state, from the interest of capital, from customs and other indirect taxes, from fines, and from the mint, post-office, and other rights called regalia. The whole of this, claims, amounting in 1826, 412,365 Swiss francs (a Swiss franc is equal to 14 French francs), and was nearly all absorbed by the expenditure of which the principal items were: general administration, 30,640 francs; department of justice, 47,890; military, 47,933; pay of police, 6,300; civil salaries, 6,979; bridges and highways, 52,947; public instruction, 6,277; miscellaneous expenses, 83,000.

The militia of the canton consists of 2,265 men, of whom some companies perform duty by turns, and all must be in readiness on a moment's notice. There is besides the landwehr, consisting of all the men capable of bearing arms in case of necessity.

The French is now adopted as the language of the government but all laws, decrees, and resolutions, must be published both in French and German. The press is free, but subject to laws against abuse of it.

There are about 100 holidays kept in the year, including Sundays; dancing, a favourite diversion of the people, was formerly allowed only on certain days, but now a general licence has been granted.

(Fersche, Dictionnaire Géographique Statistique de la Suisse, 1836; Gemäldte der Schweiz, der Canton Freiburg, St. Gall, 1833; Dandolo, Svezia Occidentale, Canton de Fribourg.)

FREIBURG, Fribourg in Switzerland, the capital of the canton, is built on several steep hills on both banks of the river Sarine, and its appearance is extremely bold and picturesque. Part of the houses rise along the slope of the hills, others are supported on greatly constructed brick foundations, and some are received from each other by deep ravines. Naked rocks, gardens, trees, and green fields are seen interspersed with churches, convents, and other buildings, the whole being surrounded by ramparts flanked with towers. On the Sarine bridge, which was partly a suspension-bridge, erected in 1834, is one of the finest in the world; its length is 885 feet, and it stands 170 feet above the level of the river. The other remarkable structures in the town are: 1. the town-house, built in the sixteenth century, in which the Great Council meets; 2. the collegiate church of St. Nicholas, built in the twelfth century; 3. the college of St. Michael, kept by the Jesuits, with an establishment for boarders, in which several hundreds young men, mostly foreigners, are educated; 4. the monastic school of the Franciscans of which Father Girard, the zealous promoter of popular education, was an inmate; and several other convents and churches. The population of Freiburg, in 1834, was 8,533, including about 1,000 natives of other cantons of Switzerland, and 833 foreign residents. The chief manufactures are woolens, pottery, tobacco, and straw hats; there are also two printers and six book-sellers. The scientific societies are the following: those of archeology, of natural sciences of medical science, and of public economy, a literary club, and a merchant's institute. A academy was established in 1829, and the deposits in 1835 amounted to 75,000 Swiss francs. A market is held every Saturday, besides five fairs in the course of the year. Freiburg lies 16 miles south-west of Bern, and 32 miles north-east of Lausanne.

FRIARS, from the French frères, a term in strictness meaning the brethren of a community, but more particularly applied to a new order of religious persons, who mostly sprung up at the beginning of the thirteenth century, and were encouraged and protected by the popes and many benefactors (the so-called monastic institutions, the ample endowments of which had led it to degenerate from its primitive austerity, and yield to luxury and indulgence. These Frères consist of Dominicans, Franciscans, Trinitarians or Marilasers, Crococi or Crucified Frères, Austin Frères, Frères of the Sac, Bothlomites, Frères of the Order of St. Anthony of Vienna, Frères de Piè, and Bothlomites of Good Men. These last were brought into England by Edmund de Mentmore in 1225. One of their orders was placed at Ashridge in Buckinghamshire. The Capuchins and Observants were distinctions of the Franciscan Friars.

Warton, in his 'History of English Poetry,' speaking of the Mendicants (for which they were called from being destitute of fixed possessions), says, these societies soon surpassed all the rest, not only in the purity of their lives, but in the number of their privileges, and the multitude of their members. Not to mention the success which attended their missions in England, and the encouragement which gave them opportunities of appearing in public and conspicuous situations, they exhibited more striking marks of gravity and sanctity than were observable in the deportment and conduct of the members of other monasteries, they were regarded with the highest esteem and were esteemed throughout all the countries of Europe. In the mean time, they gained still greater respect by cultivating the literature then in vogue with the greatest assiduity and success. Giannone says, that most of the theological professors in the universitv of Oxford, and a number of the best of the Franciscans, Dominicans, Carmelites, and Augusitines had flourishing monasteries in England. The most learned scholars in the university of Oxford, at the close of the thirteenth century, were Franciscan friars, and long after this period the Franciscans appear to have been the sole benefactors of learning. In 1236, and a colony of friars was employed in adorning their houses with stately refectories and churches, and for these and other purposes they did.

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not want address to procure multitudes of patrons, which was facilitated by the notion of their superior sanctity. It was fashionable for persons of the highest rank to bestow on their bodies to be buried in the friary churches, which were consequently filled with sumptuous shrines and superb monuments. In the noble church of the friars in London, which was long since destroyed, four queens, besides upwards of six hundred persons of quality, were buried, whose beautiful tombs remained till the Dissolution. These interments imported considerable sums of money into the mendicant society. It is probable the friars might benefit more from the casual charity than they would have gained from a regular endowment. The Franciscans indeed enjoyed from the popes the privilege of distributing indulgences, a valuable indemnification for their voluntary poverty.

In the whole, two of these mendicant institutions, the Dominicans and the Franciscans, for the space of near three centuries, appear to have governed the European church and state with an absolute and universal sway; they filled, during that period, the most eminent ecclesiastical and civil stations. They were, with an authority which silenced all opposition, and maintained the disputed prerogative of the Roman pontiff against the united influence of prelates and kings, with a vigour only to be paralleled by its success. The Dominicans and Franciscans were, before the Reformation, exactly what the Jesuits have since been. They disregarded their monastic character and profession, and were employed not only in spiritual matters, but in temporal affairs of the greatest consequence; in composing the differences of princes and settling the boundaries of several kingdoms; and, as they predominated in the cabinet councils, levied national subsidies, influenced courts, and managed the machinery of every important operation and event, both in the religious and political world.

For it must be observed, it is natural to suppose that the mendicants at length became universally odious. The high esteem in which they were held, and the transcendent degree of authority which they had assumed, only served to render them obnoxious to the clergy of every rank, to the monastic orders, and to the secular clergy. Their wealth was considerable, and their ambition unbounded, and their arrogance intolerable. Their increasing numbers became, in many states, an enormous and unwieldy burthen to the commonwealth. They had abused the powers and privileges which had been entrusted to them, and the common sense of mankind could no longer be blinded or deluded by the palpable frauds and artsifices which these rascious zealots so notoriously practised for enriching their convents. The esteem for them degenerated greatly on the Continent. In England, at the dissolution of the religious houses, they fell as unprofitably as the rest of the monasteries.

(Warton's History of English Poetry, 4to. edit. vol. i. pp. 289, 293; Tanner's Notitia Monastica, edit. Nasm. pref. pp. xii. 266.)

SECTION. If the surfaces of two solid bodies in contact be conceived to be perfectly smooth or geometrical surfaces, and to be subject to the action of any external forces, the determination of the circumstances both of their equilibrium and motion requires that we take into consideration their mutual relations as a moving force, acting in the opposite directions of the common normal, at the point or points of contact. This force is strictly proportional to the pressure mutually exercised, which in the case of equilibrium is the resultant of the external forces applied, and to or from which in curvilinear motions we must add or subtract the pressure arising from centrifugal force.

But as all natural surfaces have certain degrees of roughness arising from the innumerable small asperities with which they are covered, it becomes necessary to attend to the force of friction acting in the tangent plane of the surfaces in a direction opposite to that in which the surfaces move or tend to move. Friction is therefore a retarding force capable of destroying but incapable of generating motion; and, in order to be a fruitful source of power, it must be capable of acting as a mechanical force, of which the tendency is to be low stability. It is therefore of great importance in the useful arts of life to be acquainted with its laws, to know how to increase it, as in the case of the friction of wheels, to prevent them from slipping, and in all works in which it is an object to economise the expense of force.

The attempt to discover the laws of friction from abstract considerations on the constitution of bodies has not led, nor could have been expected to lead, to trustworthy results. This research belongs properly to the province of experiment. The objects are within our reach, and the procedure should be more simple and easy. But the great variety of solids of different physical properties would lead us to anticipate a corresponding variety of results; it is therefore necessary to aim at properties connected with causes independent of the constitution of the substance, in fact, of these facts may be entirely influenced by the time or duration of contact, by the actual pressure of the surfaces, by the extent of the surfaces in contact, and by the velocity of the motion.

These questions were answered in a very contradictory manner by younger men, Euler, D'Alembert, D'Arsac, &c.; the reason for which disagreement was, that abstract notions and hypotheses took, wholly or partly, the place of experiment, and the little of experiment which was admitted was very indifferently executed. The importance and uncertainty of the subject at length attracted the notice of the French Academy of Sciences, and Coulomb published, in 1781, the results of an extensive series of experiments (in the Mémoires des Savans Etrangers) which were commenced in 1779. The high character of Coulomb as a sagacious experimentalist has preserved this memoir in great repute to the present time, and some of the laws which he inferred have been gradually confirmed, while others have been modified or rejected.

Professor Vince, of Cambridge, a few years after the publication of these experiments, published a memoir showing the connexion of the friction of solids to the uniformity of the retarding power of friction, and affirmed that when cloth and woollen are employed, an increase of retardation accompanies an increase of velocity. To Mr. Southern are due some experiments of a similar nature, but the friction of water is of a much more simple and secure certainty to his conclusions. Several able experimentalists, as Wool, Tredgold, Rennie, Morin, &c., have continued the same class of valuable researches up to the present date; and though the results on the quantity of friction compared with the nature of the surfaces and the pressure are not finally established, the laws of friction may be regarded as being nearly if not altogether established. The subject still offers a vast field of research.

The following appear to be the most general results which have been yet obtained by observations on friction.---

1. Friction is increased by time; thus it requires the application of a greater force to move a weight along a horizontal plane from its position of rest than to keep it afterwards moving on the same plane.

2. The methods of estimating friction rather uncertain. The method alluded to consists in placing the weight on a plane of which the position at first is horizontal, and gradually elevating one extremity of the plane to an inclination sufficient to cause the imposed weight to begin to slide. The height of the plane at which it becomes necessary to move, its aspersities become more deeply involved between those of the plane than when first placed on or when in motion; and it has been observed that by giving a light tap to the plane, the small vibrations produced are sufficient to free the weight from the acquired hold of the plane, when it would descend at a much lower inclination corresponding to its true index of friction. In other methods for attaining the same result, the same causes, which have already been considered, that which only exists at the commencement of the motion, has not been sufficiently attended to, and must therefore have vitiated the results: this uncertainty is not removed even in the experiments of Mr. Rennie afterwards noticed.

3. Between substances of the same nature the friction is proportional to the pressure; thus, if a block of oak be of double the weight of another, and both, having equal surfaces of contact, are placed on one plane of uniform nature, the force required to move the first will be double of that requisite for the second.

4. The amount of friction is independent for one and the same body of the extent of the surface of contact.

In verifying this law, it will be necessary to take care that the same conditions are observed; in the different trials which are mutually compared, for when a rectangular block of oak is placed on an oak table so that
the fibres in both lie parallel, the friction is greater than in the case where the fibres of the block lie transversely to those of the table.

4. The friction is independent of the velocity, at least when the velocity is neither very small nor very great.

For it is clear that friction is a constant retarding force, and consequently when a body is drawn on a plane by the action of gravity, or by the intervention of a pulley and cord, which causes it to communicate with a vertically descending weight, the spaces it passes over will be proportional to the square of the time measured from the origin of its motion.

There are other modifications of friction besides that of simple attraction, which belong to various heads, as Rigidity of Ropes, \\&c. We shall now give some account of the most recent experiments, and carefully considered experiments which have been published on this subject.

In the Philosophical Transactions for 1829, Mr. George Rennie published his experiments on the friction of attraction relative to several solid substances, such as ice, from its resistance to sledge, \\&c. Cloth, because of its anomalous properties compared with other solids.

Leather, of so much use in the pistons of pumps, \\&c. Wood, in its application to pile-driving, carpentry, \\&c. Stones, from their importance in archeology and other constructions.

And metals, from their extensive application to machinery, carriages, railroads, \\&c.

We must refer to the memoir itself for the tabulated results of experiments, and carefully consider the author's valuable remarks thereon; and we shall only extract some of the experiments on wood and metals, as they are of the most extensive employment in machinery. Without underestimating the experiments by the inclined plane, we decidedly prefer those referring to friction on a horizontal plane, which is to be understood in the following tables.

**Fricition of Woods two inches square.**

<table>
<thead>
<tr>
<th></th>
<th>Weight on red oak</th>
<th>Weight on black beech</th>
<th>Norway oak on Norway oak</th>
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<td>14</td>
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Comparative Amount of the Friction of Different Metals under an average Pressure of from 54.25 lbs. to 69.55 lbs.

<table>
<thead>
<tr>
<th>Names of metals</th>
<th>Average weight</th>
<th>Proportion</th>
<th>Weight per square inch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brass on wrought iron</td>
<td>69.55</td>
<td>7.319</td>
<td>11.19</td>
</tr>
<tr>
<td>Steel on steel</td>
<td>69.55</td>
<td>6.869</td>
<td>11.19</td>
</tr>
<tr>
<td>Brass on steel</td>
<td>69.55</td>
<td>6.745</td>
<td>11.19</td>
</tr>
<tr>
<td>Steel on steel</td>
<td>69.55</td>
<td>6.599</td>
<td>11.19</td>
</tr>
<tr>
<td>Brass on brass</td>
<td>69.55</td>
<td>6.561</td>
<td>11.19</td>
</tr>
<tr>
<td>Cast iron on cast iron</td>
<td>69.55</td>
<td>6.475</td>
<td>9.08</td>
</tr>
<tr>
<td>Cast iron on steel</td>
<td>69.55</td>
<td>6.203</td>
<td>9.08</td>
</tr>
<tr>
<td>Cast iron on wrought iron</td>
<td>69.55</td>
<td>6.15</td>
<td>9.08</td>
</tr>
<tr>
<td>Tin on tin</td>
<td>69.55</td>
<td>5.746</td>
<td>12.25</td>
</tr>
<tr>
<td>Iron on iron</td>
<td>69.55</td>
<td>3.305</td>
<td>12.25</td>
</tr>
</tbody>
</table>

The preceding table is a little abridged.

From hence it would appear that hard metals have less friction than soft ones, and the friction of hard against hard may be generally estimated at about one-sixth of the pressure.

From his experiments on the frictions of axes without unguents, Mr. Rennie remarks that when gun-metal is loaded with weights varying from one to ten hundred weight, the friction varies nearly in the proportion of 1:8 to 1:4 of the pressure, and is scarcely affected by time; that it was increased when yellow brass, and decreased when cast-iron was tried; and still more so when black-lead was used instead of unguent metal.

Relative to unguents the experiments show that for gun-metal on cast-iron with oil intervening, and a weight of ten hundred weight, the friction amounted to 1:4 of the pressure, but on diminishing the insistent weights the friction was diminished to 1:2; cast-iron, under similar circumstances, showed less friction, which was also diminished by hog's hair when loaded.

From hence it may be inferred that the lighter the insistent weight, the finer and more fluid should be the unguent.

His experiments on hide-leather soaked in water, compared with dry leather, show that the soaking causes the friction to be subjected much more to the influence of time and weight.

Amongst the conclusions which Mr. Rennie draws, the following are perhaps the most important.

With fibrous substances, such as cloth, \\&c., friction is increased by surface and time, and diminished by pressure and velocity.

With harder substances, such as woods, metals, and stones, the amount of friction is simply as the pressure, without regard to surface, time, or velocity.

Friction is greatest with soft, and least with hard substances. The diminution of friction by unguents depends on the nature of the substances, without reference to the substances moving over them.

Subsequent to the publication of Mr. Rennie's memoir, M. Arthur Morin, captain of artillery, commenced a series of experiments on friction at Metz, in 1831, which he continued by another series in 1832; they form the subject of two memoirs in the volume of the Mémoires de l'Institut for 1833. The author's object was to repeat the experiments of Coulomb, with the view of either verifying, or correcting them. The amounts of friction which he obtains differ greatly from those given by Coulomb, who, in his opinion, must have frequently employed materials improperly prepared, and committed other oversights, whence he accounts for the errors into which he has fallen. The results of M. Morin's experiments go completely to establish the four laws of friction mentioned at the beginning of this article.

The description of the apparatus which he employed would be too long to be inserted here, but it seems very ingenious and well adapted to obtain that precision and neatness of measurement which are necessary for the observations of this nature valuable. The motions were horizontal by means of a cord and pulley, but the most curious part of the apparatus is a dynamometer, to measure the tension of the cord by the inflexion attached to it, and the moving train; the state of which was determined by a pencil-trace on paper laid on a circular plate of copper, having a uniform rotation. He was thus enabled to compare the spaces described, whether in retarded, uniform, or accelerated motions of the train, with the time elapsed, and he confirms the conclusion that friction is a uniformly retarding force. The relations between the radii vectors of the curve described, with the corresponding angle at the centre, which is proportional to the time, enabled him in the various cases to connect the time with the retardation, which co-ordinates the relation between the space and time, the latter curve being generally a parabola; the idea of this invention, he says, was suggested to him by M. Poncelet. His results however differ in amount so greatly from those of Coulomb, and most others who have made friction the subject of experiment (though leading to, and confirming, the same general laws), that it may be permitted to doubt whether a source of error may not be somewhere concealed in the dynamometer employed.

In the following table, we give some of the more important results of his first memoir; the first referring to surfaces which have been for some time in contact; the second giving the friction during motion; and in both cases without the employment of unguents.

I. Friction of plane surfaces which have been some time in contact.

II. Friction of plane surfaces in motion.
or Gardner island in 17° 57' S. lat. The most southern of the Friendly Islands is Pylstaart, in 22° 26' S. lat. These islands are remarkable for the mildness of their climate, their fertility, and the great variety of their vegetable productions. For food, there are cultivated and game-cooked bread-fruit trees, sugar-cane, and sago; the Chinese paper mulberry-tree is cultivated for its inner bark, from which the clothing of the inhabitants is made. Hogs and dogs are numerous, and both are used for food. Fish is plentiful, and also different kinds of birds, as owls, pigeons, parrots, and to the编程 error in the document. A handwritten correction is likely required, as the text is not legible.

Cook called these islands the Friendly Islands, because he was received by the inhabitants in a very friendly manner; but it is now well known that they had been taught to seize his vessels. They are a very industrious people, and pay great attention to the cultivation of the soil. They apply themselves also to fishing, and live mainly by the manufacture of their clothing, and of their domestic utensils. They have a complete religious system, priests, and festivals, and sometimes they sacrifice men, but they do not eat them. Missionaries have been in some places as long as 184, and they speak a language distinct from all the other languages of the Pacific. The political constitution is a despotism, supported by an hereditary aristocracy. The number of the inhabitants is estimated to amount to 20,000.

FRI FRIENDLY SOCIETIES. These institutions, which if founded upon correct principles and prudently conducted, are beneficial both to their members and those whom they are designed to benefit, and are more likely to remain than any other similar associations. Mr. Turner, in his History of the Anglo-Saxons, notices them in these words: 'The guilds, or social corporations of the Anglo-Saxons, seem on the whole to have been friendly associations made for mutual aid and contribution to meet the pecuniary exigencies of individuals, and also for voluntarily arranging the payment of the fines, the payment of the fines, and other payments or compensations. These social corporations of our ancestors differed from the friendly societies of modern times, both as regarded the quality of their members, who were not connected to the poor or the working classes, and also as regarded the objects of their society. It is now no longer necessary to establish a mutual guarantee against legal exactions and penal mutes, and the objects of friendly societies are now limited to an insurance against the natural contingencies of sickness, infirmity and death.'

Until a comparatively recent period, the principles upon which these societies should be conducted were not understood, and as their management was confined to persons of insufficient attainments, the common result was simply dissipation. One of the friendly societies thus established is said to have been established in 1715; but this fact rests only upon tradition, and is unsupported by any records in possession of the body.

The earliest occasion upon which the objects contemplated by these associations can be said to have received the sanction of either branch of the English legislature was in 1773, when a bill brought into the House of Commons by Mr. D'ョdreswell, and supported by Sir George Savile, Burke, and other influential men, for the purpose of incorporation of the Lords: its object was 'the better support of poor persons in certain circumstances, by enabling parishes to grant them annuities for lives upon purchase, and under certain restrictions.' A bill with a similar object met with the like fate in the House of Commons, and was passed in 1732, and thrown out by the Lords. A bill introduced in 1793 by the late Mr. George Rose passed into a law, which is known by his name, and was extensively acted upon. This act received 'that the protection and encouragement of Friendly Societies in many respects, for securing, by voluntary subscription of the members thereof, separate funds for the mutual relief and maintenance of the said members in sickness, old age, and infirmity, is likely to be attended with very beneficial effects, by promoting the happiness of individuals, and at the same time to be a considerable relief to the public burthens.' This act authorized any number of persons to form themselves into a society of good fellowship, for the purpose of raising funds, by contributions or subscriptions, for the mutual
relief and maintenance of the members in old age, sickness, and infirmity, or for the relief of the widows and children of deceased members. A committee of members was authorised to frame regulations for the government of the society, which regulations, after being approved by the majority of the subscribers, were to be exhibited to the justices at quarter-sessions, and to be confirmed and to the rules of savings' banks; in Scotland to the lord-advocate or any of his deputies; and in Ireland, to such barrister as may be appointed by her majesty's attorney-general in Ireland, for the purpose of ascertaining whether such rules are consonant with the laws and testamentary dispositions of the realm, and conformable to the true intent and meaning of the act, to be confirmed and made binding upon the subscribers.

Among other provisions, it was allowed to impose reasonable fines upon such members as should offend against the regulations; such fines to be applied to the general benefit of the society. By this act it was declared unlawful 'to dissolve or determine any such society, so long as the intents or purposes declared by the society remain to be carried into effect, without the consent in writing of five-sixths of the then existing members and all of the persons then receiving or entitled to receive relief from the society, on account of sickness, age, or infirmity.' Societies thus constituted were relieved from the payment of certain stamp-duities, and from all costs and charges at law in respect of the same. Rose's act to other 'benevolent and charitable institutions and societies formed in this kingdom for the purpose of relieving widows, orphans, and families of the clergy and others in like cases of want or distress.' Several other acts were passed between 1795 and 1817 affecting the regulations of these societies, but not in any matter of importance. In the last-mentioned year the 'Savings Bank Act' was passed, and under its provisions the officers of friendly societies were allowed to deposit their funds in any savings' bank, by which means they got security for their property and a higher rate of interest than they could otherwise obtain.

This act has been of essential benefit to these associations. Another law, making provisions for the further protection and security of members thereby subscribing sums of money, was also passed in 1819; but this and all other acts previously passed with the same object were repealed and superseded by the act of 1829 (10 Geo. IV. c. 50), which with two acts passed in 1832 and 1834 (36 & 37 Geo. IV. c. 37, and 4 and 5 Will. IV. c. 40), contain the law as it now stands for the regulation of friendly societies, it is unnecessary to detail here the alterations effected in 1819.

In the years 1825 and 1827, select committees were appointed to investigate the condition of Friendly Societies relating to friendly societies. The reports made by these committees have thrown considerable light upon the subject, and prepared the way for the enactment of 1829, already mentioned, which, with the subsequent acts of 1832 and 1834, gives the Friendly Societies the law they now enjoy.

The law of 1829, in the first place, authorises anew the establishment of societies within the United Kingdom, for raising funds for the mutual relief and maintenance of the members, and gives protection to all such societies then existing, while it affords encourage for the formation of other like associations for the mutual relief and maintenance of all and every the members thereof, their wives or children, or other relations, in sickness, infancy, advanced age, widows, orphans, or any other natural state or contingency

The matter of such societies is to meet together to make such rules for the government of the same as shall not be contrary to the intent of the act nor repugnant to the provisions and if no such rules as may be reasonable to the members who offended against any of such rules as may be necessary for enforcing them; and these rules, which must be passed by a majority of the members present, may be altered and amended from time to time as the case may require. By this act or amended rules shall be confirmed by the justices of the county at the general quarter-sessions, they must have inserted in them a declaration of the purposes for which the society is established, and the use to which its funds shall be applied: The societies are empowered and authorised to examine all circumstances any member of the society or other person shall be entitled to the same; and further it is required that the rules so passed shall be submitted, in England and Wales and Berwick-upon-Tweed, to the barrister-at-law for the time being appointed to settle such rules of savings' banks; in Scotland to the lord-advocate or any of his deputies; and in Ireland, to such barrister as may be appointed by her majesty's attorney-general in Ireland, for the purpose of ascertaining whether such rules are consonant with the laws and testamentary dispositions of the realm, and conformable to the true intent and meaning of the act, to be confirmed and made binding upon the subscribers. The officers here mentioned are respectively to settle such rules, and make them conformable to law and to this act of parliament, giving a certificate of this regulation having been complied with. The rules so certified are then to be deposited with the clerk of the peace for the county, and sent to the society. If the barrister or other officer above mentioned shall refuse to certify the rules offered for his approval, the society is allowed to submit the same to the court of quarter-sessions, together with the reasons assigned for his refusal of the same. If his refusal should be confirmed, the court shall confirm the rules notwithstanding the disapproval of the revising officer. Before these directions are complied with, no society is entitled to enjoy any of the privileges or advantages communicated by the act; but when the rules shall have been certified, they shall be altered and the like confirmation shall have attended such alteration, they shall be binding upon the members of the society, and a certified copy of them shall be received in evidence in all the courts of law in the true execution of which the society must give account. The members of the society shall take the same to the clerk of the peace for the county, for sufficient sureties, for the faithful performance of his trust, and must, on the demand of the society, render his accounts and assign over the funds of the society at the demand of a meeting of the members. The property of the society is to be vested in the treasurer or trustees of the society, who may bring and defend actions, 'criminal as well as civil, in law or in equity,' concerning the property, right, or claim of the society, provided they shall be authorized to do so by the vote of a majority of the members, and that its being necessary to take out letters of administration.

It is not lawful to dissolve any friendly society, so long as any of the purposes declared in its rules remain to be carried into effect, 'without obtaining the votes of consent of five-sixths in every such society, and the consent of all persons then receiving or then entitled to receive relief from such society; and for the purpose of ascertaining the votes of such five-sixths in value, every member shall be entitled to one vote, and an additional vote for every five years that he may have been a member, provided that no one member shall have more than five votes in the whole.'

The rules of the society are to contain a declaration whether, in the event of any dispute or difference arising between the society and any of its members, the matter shall be referred to the decision of a justice of the peace or of arbitrators; if to the latter, the arbitrators must be chosen or elected in sufficient number at the first meeting of the society, and shall be held the enrolment of its members. If the society has received any sums in the funds of the society; and whenever the necessity for their employment shall arise, a certain number, not exceeding three, are to be chosen by ballot from among the arbitrators for the purpose of determining justly and impartially, and empowered to enforce compliance with the decision of the arbitrators. If the rules of the society direct the application, in cases of disputes, to justices of the peace, any justice is empowered to summon the person against whom complaint is made to appear, and to determine whether a matter, their sentence or order being final and conclusive. Minors, if they act with the consent of parents or guardians, may become members of friendly societies, having authority to act for themselves on the one hand, and being held legally responsible for their acts on the other.

A statement, attested by two auditors of the funds belonging to each society, shall be made annually to its
members, every one of whom may receive a copy of the statement on payment of a sum not exceeding sixpence.

Every friendly society, when its funds are in an old, with- ered, or improper state, shall on or before the third months after the end of the year 1835, and again within three months after the expiration of every five years, to transmit to the clerk of the peace for the county in which the society is situated a return of the rate of sickness and mortality among its members, and of the expenses incurred by the society during the preceding five years, giving the number of members, the amount of annual payments, the number of habitations in which the society is carried on, and a statement of the returns to be made in a prescribed form to assure uniformity; and the clerks of the peace are directed, within one month after the period just stated, to transmit these returns to the Secretary of State, with a view to their being laid before parliament. In case the officers of any society shall neglect to transmit these returns within the time specified, the clerk of the peace shall call upon them to make the return within 21 days; and should they neglect to comply with this demand, the society shall cease to be entitled to the benefits of the act. If such neglect is without sufficient reason shall be assigned to the justices at the next ensuing quarter-sessions, why such returns could not be made.

The provisions and privileges of this act were extended to all friendly societies which should, within three years from its date, after which time all friendly societies which should not so conform were to be entitled to the privileges granted to friendly societies by this act, or by any other act of parliament.

11th Augt. 1834, the time during which existing societies might conform to the provisions of the act of 1829, and declared its privileges to extend to all societies formed for the relief of the widows, orphans, and families of clergymen, both of the established and of dissenting churches.

The provisions of the act of 1834 are for the most part confined to matters of regulation which it is not necessary to notice here. The returns relating to sickness and mortality are by this act directed to be made to the barristers appointed to be commissioners for the purposes of the act, and delivered to the clerks of the peace, as ordered in the act of 1829.

Societies thus constituted and privileged must be acknowledged as a great improvement upon the benefit clubs, which were formed by the different denominations, such as sick clubs and burial societies, previous to the act. The periodical meetings of these clubs were ordinarily held in public-houses, where a part of that money was spent in present enjoyment which should have gone towards a future provision against the calamities of other members. It frequently happened that these societies were got together by the landlord of the public-house in which the meetings were to be held, and that he was constituted its secretary or treasurer, keeping the funds in his own possession, or too frequently, as it is not known that a regular club was ever formed, put the money to his own use. In this case, a temptation was held out to obtain members by the smallness of the contributions, which proved in the course of years wholly inadequate to answer the demands that were then suffered to arise, although the income of the society had at first been so large as to have been sufficient for the purpose. The mischief thus fell upon them when they had become old and infirm, and had no means of relieving themselves from it: this evil is now prevented by the compulsory adoption of tables prescribing such rates of contributions as experience has demonstrated to be sufficient and equitable.

The considerations by which benefit societies recommended themselves to the community were so well pointed out by the gentlemen of the House of Commons which sat in 1823, that it will be sufficient for this purpose to insert a short extract from its report.

'It has been observed that the hostility to friendly societies has been nowhere more strong and controversial than amongst the depositors of their savings' banks. Of these institutions your Committee will only say, that they are unobjectionable for many very useful purposes, some of which cannot possibly be secured by institutions of mutual assurance; but your Committee affirm without hesitation, as equally undeniable, that it is by the contribution of the savings of many persons to one common fund, that the most effectual provision can be made for casualties affecting, or liable to affect, all the contributors.' This proposition, which is indeed obvious, has been well illustrated by a writer on friendly societies, who asks whether the advocates of a separate and exclusive saving will be easily persuaded to save their annual premium, instead of insuring their houses against fire?

'Whatever there is a contingency, the cheapest way of providing against it is by uniting with others, so that each man may subject himself to a small deprivation, in order that no man may be subjected to a great loss. He upon whom the contingency does not fall does not get his money back again, does he get for it any visible or tangible benefit; but he obtains all the security that the peace of mind. He upon whom the contingency does fall, gets all that those whom fortune has exempted from it have lost in hard money, and is thus enabled to sustain an event that would otherwise have been ruinous to him.'

'The individual depositor, not the contributor to a common fund, is really the speculator. If no sickness attacks him during his years of strength and activity, and he dies before he is past labour, he is successful in his speculations; but if he has any of the accidents which attend the advancing age, he is a great loser, for his savings, with their accumulations, will support him but a short time in sickness; or even if he retain something in old age, after having provided for his occasional illness, the annuity which he can then purchase will be to him a very small dividend. But, as he has obtained if he had entitled himself to the benefit of the accumulated savings of all those who, having contributed for many years to a superannuation fund, have never reached an age to require it.

The rules prescribed by different friendly societies vary in many particulars of minor importance. The following abstract comprises most of the practical points aimed at by such institutions, and is inserted in order to afford a general idea of the principles upon which they are based.

Rule I. The object of this society is to assure persons between the ages of twenty-one and fifty-five, who become members thereof.

- An annual premium of 20/- per week, during sickness, until the age of 70.
- An assurance not exceeding the whole £3 per month, from and after the ages of 55, 60, 65, or 70, as may be previously agreed on, to continue during life.
- 3d. payment at death, not exceeding £20.

Rule II. The contributions for these assurances shall be paid monthly, and may be regulated at the pleasure of the members, from time to time, and shall be in the form of a premium, to be either paid in weekly, monthly, or quarterly instalments, to be entered at the end of the rules. Each member assuring himself shall receive a certificate signed by the secretary, stating his assurance, the amount of his premium, the time at which it shall expire, and the amount, to entitle himself to medical attendance and medicines when needed.

Rule III. The contributions, which shall be paid at least as frequently as the premiums, the amount of which is given in the table added to those rules, shall be considered as contributing to the whole of the monthly contributions which would otherwise have been payable.

Rule IV. To XLI. relate to the contributions of honorary subscribers, and to the appointment and duties of officers, to the executive, and other matters of regulation.

Rule V. To XLI. relates to the powers of any officer or committee, and to the rules of the society.

Rule X. To XXI. relates to the performance of any act of the society, and to the rules of the society.

Rule XX. To XXI. directs how special meetings may be called upon any emergency.

Rule XIX. relates to the admission of members. All candidates must be recommended by a member of the society, and a certificate signed by the secretary, stating his opinion as to the fitness of the candidate. He must also sign a declaration of the kind and amount of insurance for which he is to pay, to provide for his annual payment of the premiums, and to bind himself for the period of the assurance. All candidates must be candidates to the electors of the society, and to the rules of the society.

Rule XX. To XXI. relates to the form of application, and the mode of paying the premium during the sickness, as far as it can be, and to the rules of the society.

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The number of friendly societies enrolled by the clerks of the peace in each county in Great Britain from the year 1829 to 1836, both inclusive, in conformity with the act passed in that year last mentioned, are as follow:—

<table>
<thead>
<tr>
<th>County</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bedford</td>
<td>27</td>
</tr>
<tr>
<td>Berks</td>
<td>52</td>
</tr>
<tr>
<td>Bucks</td>
<td>92</td>
</tr>
<tr>
<td>Cambridge</td>
<td>33</td>
</tr>
<tr>
<td>Chester</td>
<td>48</td>
</tr>
<tr>
<td>Cornwall</td>
<td>84</td>
</tr>
<tr>
<td>Cumberland</td>
<td>51</td>
</tr>
<tr>
<td>Derby</td>
<td>47</td>
</tr>
<tr>
<td>Devon</td>
<td>21</td>
</tr>
<tr>
<td>Dorset</td>
<td>42</td>
</tr>
<tr>
<td>Durham</td>
<td>27</td>
</tr>
<tr>
<td>Essex</td>
<td>50</td>
</tr>
<tr>
<td>Gloucester</td>
<td>45</td>
</tr>
<tr>
<td>Hants</td>
<td>38</td>
</tr>
<tr>
<td>Hereford</td>
<td>100</td>
</tr>
<tr>
<td>Hertford</td>
<td>41</td>
</tr>
<tr>
<td>Kent</td>
<td>52</td>
</tr>
<tr>
<td>Lancaster</td>
<td>48</td>
</tr>
<tr>
<td>Leicester</td>
<td>23</td>
</tr>
<tr>
<td>Lincoln</td>
<td>46</td>
</tr>
<tr>
<td>Lincoln</td>
<td>17</td>
</tr>
<tr>
<td>Lincoln</td>
<td>26</td>
</tr>
<tr>
<td>London</td>
<td>21</td>
</tr>
<tr>
<td>Middlesex</td>
<td>36</td>
</tr>
<tr>
<td>Monmouth</td>
<td>11</td>
</tr>
<tr>
<td>Norfolk</td>
<td>11</td>
</tr>
<tr>
<td>Northampton</td>
<td>30</td>
</tr>
<tr>
<td>Northumberland</td>
<td>45</td>
</tr>
<tr>
<td>Norwich</td>
<td>46</td>
</tr>
<tr>
<td>Oxford</td>
<td>40</td>
</tr>
<tr>
<td>Rutland</td>
<td>46</td>
</tr>
<tr>
<td>Salop</td>
<td>84</td>
</tr>
<tr>
<td>Somerset</td>
<td>40</td>
</tr>
<tr>
<td>Stafford</td>
<td>180</td>
</tr>
<tr>
<td>Suffolk</td>
<td>60</td>
</tr>
<tr>
<td>Surrey</td>
<td>75</td>
</tr>
<tr>
<td>Sussex</td>
<td>38</td>
</tr>
<tr>
<td>Warwick</td>
<td>58</td>
</tr>
<tr>
<td>Wiltshire</td>
<td>34</td>
</tr>
<tr>
<td>Wiltshire</td>
<td>58</td>
</tr>
<tr>
<td>York</td>
<td>26</td>
</tr>
</tbody>
</table>

Total of England: 2438

No friendly societies have been enrolled in Huntingdon, Westmorland, and Anglesea. The returns from Scotland comprise only those societies from which returns of sickness and mortality have been received. Of the above societies there were enrolled in England and Wales:—

England: 216; Wales: 2823; Total: 3039

In 1829: 2444

Coarse: 6

In 1830: 2438

In 1833: 394

In 1836: 2832

The tables showing the sum to be contributed monthly by persons of the following ages when admitted, until they shall reach the age of seventy, to insure the payment of the sum of 20l. at the time of death:—

<table>
<thead>
<tr>
<th>Age at which to begin contributions</th>
<th>Monthly contributions</th>
</tr>
</thead>
<tbody>
<tr>
<td>To begin at 18</td>
<td>To begin at 19</td>
</tr>
<tr>
<td>To begin at 20</td>
<td>21</td>
</tr>
<tr>
<td>To begin at 22</td>
<td>23</td>
</tr>
<tr>
<td>To begin at 25</td>
<td>26</td>
</tr>
<tr>
<td>To begin at 30</td>
<td>31</td>
</tr>
</tbody>
</table>

If the sum, the receipt of which it is desired to insure during sickness, shall be less than 20l. per week, the contributions must be three times the above rate. For 10s. per week, the contributions are one-half the rates stated in the table, and so on. This rule is likewise applicable to the following tables.

Table showing the sum to be contributed monthly by persons of the following ages when admitted, to secure the payment to them of a monthly annuity of 2l. to commence from their attaining the respective ages of either 55, 60, 65, or 70, as agreed at the time of joining the society; the contributions to cease when the annuity commences:

<table>
<thead>
<tr>
<th>Age at which to begin contributions</th>
<th>Monthly contributions</th>
</tr>
</thead>
<tbody>
<tr>
<td>To begin at 18</td>
<td>To begin at 19</td>
</tr>
<tr>
<td>To begin at 20</td>
<td>21</td>
</tr>
<tr>
<td>To begin at 22</td>
<td>23</td>
</tr>
<tr>
<td>To begin at 25</td>
<td>26</td>
</tr>
<tr>
<td>To begin at 30</td>
<td>31</td>
</tr>
</tbody>
</table>
The above-mentioned societies do not comprise all, or nearly all, those which are in existence in Great Britain, and no similar account has been given for Ireland. According to a return printed by order of the House of Commons, of the friendly societies, the number of which were filed by the clerks of the peace in England and Wales, and equivalent officers in Scotland and Ireland, between the beginning of 1793 and the end of 1832, were—

<table>
<thead>
<tr>
<th>Country</th>
<th>Societies</th>
<th>Deposits (£)</th>
<th>Average (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>4792</td>
<td>658,424</td>
<td>138</td>
</tr>
<tr>
<td>Wales</td>
<td>269</td>
<td>40,723</td>
<td>151</td>
</tr>
<tr>
<td>Scotland</td>
<td>92</td>
<td>13,521</td>
<td>123</td>
</tr>
<tr>
<td>Ireland</td>
<td>266</td>
<td>16,622</td>
<td>63</td>
</tr>
<tr>
<td>Total</td>
<td>5409</td>
<td>727,295</td>
<td>134</td>
</tr>
</tbody>
</table>

Many of the societies included in this return have ceased to exist, but it is known that there are many still in being which have not been enrolled under the Act of 1829; in fact the number which have deposited their funds with savings' banks very greatly exceeds those so enrolled. The number having made these deposits, and the amount of the sums deposited by them, as they stood on the 20th of November, 1836, were as follow:

It is to be regretted that hitherto no use has been made of the returns of sickness and mortality made under the Act of 1829, of which it is understood that great numbers are deposited in the office of the Secretary of State, and with the barrister appointed to certify the rules of friendly societies. Several of these societies are composed of persons engaged in some particular calling; and if a careful analysis of the returns were made, it might, among other interesting and useful points of information, afford data for estimating the comparative healthiness of different trades, a matter hitherto very imperfectly understood or investigated. The experience of different Life Assurance Offices has made it very well acquainted with the rate of mortality among the higher and middle walks of life, and the general tables of mortality, although hitherto very imperfectly kept, afford a tolerable view of the law of human life in the aggregate in this country; but it is very desirable to know as accurately as possible the experience, in regard both to sickness and mortality of institutions, the number of which are taken from the working classes, since there could perhaps be no surer test discovered whereby to judge of the progress of civilization than this, which would mark the greater or smaller approximation made by the great bulk of the people following different employments, and placed in different localities, towards the substantial and necessary comforts enjoyed by the easier classes.

To supply this deficiency 'The Society for the Diffusion of Useful Knowledge' prepared various schedules, and distributed the same to friendly societies in most of the counties in England, and obtained in consequence a considerable number of returns applying to the five years that occurred between the beginning of 1823 and the end of 1827. These returns were placed in the hands of Charles Ansell, actuary to the Atlas Insurance Company, who has made the groundwork of a Treatise on Friendly Societies, in which the Doctrine of Interest of Money, and the Doctrine of Probability, are practically applied to the Analysis of such Societies. It is not necessary to borrow from Mr. Ansell's elaborate calculations more than the following table, which exhibits the amount of sickness and mortality that actually occurred during five years among all the friendly societies from which returns were received and examined, and the probability of the expectation that has yet been given concerning the casualties to which the working men of England are liable. An additional column is given, deduced from the 'experience' of the Equitable Society, drawn from the actual duration of all the lives assured by that corporation from 1762 to 1822, a period extending over two-thirds of a century; and this will serve to show the great discrepancies exhibited in Mr. Ansell's table, which unavoidably arise from the limited materials with which that gentleman was furnished.
and south-east by that of Obervesel, and on the west and south-west by the Bies and Zuid-Zee. It is sometimes called West Friesland, in order to distinguish it from East Friesland in Hanover: but is not called by that name in Holland itself. The area of Friesland is about 1027 square miles, and the population, which was 176,554 in the years 1754 and 1755, is now estimated at about 221,000. The surface, as well as the soil itself, are so identified in character with those of the province of North Holland that there cannot be a doubt that they formed one and the same country antecedently to the convulsion out of which the Frisian, which separates them, arose. There are many parts of Friesland which, like North Holland, lie lower than the level of the sea, and are protected from the storms of the North Sea by costal artificial dykes. The whole land is flat and intersected by a network of ditches, in which the water is retained, excepting some mounds, here called "terpen," on which the ancient Frisians were accustomed to take refuge in seasons of marine inundations. In all parts there are deep swamps and marshy bogs, between which, especially in the west, the canals, which are frequently higher than the land they drain (the water being pumped up into them), and have enabled human industry to bring it under cultivation, mostly join the greatest part of the area. The chief town is Leeuwarden, in the west, and leads through Franeker, Leeuwarden, and Dokkum to Groningen. The lowlands near the coast, particularly in the north-west, are mostly appropriated to the feeding of cattle; and the interior of the province, where the swelling of the land indicates the former course of a broad river, is covered by a profuse growth of corn. Friesland has no river of any note excepting the Lauwers, which falls into the gulf of that name, after forming the boundary in part between this province and Groningen. Of the other streams, the Baarre, Linde, Paassens, &c. are merely small torrents, which are only of importance to the countrymen, and convolted into polders, or enclosed tracts of arable and pasture land. The principal occupation of the people is breeding cattle, growing corn, fishing, and digging and preparing turf for fuel. And large tracts of sand and 170,000, and above 5,000,000 pounds of butter and 1,000,000 of cheese are annually exported, but the quality is inferior to that of the western provinces of Holland. There are numerous flocks, but they are of an inferior breed, and the wool is coarse. About 2,000,000 of sheep are reared every year, but the number of these is much decreasing. A great number of horses are bred: the stock of the latter is about 30,000; they are strong limbed and stand high, and are much sought after as carriage horses. Swine are reared everywhere, and fed with a view to the production of large numbers of solder between November and March. But in Friesland there is more room for cattle than for corn; and on some of thebest farms in the province, the raising of the quality of their products is the object aimed at. The quality of the cheese is higher than that obtained in any other part of Europe, and the nature of the province is such that the quality of the beef is more constant. Overall, Friesland is a region of contrasts: on one hand, it is characterized by a flat landscape dotted with canals, dikes, and dykes, which have been constructed to protect the low-lying areas from the sea. On the other hand, it is renowned for its agricultural productivity, especially in cattle breeding, dairy production, and forestry. The province is rich in natural beauty, with its extensive forests and rolling countryside, which attract many visitors. In addition, Friesland is known for its cultural heritage, including its rich history, traditional crafts, and festivals. The province is divided into several regions, each with its own distinct character and attractions. For example, the northern part of the province is known for its fishing industry and coastal scenery, while the southern part is more agricultural and industrial. Friesland is also home to several important towns and cities, including Leeuwarden, the capital, and Franeker, which is renowned for its beautiful architecture and history. The province is an important part of the economy of the Netherlands, with a strong focus on agriculture, fishing, and manufacturing. Overall, Friesland is a region that offers a unique combination of natural beauty, cultural heritage, and economic strength, making it a popular destination for visitors and locals alike.
and most extraordinary bird from Western Africa, the bill is not much inferior to the size of the head. It is well known that all these ‘hard-billed’ birds, as the old writers aptly called them, feed entirely upon seeds and nuts; and the harder these are the stronger are the bills of such species. They are used to derive nourishment from seeds of different sorts; whenever an insectivorous and frugivorous diet is united, as is the case with most Tanager finches, the upper mandible is notched for the obvious purpose of more firmly securing that part of their food which can escape.’

M. Lesson, in his ‘Table Methodique,’ places the Fringillidae as the third family of the Comrostres, and makes it consist of the following genera:—Emberiza of Linnaeus, Emberizoides of Temminck, Fringilla of Linnaeus, vir., Pyrrhula of Cuvier, Carduelis of Cuvier, Limaria of Brandt, Spinus of Cuvier, Coryphus of Temminck, Pyrrhula of Brisson, Loxia of Brisson, Petitoestra of Temminck, Coryphus of Cuvier, Colius of Brisson and Linnaeus, Phylotoma of Molina, and Poecile of Cuvier.

Cuvier, in his ‘Règne Animal,’ arranges the Buntings (Emberizidae) under the order Turdidae, nac the Titmice (Parus of Linnaeus); and, next to the Buntings, he places the Sparrows, les Moeux (Fringilla of Linnaeus).

Cuvier designates the Buntings as possessing an extremely distinct character in their conical, short, straight bills, which he compared to the ‘mouts’ of the birds on the lower, has on the palate a hard and projecting tubercle; and as granivorous birds which have little caution, and readily enter the snares prepared for them. Those Buntings which have an elongated nail on the hind toe like the larks, are considered by Meyer under the generic name of Plectrophanes.

The Sparrows (Fringilla) are characterized by Cuvier as having a conical bill more or less large at its base, but not angular at the commissure. They subsist principally on seeds and fruits, and are not injurious to the crops. The Weavers (Poecile, Cuv.), a form found in both the old and the new continents. Those of the old world make a nest by interweaving very skillfully the fibres of various plants. The name of the Ternate Court of the Philippine Islands (Loxia Philippina of Linnaeus), with its pendulous nest, having a vertical canal opening below, which communicates laterally with the cavity where the young are laid, and the Republican (Loxia socia of Latham), which builds its nest in trees, and whose conjoined nests form one large continuous mass with numerous compartments. Among the Weavers of the new continent Cuvier places Le Mangue de ris, petit Choucas de Surname, de la Jamacique, Cassique noir, &c. (Oriolus Niger, O. Revesalis, C. Surname). The large numbers of the Cuvier, O. Surinamensis, countless flocks, lay waste the fields of many of the warm parts of America. Next to the Weavers are placed the Sparrows, properly so called (Pyrrhula of Cuvier), of which the well known Common, or House Sparrow (Fringilla domestica of Lat.), is the largest species. The companion of civilized man on a large portion of the globe, may serve as the type. Cuvier makes the Finch, les Pinons (Fringilla of Cuvier), follow. These have the bill rather less arched than the sparrows, and a little longer and stronger than the linnets. Their habits are more gay, and their song more varied than those of the sparrows, and the Chaffinch, le Pinon ordinaire (Fringilla coelebs of Linnaeus), may be taken, as an illustration of the genus. [CHAUVIVN.] The Linnets and Goldfinches (les Linnites, Loxia, and Carduelis) follow Cuvier come next, and the Serina, or Turina, Canary birds, for example. [CANARY BIRD.] Then come the Whistling Finches, Widow Birds, as they are popularly called (Vidua of Brissou and other authors), and next to them the Grosbeaks, Gros-becs (Coccothraustes of Brissou and Cuvier, and others), to which Cuvier considers there is a gradual passage from the linnets without any assignable interval, and whose completely conical bill is only distinguishable by the nature of the tips of the bill. Such is the Common Grosbeak (Loxia Coccothraustes of Linnaeus), which, more than any other, assigns a certain foreign species, succeeds. It has, as well as Coccothraustes, a large bill, which is slightly compressed, arched above, and sometimes has a slight edge of the edge of the upper mandible. The Bullfinches (Pyrrhula) include the species of this genus.

After the Sparrows Cuvier places the Crossbills (Loxia of Brisson), and the Durbeva (Coryphus of Cuvier, Strostiphaga of Vieillot), observing that they cannot be placed at a distance from the bullfinches and crossbills. The bill of Coryphus, convex all round, has its point curved above the lower mandible. Colius he considers as nearly approaching the preceding.

M. Temminck thus defines the character of the Buntings: ‘Bill short, strong, convex, straight, and jet black, with a sharp and compressed, trenchant, without a notch, mandibles having their edges included (the upper mandible being smaller than the lower), and a little distant from each other at the base. Nostrils basal, rounded, surmounted by the frontal feathers which partially cover them. Feet with three anterior and one posterior toe, the anterior toes entirely divided, and the posterior toe with a short and curved nail; in a small number of species this nail is straight and long. Wings with the first quill rather shorter than the second and third, with the second and third quills graduated, the third rounded.

It will be observed that in this generic character M. Temminck has omitted the projecting tubercle on the palate; and he gives as a reason for this omission, that it is not visible externally.

Post, Thulas, Introduction.—The principal food of the Buntings consists of farinaceous seeds, to which insects are occasionally added. The greater number haunt woods and gardens, and build their nests in bushes. Those which have the posterior nail or claw long, live among the rocks, on the top of the hills, and even in the trees, particularly all the species the sexes present a marked difference, the males being variegated with lively and well defined colours. The young may be distinguished from the females, which they much resemble by their more sombre colouring, and a greater and more beautiful deep shade. Many of these species moult twice, but the greater part of the foreign species do so regularly, and the colours of the males change considerably in these two molts: in the summer they are adorned with brilliant colours; in the winter they put on the most livid of the feathers (Temminck).

The same ornithologist divides the Buntings into two sections.

I. The Buntings properly so called.

These have the posterior claw short and curved, and live in the woods and gardens. They appear to moult but once a year. Some parts of their plumage which are coloured with lively tints in the summer are clouded in winter by the growth of a new and strong plumage which the feathers are terminated; these colours are without mixture in the spring and so deep a black, till it becomes clouded with reddish at the autumnal moult. The common Yellow Hammer (Emberiza citrinella) may be taken as an example of this section: and many of the other species, the Ortolan (Emberiza hortulana of Linnaeus), Ortolan Buntings of Latham) and the Girl Bunting (Emberiza Cirrus of Linnaeus).

II. The Sou Buntings (Brissia, Eophoeniculus, Plectrophanes of Meyer).

This section has the back claw long and but very slightly arched. The species composing it live always on the ground in open places. Their moult is simple and ordinary, but the colours of the plumage change considerably by rubbing and the action of the air and light, so that their summer dress appears very different from that which these birds assume in the autumn.

The numerous genera into which, as we have seen, the genus Fringilla has been divided, to which M. Temminck’s views; and as this excellent ornithologist has as much practical experience as any of those who have made this interesting branch of natural history their study, and perhaps more, we think it right to put the student in possession of his opinions. The angle between the frontal feathers. Nostrils basal, round, placed near the front, behind the highly elevated of the swollen part of the bill, partially hidden by the feathers of the front. Feet with the tarsus shorter than the middle toe; the anterior toes entirely divided. Wings short; the second and third quilla graduated, the third or fourth longest.

Tail varying in form.

Food, Habits, Reproduction, &c.—These birds, says M.
Temminck, feed on all sorts of seeds and grains, which they open with the bill, at the same time rejecting the husk; it is only very rarely that insects are added to this diet. They inhabit all the countries of the globe, but particularly the regions of the torrid zone and warm latitudes. They raise many broods annually, collect together in numerous flocks, and migrate in associated flights. Of all the winged class they are, after the Pigeons and Gallinaceous Birds, the most easily domesticated. The greater number of foreign species and some European undergo a double moult. When this takes place, the male assumes in winter the livery of the female. The young of the year differ from the old ones before the autumnal moult; but after that period it becomes impossible to distinguish them.

Upon this extensive genus M. Temminck proceeds to remark that methodists have essayed to class these birds in many genera, under the designations of Striobophilog, Coccothrustes, Fringilla, Pityes, Pergula, Vidua, Linaria, and Carduelis. The manners of all these birds being, with some slight shades of difference, absolutely the same, it is impossible, in his opinion, to have recourse to the invention of new names as the means of subdividing this great group. M. Temminck declares that he took the greatest pains to compare more than a hundred foreign species with our indigenous species, and the result of this examination confirmed him in the conclusion that there exists a gradual passage, without any demarcation, from one species to another. He has, however, been misled by Illiger, who unites all these birds with a thick and conical bill (à bec gros et comique) in one great genus under the name of Fringilla, comprising the Bullfinches (Pyrrhula) therein. M. Temminck, however, thinks that these birds are more sub-divided into genera in consequence of the form of the bill, certain habits, and perhaps, also, with reference to the countries they inhabit. The genus Locia, he remarks, has been restored by Illiger to the limits assigned to it by Brisson; and he adds that he (M. Temminck) has perceived, by his examination of the Linæus a species singularly characterized by the form of the bill, under the name of Psittirostra. M. Curier, he goes on to observe, has, in the Règne Animal, indicated, rather than established characteristically, many genera and subgenera, which he has considered as the product of the same species, or the same genus, without any assignable interval, from the Linæus to the Grosbeaks. The species of his genus Vidua, or Widow Birds, are distinguished by some of the upper covert of the tail being excessively elongated in the males. This distinction, available for recognizing the males only, disappears in the female; and for winter they have no conformation of the tail differing from that of the females; and at that season it would be difficult to pronounce whether they were Linæus, Sparrows, or Finches (Pinsones). M. Temminck observes that to form three sections in the genus Fringilla, under indications which have more or less reference to the three different groups of bills, which may be separated into Latiornis, Brevicornis, and Longicornis. In the first section may be comprised, he thinks, the greater number of the pretended Locia of authors, some of which are long-haired finches (Mælora); others which resemble ours in the colours of their plumage; in the second, some Sparroæ (Maineæ) of authors, the Finches (Pinsones), the Linæus (Limbites), and those indicated as Widius (Vidua), Bengalese, and Senegalus; in the third the Turdæ, some Senegalæ, and the Charadonnæs.

I. The Latiornis.

(Bill large, convex, more or less swollen on the sides.)

The Grosbeak, Grosbeak or Haufnæ (Fringilla coccothrustes of Linæus), Fringilla coccothrustes of Temminck) is placed by that author at the head of the order according to which contains, among other species, the Green Grosbeak or Greenfinch (Pomaria chloris of Linæus, Fringilla chloris of Temminck) and the Common Sparrow.

II. The Brevicornis.

(Bill in the shape of a cone, more or less short, straight, and cylindrical, often conical throughout.)

M. Temminck commences this section with the Chaffinch. The Linnets also belong to it.

III. The Longicornis.

(Bill in the form of a straight cone, long and compressed; points of the two mandibles sharp.)

The Citril Finch (Fringilla citrinella of Linæus) appears at the head of this section, which also comprises, among other species, the Siskin (Fringilla spinus of Linæus), the Lesser Red Pole, and the Goldfinch. In the second volume of his Classification of Birds, lately published (1837), Mr. Swainson makes the Coscothrustina the typical group, a subfamily composed of the hawfinches, weavers, goldfinches, and linnets. They live entirely upon trees, and have the bill very strong and conical. Genus, Locia, subgenus, Pyrimaera, Pyrrhula, Cimex, Coscothrustina, Briss, Spermoepola, Derozard, Sw., Cuv., Euplectes, Sw., Plocus, Cuv., Symplectes, Sw., Amadina, Sw., (Bengaly); subgenus, Extreilia, Sw., Amadina, Sw., Spermoepola, Sw., Longithra, Sw., Genus, Tiaris, Sw.; Genus, Carduelis, Sw.; Genus, Linaria, Briss.; subgenus, Linaria, Lewichtia, Sw., Chloris, Sw. The second or sub-gynous group he makes to contain the Tanagrinae. Genus, Tardivola, Sw.; Genus, Tanagra, Lin., subgenus, Tanagra, Cuv., Tanagra, Sw., Linn., Ramphep, Vegill., Genus, Phoenioma, Sw.; subgenus, Lamprotes, Sw., Phoenioma, Sw., Tachuphora, Vegill., Leucopygia, Sw., Genus, Nemosia, Vegill.; Genus, Aglia, Sw.; subgenus, Euphonia, Sw., Tanagrella, Sw., Pyrrhula, Sw., Pyrrhula, Cuv., subgenus, Millaria, Sw., Elecropterus, Meyer. Genus, Agrophila, Sw. The fourth contains the Alaudinae. Bill much more slender than in any of the preceding; hind-claw always more or less lengthened. Genus, Alauda, Sw.; Genus, Pteronura, Sw.; Genus, Lint, subgenus, Passerella, Sw., Fringilla, Zonotrichia, Sw., Ammodramus, Sw., Chondræctes, Sw., Genus, Emberiza, subgenus, Emberiza, Linn., Fringillaria, Sw., Genus, Leptonyx, Sw.; subgenus, Leptonyx, Sw., Melanocorypha, Sw., subgenus, Millaria, Sw., Elecropterus, Meyer. Genus, Agrophila, Sw. On the 19th January, 1837, Mr. Gould (who, in his great work on the Birds of Europe, adopted the Genus, Chrysopsis, of the Prince of Mussonus, who exhibited to the Zoological Society, from Mr. Darwin's collection, a series of Ground Finches, so peculiar in form that he was induced to regard them as constituting an entirely new group, containing 14 species, and appearing to be strictly distinct from the Gallinacea, which he had divided into the following generic names for them: Geospiza, Camarhynchus, Cac-tornis, and Cercithoe, giving at the same time their characters. On a subsequent evening, Mr. Darwin remarked that these birds were exclusively confined to the Galapagos; being in all the males of the same species, and in the females of an indistinguishable association in large flocks rendered it almost impossible to study the habits of particular species. In common with nearly all the birds of these islands, they were so tame that the use of the fowling piece was of little necessity. They appeared to subsist on seeds deposited on the ground in great abundance by a rich annual crop of herbage. (Zool. Proc. 1837.)

Having thus endeavoured to give the student a general sketch of this family of birds, and the views of the leading ornithologists with regard to them, we shall hereafter, as far as our limits will permit, give a description of a few of the most remarkable forms of the species which compose it. Our own woods, hedges, and plains afford ample materials for every observer who would study the characters of this widely-diffused group.
FRISCHES HAF, an inclosed arm of the Baltic, lying between 54° 12' and 54° 45' N. lat. and 19° 10' and 29° 31' E. long. It belongs to the province of Eastern Prus- sia; its length from Holstein, a village at its N. extremity, to the mouth of the river Plauen, to its south-western extremity near Yungfer, a village N.E. of Ebelg, is about 60 miles: its mean breadth is about 114, and its greatest about 184 miles; and it occupies an area of about 310 square miles. It is separated from the Baltic by a narrow tongue of land or sandbank called the Frische Neuhorn, on which are the hamlets of Neuburg, Kaltheim, and Probhannen, and at the north-eastern extremity of which, opposite to Pillau, there is a narrow strait, 12 feet deep and 3000 feet wide, called the Gatt. This passage was formed by an inundation of the waters of the Baltic into the Frische Haff, in consequence of the shallowness of water in the Frische Haff, particu- larly in summer, no large vessels can navigate it, and Pillau is therefore the port both of Königsberg and Ebelg. Among the numerous streams which find an outlet in this headland, are the Drebelt, Baude, and two arms of the Vistula, of which the southernest, quitting the main channel of that river, takes the name of the Nogath and flows past Ebelg. The towns of Fischhausen, Bramenland, Frankenberg, and Tolkenit, are on the north- western side of the Haff.

FRISCHLIN, NICODEMUS. born in 1547, was the son of a Protestant clergyman in the duchy of Württemberg. He showed at an early age a great aptitude for the study of languages, became an accomplished scholar, and was made professor of Latin at Tübingen. He wrote the Paraphrases of Virgil's Bucolics and Georgics, and of Persius, as well as a great quantity of original poetry, and several dramas, for one of which, entitled 'Rebecca,' he was crowned with a gold laurel crown by the Emperor Rud- olph II., at Prague, who himself composed a great deal of poetry.

But his satirical humour made him enemies, and being charged with adultery, he was obliged to leave Tübingen. After visiting several towns of Germany, he at last settled at Mayence, where he published in 1610, in his work: In the Golden Age, a series of satirical effusions from his pen, the dukes of Württemberg caused him to be arrested at Mayence, and shut up in a tower, from whence he attempted to escape, but fell in so doing from a great height, and died on the 16th of November, 1610, of his wounds.

He wrote a great number of works, the principal of which are: 1. De Astronomia Artis cum Doctrinæ Celestis et Naturali Philosophia convenientiæ; 2. Institutiones Oratoriae; 3. Several Orations; 4. A work on edu- cation of the Roman orator, of which a Latin and a German translation were published; and 5. Several matiæ sexto vel septimo ad annum usque sextumdecimum; 5. 'Dialogus Logicos contra P. Rami Sophisticam pro Aris- totele,' and other treatises against the schoolmen; 'Face- tias Selectiores,' many of them licentious; 7. 'Questionum Grammaticarum Discorsa,' of which a Latin and a Greek translation were published; 8. 'Notes' on Callimachus; 10. 'Aris- tophanes repurgatus a mendis et interpretatis.' 11. In breviatram Carmina; and a quantity of verses, elegies, satire, epics, ballads, and the paraphrases of classic authors above mentioned.

(Tissier, Eloges des Hommes Savants; Moreri's Dic- tionary, art. 'Friscelin.')

FRIANS, a people of Germany, who formed part of the province of Holland. This name has been by some derived from the low German word 'fräsen,' to shake or tremble, in allusion to the nature of their country, the soil of which is an unstable or shaking moor. They were divided into Frisii Minores, who inhabited the lands north of the island of the Batavi—the present provinces of Overyssel, Gelders, and Utrecht, and the greater part of the province of Holland, inclusive of the Zuiderzee, at that time was mostly dry land; and the Frisii Majores, who inhabited the land between the Yssel, Em, and the country of Griethoorn, the province of Groningen, the whole land and Groningen. The old Rhine separated them from the Batavi, and the Em from the chaucii. According to Tacitus (Ann. ii. e. 24) they were the most steadfast allies whom the Romans possessed in this quarter; they aided Domitian in their war against the Cherusci, and saved the Roman fleet from destruction at the mouth of the Em. But this state of anarchy was broken off upon the Romans making an attempt to treat them as subjects; they thereupon became declared enemies of Rome, and raged, with one exception. All her strongholds in these parts, having in the 29th year a.d., when Olenius was the Roman lieutenant, turned upon the Romans, slaying about 900 of them near the woods of Badu- nium, and freed themselves from their dominion. (Tact. Ann. iv. c. 72, 73.) Corbulon, the Roman general under Claudius, a.d. 47, reduced them to obedience, and Nero drove them out of some districts on this side of the Zuiderzee, which they had invaded. (Tacit. Ann. xii. 24; Suet. Nuer. xvi.) In the 5th century, when they appear as members of the great con- federacy of the Saxons, no mention of them occurs. We find them at this time holding the sea-coasts from the Schelde to the Elbe and Eyler, whence it has been concep- tion that they were the ancestors of the present Dutch nation, and the name of Frisians. They now passed over into Britain, in company with the Angles and Saxons, and aided them in its conquest. Under the emperor Julian they made themselves rulers over England, and razed by the army of the Batavi, on which spot they were sorely humbled by Pepin, major-domo of the Franks, who put Radbod their king to flight, and wrested the whole of their western lands from them as far as the mouths of the Rhine. Poppo, Radbod's successor, made a fruitless attempt to recover the lost territory, and was driven back by Charles Martel. Charlemagne hereupon brought the eastern dominions of the Frisians under subjection, and appointed his own duke over them, whose office subsequently merged into that of count of Holland.

That the Frisians were a family of a sovereign prince; but his power and that of his descendants was jealously limited by the national state. The last prince died in 1744, and by virtue of an imperial grant in 1690, Prussia took possession of East Friesland.

It was wrested from her in 1795, and transferred to Hol- land; in 1810 it became a province of the French empire; in 1813 Prussia recovered it, and in 1815 she ceded it to Hanover.

The western part of the Frisian territory, known to the Frisians as the landen of Holland, was included in the province of the kingdom of Holland.

The ancient Frisians resembled the Germans in their habits and mode of living, and according to Tacitus, the only tribute they could afford to pay the Romans consisted of skins. They were governed by two princes, whose dominions were separated by the river IJssel, and the smaller islands of the Zuiderzee. The Frisians were settled among the small islands on the western coast of the duchy of Schleswig, and preserve not only the name of Frisians, but many vestiges of their customs and dress.

They wander in quest of a livelihood to Holland and the southern provinces of Germany, and are remarkable for the simplicity of their labours. (Tacitus' Annals; Wiarda's History of E. Friesland.)

FRIT. [Glass.]

FRITH. or FIRTH, is used on the eastern coast of Scot- land to indicate what on the western is called a Loch. It is doubtless derived from the language of the settlers, who came from the northern parts of Europe; for it corre- sponds to the word of the Danes and Norwegians, and the fjordur of the Icelanders. It is a term properly used to indi- cate a narrow arm of the sea inlets in a rocky and elevated coast, and is, perhaps, preferable to the term sound, which is generally used for such inlets.

FRIULI, the most eastern province of Italy, forming part of the Venetian territory, is bounded on the north by the Carnic Alps, which divide it from the valley of the Drave in Carnia; on the north-east by the Julian Alps, which divide it from the valley of the Save; on the north-west by an offset of the Carnic Alps, which divide it from the valley of the Piave in the province of Belluno; on the west by the Isonzo; on the south by the Legio, on the west by the Isonzo, the mouth of which is placed farther west, running from Palmanova to the mouth of the Asa, leaving out Aquileia and Grado, which make part of the circle of Istria. [AQUILEIA.] The boundaries of Italy on this side are not strongly marked by nature— the
chain of the Alps does not approach so near the sea as on the western frontiers of Genoa, and the main ridge of Julian Alps turns off to the eastward a considerable distance inland between the sources of the Save and those of the Isonzo. The valley of the Isonzo also and its tributaries present an opening into Carniola, and the coast of the Adriatic affords an easy access to Italy from Istria, Croatia, and other parts of Illyricum. Many centuries ago Paulus Diaconus and other writers, whose accounts of the wars and expeditions of the foreign armies on its eastern frontiers on the side of Illyricum and Pannonia, and this may explain, in part, why the Germans have always found greater facility than the French in maintaining a footing in the Peninsula. According to the story, by which the extension of the East, the Huns, the Longobards, and the Hungarians, successively invaded Italy.

The name of Friuli appears to be a corruption oforum Juli Carnorum, the name of a Roman colony said to have been established by Julius Caesar in the east of Italy, and of the city of Aquileia, one of the clients of the Isonzo, which flows along the western side of an offset of the Julian Alps which bounds Friuli to the north-east. Numerous and important remains of the Roman colony have been lately excavated by the Cenac, ence, the Venetian conquerors in Friuli, and annexed it to their territories, leaving to the people of the towns their municipal laws and magistrates, and to the feudal lords their jurisdictions and allowing them to retain a considerable degree of independence. The county of Gorizia and Udine, 4 vols. folio, 1828; and part of the Isonzo, belonging to the old duchy of Friuli, were given up to Austria. Friuli remained subject to Venice, till the fall of that republic in 1797; it was then ceded to Austria, by the peace of Campoformio; it was afterwards annexed to the kingdom of Italy, 1805, and since 1814, when the Isonzo, southern part, producing abundance of corn and very good wine, while the northern part is hilly and affords excellent pasture and plenty of game. The climate is healthy, the inhabitants are industrious, and the country is considered as a very good marksmen in the time of the Venetian rule. They speak a dialect of the Italian, different from the Venetian; on the borders however German and Schalovian are spoken. (Da Porto, Lettere Storiche dall anno 1569 al 1512; lettera xxi. descrizione della Patria del Friuli.) For a further description of the country see Udine. PROVINCE OF.

FROBEN, or FROBENIUS, JOHN, was a native of Hammelburg in Franconia, where he received his earliest education. He afterwards went to the university of Basle, and was soon acquired the reputation of being an eminent scholar. With the view of promoting useful learning, he applied himself to the art of printing; and becoming master of it, opened a shop in Basle, probably about 1491. He was the first of the German printers who brought the art to perfection; and one of the first who introduced into German press the use of the Roman character. Being a man of probity and piety as well as skill, he would never suffer libels, or any thing that might hurt the reputation of another, to go through his press for the sake of profit. He thought such productions detrimental to decency, and consequently to religion and society. Froben's great reputation was the principal motive which led Erasmus to fix his residence at Basle, in order to have his own books printed by him. The connection between them grew close and intimate; and when the circumstances which led Froben to love the good qualities of Froben, as much as Froben admired the great ones of Erasmus.

There is an epitaph of Erasmus extant, which contains so full an account of his printer, that it forms a very curious and important source for the history of literature; and one of the first which introduced into German press the use of Froben's death, which happened that year; and which, Erasmus tells us, he bore so extremely ill, that he really began to be ashamed of his grief, since what he felt upon the death of his own brother was not to be compared with his. Froben was after all only a man, and the virtue which endowed him was not of the kind that is esteemed by all; but he seemed raised up by Providence for the promotion of liberal studies. Then he proceeded to describe his good qualities, which were indeed very great and numerous; and he related with great accuracy the whole history of Froben, an account of which is somewhat remarkable. He relates, that, about five years before Froben had the misfortune to fall from the top of a pair of stairs, on a brick pavement; which fall, though it was not very severe, and he was therefore not disabled, yet he was somewhat changed. Froben was afterwards taken a great deal of time, which he laid the foundation of his farm house; and he died, about a year before he died, he was seized with excruciating pains in his right ankle; but was in time so relieved from them, that he was able to go to Frankfort on horseback. The malady however, which thus improved, was not gone, but had continued a great deal of time, and had become so serious that it was not remedied by all, but by none more than Erasmus, who wrote his epitaph in Greek and Latin. Both these epitaphs are at the end of his epitaph.

A large number of valuable authors were printed by Froben; he says, carpenter and master of a loss of Froben, not so much because he had a strong affection for him, but because he seemed raised up by Providence for the promotion of liberal studies. Then he proceeded to describe his good qualities, which were indeed very great and numerous; and he related with great accuracy the whole history of Froben, an account of which is somewhat remarkable. He relates, that, about five years before Froben had the misfortune to fall from the top of a pair of stairs, on a brick pavement; which fall, though it was not very severe, and he was therefore not disabled, yet he was somewhat changed. Froben was afterwards taken a great deal of time, which he laid the foundation of his farm house; and he died, about a year before he died, he was seized with excruciating pains in his right ankle; but was in time so relieved from them, that he was able to go to Frankfort on horseback. The malady however, which thus improved, was not gone, but had continued a great deal of time, and had become so serious that it was not remedied by all, but by none more than Erasmus, who wrote his epitaph in Greek and Latin. Both these epitaphs are at the end of his epitaph.
of the islands of Shetland; and on the 11th July discovered Freeseland, bearing W.N.W., which stood high, and was covered with snow. They could not land by reason of the heavy snow and snowdrifts. North of this point of the island Capt. Frobisher named "Queen Elizabeth's Foreland." On the 28th they sighted of Meta Incognita, being part of New Greenland, on which also they could not land, for the reasons just mentioned. Aug. 10th Frobisher went ashore, and those vessels that could, but staid there only a few hours. The next day he entered into a strait which he called, and it still retains the name of Frobisher's Strait. On the 12th, sailing to Gabriel's island, they came to a sound, which they named Prior's Sound, and anchored in a sandy bay there. On the 15th they came to Prior's bay; the 17th to Thomas Williams's island, and the 18th came to anchor under Burcher's island. Here they went on shore, and had some communication with the natives, by whose treachery they lost a boat and five of their men. Frobisher having endeavoured in vain to recover his men, set sail again for England the 26th August; came again within sight of Freeseland 1st September; and notwithstanding a terrible storm on the 7th of the same month, he arrived at Harwich on the 2nd of October.

Frobisher took possession of the country he had landed upon in Queen Elizabeth's name, and, in token of such possession, ordered his men to bring to him whatever they could first find. One among the rest brought a piece of a black stone, in appearance like sea-coal, but very heavy. He called it tributated iron. In one of his actions on the chase, the wife of one of the adventurers threw a fragment into the fire, which being taken out again, and quenched in vinegar, glittered like gold; and being tried by some residents in London, was found to contain a portion of that rich metal. They also found here some curious productions of gold, great numbers of persons earnestly praised, and soon fitted out Capt. Frobisher for a second voyage, to be undertaken in the following spring. The queen lent him a ship of the royal navy, of two hundred tons, with which, and two small vessels of about thirty tons each, he set sail, on May 26th, 1577, where the minister of the parish came aboard the greater ship, the Ay, and administered the sacrament to the company. Two days after they reached Harwich, whence they sailed on the 31st May. They had a very tempestuous voyage; the ship was most of the time driven into the ice, of which they were seventy or eighty fathoms under water, and more than half a mile in circuit. Not having been able safely to land in this place, they proceeded to Frobisher's Strait; and on the 17th of the same month made the north foreland in it, otherwise called Hall's island, as also a smaller island of the same name, where they had in their previous voyage found the ore, but could not now get a piece as large as a hazel nut. They met with some of it, however, in other adjacent islands. On the 19th they went upon Hall's island to discover the cave of the natives, and numbered the inhabitants, with some of whom they trafficked, and took one of them, neither in a very just nor handsome manner; and upon a hill here they erected a column of stones, which they called Mount Warwick. They sailed about, to make what discoveries they could, and gave names to different bays and islands; as Jackman's Sound, Smith's Island, Bear's Sound, Leicester's Isle, York's Sound, Ann countess of Warwick's Sound and Island, &c.

Frobisher's instructions for this voyage were principally to search the north-west passage, which was directed to leave the further discovery of the North-west passage till another time. Having therefore in the countess of Warwick's island found a good quantity, he took a lading of it. He sailed the 23rd of August, and arrived in England about the 11th September. He was received by the queen; and as the gold ore he brought had an appearance of riches and profit, and the hope of a North-west passage to China was greatly increased by this second voyage, her majesty appointed commissioners to make trial of the ore, and examine thoroughly into the whole affair. The commissioners did so, and reported the great value of the undertaking, and the expediency of farther carrying on the search; and in the meantime the necessary preparations were made with all possible dispatch; and because the mines newly found were sufficient to defy the adventurers' charges, it was thought necessary to send a select number of soldiers, to secure the places already discovered, and to clear the country into the inland parts, and to search again for the passage to China. Besides three ships, as before, twelve others were fitted out for this voyage, which were to return at the end of the following summer, with a lading of gold ore. They assembled at Harwich, May 15th, 1578, and cleared for the north on July 4th, they came within sight of Freeseland on the 20th June, when Frobisher, who was then called lieutenant-general, took possession of the country in the name of Queen Elizabeth's, and called it West England, giving the name of Charing Cross to one of the bays. On July 4th, they came to the mouth of Frobisher's Strait, but being obstructed by the ice, which sank one of their barks, and driven out to sea by a storm, they were so unfortunate as not to hit the entrance of it again. Instead of which, being deceived by a current from the north-east, and remaining twenty days in a continual fog, they ran sixty leagues into other unknown straits before they discovered their mistake. Frobisher, however, coming back again, made for the strait which bore his name; and on the 23rd July, at a place called Charing Cross, they found three of the Spanish coast. On the 31st of the same month, he recovered his long-desired port, and came to anchor in the Countess of Warwick's Sound; but the season of the year being too advanced to undertake discoveries, after getting as much as they could, he anchored with his fleet for England, where, after a stormy and dangerous voyage, he arrived in the beginning of October.

We have no account how Frobisher employed himself from this time to 1585, when he commanded the Aid, in Sir Francis Drake's expedition against the Spanish coast; but in 1586 he commanded the Triumph, and exercised himself very bravely against the Spanish armada on July the 26th, in which year he received the honour of knighthood, on board his own ship, from the lord-high-admiral, for his valour. In 1590 he commanded one of the two squadrons upon the Spanish coast. In 1594 he was sent, with four men of war, to the assistance of Henry IV. of France, against a body of the English and Spaniards, thence in possession of part of Brittany, which he fortified himself very strongly at St. Malo. On Nov. 7th, 1594, he was taken prisoner by the French, on Nov. 7th, he was wounded by a ball in the hip, of which he died soon after he had had the fleet safely back to Plymouth, and was buried in that town. Frobisher, says, the French were more and most menial in it, but because so many through the negligence of his surgeon were without any sons, and of the wounding, which caused it to festers. (Hakluyt's Collect of Voyages, vol. iii. pp. 29, 32, 39; Stow's Annals, edit. 1631, vol. vi. p. 188; L'Estrange, note l. p. 276.) This is a good trait of Sir Martin Frobisher in the Secret History of Oxford; and many of his letters and papers, with others relating to him, are preserved in the Cottonian and Harleian collections of manuscripts in the British Museum. The instructions given to him for the voyage of 1577, printed in the Admirals' Tables, viii. p. 297, from one of Sir Hans Sloane's MSS. His last letter, reporting the taking of the fort of Croyzon, dated Nov. 8th, 1594, is preserved in the Cottonian MSS. Colig. E. ix. fol. 211. A Latin translation of the account of his voyage is on the title page of Historia Navigationis Martinis Fobiserti, by Joh. Tho. Freigius, was published at Hamburg, in 4to. 1675.

FRODSHAM. [Cheeshire.] FROGS, FROG-TRIBE. Terms applied by zoologists to a natural section of the Batrachians, Cuvier's fourth order of Reptiles. The Batrachians differ essentially from the other three orders, viz.: Cheloniens or Tortoises, Sauuriens or Lizards, and Ophidiens or Serpents. They have no ribs, or rudiments of ribs only. Their skin is naked, being without scales; they breathe by lungs; they have both two eyes, and there is consequently no intromissive coitus. In the Frog-tribe the ova are fertilized on their exclusion from the body of the female: they are ameloblasts and generally laid in the water. The young, when hatched, breathe by means of
branched gills, very much after the manner of fishes, being in their early stage of growth quite unlike their parents, and, in that state, forming a natural passage to the last-named class of animals. These branchiae disappear as the higher Batrachian proceeds towards maturity, and the order has therefore been named the *Caudibranchiate Amphibia,* which have been divided into, 1st, the Anuranous or True Batrachians, having no tails except in their young state, including the frogs and toads; and 2nd, the Urodèles or Tailed Batrachians, such as the Salamanders [Salamander]. The first-named branch will form the subject of the present article; and, among these animals, the transformations of the young (which undergo a complete metamorphosis in the greater part of their organs, and an entire change in their habits and mode of life) are most distinctly manifested.

**Organization.**

**Skeleton.**—The skull, in the reptiles, generally, is made up of the same parts nearly, as that of the mammiferous animals, though the proportions are different. But the lower Batrachians, which approach the fishes in this particular, have not the internal cavity corresponding so completely with the surface of the eucephalon as the other reptiles. The skull is very much flattened; and small as the cerebral cavity is, it is by no means filled with the brain. It is narrower and more elongated in the species which pass their whole lives in the water than it is in the Anuranous Batrachians or True Frogs.

The vertebral column commences at the posterior part of the head, and, unlike the rest of the reptiles, the Batrachians, like the Rays, the sharks, and the mammiferous animals, possess two conydes situated on the sides of the vertebral hole. In the tadpole the vertebrae are of the same calibre throughout, but a difference takes place when the limbs are developed. At this period, the vertebral canal diminishes, and the transverse processes and the arch become more pronounced. It is in the tailless Batrachians that the vertebral column is shortest, for the frogs have only ten and the pipas but eight vertebra.

As a general rule, the anterior extremities are shorter than the posterior limbs; but in some of the frogs, especially, the lower extremities are twice or thrice as long as the anterior feet, as might be expected in animals whose progression is principally effected by leaps. Ribs there are none; but the sternum is highly developed and a large portion is very often cartilaginous. It receives anteriorly, or in its mesial portion, the two clavicles and two coracoids which fit out to the scapula. The whole makes a sort of band which sustains the anterior extremities, and an elongated disk which forms a support for the throat, and assists in the offices of deglutition and respiration. Another disk extending backwards, being for the insertion of the rect muscles, protects the abdominal viscera in some species. The pelvis is well developed in the frogs, especially in the Pipa, and though apparently deprived of all traces of a tail after undergoing their last transformation, there remains, internally, a true coccygeal piece, most frequently even moveable, and elongated, but without anything like vertebral for the point of junction with the sacrum, which is, itself, dilated, forming a strong union by means of a true symphysis. The femur, or thigh-bone, is very much elongated, and slightly curved in the form of the letter S in the Frogs (Rana), and in the True Frogs (Hylos); it is a little more semicircular in the Toads (Bufo), and is flattened in the Pipa. The bones of the leg (tibia and fibula) are, in the Reptiles, generally distinct; but in the Anuranous Batrachians, Rana, Ilyus, and Pipa, for instance, they are so soldered together as to form but a single articulation with the femur and tarsus, and to present the appearance of a single very much elongated bone, which some have erroneously considered as a supernumerary bone, or second femur. The knee-joint and articulating bones are so disposed that the feet have always a direction backwards. In the Reptiles, generally, the posterior feet are more developed than the anterior limbs; and this modification is particularly observable in the Anuranous Batrachians, which have the tarsus so much elongated as to induce some to consider the first bones composing it to be a fibula or tibia. The bones of the metatarsus correspond to the number of toes.

![Skeleton of the Common Frog.](image)

*The Axolot (see the title) is an example of the Peromastrebranchiate Amphibia.*
Muscular system, particularly as relating to locomotion.

The muscles destined to give activity to the framework, examples of which are given above, are, like those of all the Reptiles, remarkably well-developed. There are not wanting zoologists who have seen Toads, Salamanders, Tortoises, and Serpents, deprived of their heads and skins, but kept moist, display muscular motion for whole weeks. In the Anuranous Batracians, the Frogs especially, the muscles of the body are more highly developed than in the other Vertebrates, offering in this particular some analogy to the abdominal structure of the Mammifers. But it is in the disposition of the muscles of the thigh and leg in the Frogs and other Anuranous Batracians, that the greatest singularity is manifested. These, whether taken conjointly or singly, present the greatest analogy with the muscular arrangement of the same parts in Man. We find the rounded, elongated, conical thigh, the knee extending itself in the same direction with the thigh-bone, and a well-fashioned calf to the leg, formed by the belly of the gastrocnemius muscles. It is impossible to watch the horizontal motions of a frog in the water, as it is impelled by these muscles and its webbed feet, without being struck with the complete resemblance in this portion of its frame to human conformation, and the almost perfect identity of the movements of its lower extremities with those of a man making the same efforts in the same situation.

We have seen that the ribs are absent in the Anuranous Batracians, and the functions of respiration, as well as those of deglutition, being carried on by means of particular muscles, as we shall presently have to notice, those bones would have been mere incumbrances. In the Frogs, the muscles are not attached to the skin, which envelopes the whole muscular arrangement in a sort of insulated, insensitive, moveable bag: in the Urodèles, on the contrary, the integuments serve as the point of insertion to almost all the active organs of motion.

The locomotion of the Anuranous Batracians on land consists in walking, running, and leaping, in its various modifications; the latter being the motion most prevalent. The greater part of them are excellent swimmers; and when they betake themselves to this exercise, the body is extended horizontally, and the animal is propelled by the mechanism of the lower extremities alone, a mechanism admirably adapted to this mode of progression, as well as to the other varieties of movement which the necessities of the animal require. By the aid of these well-developed lower limbs, and the prodigious power of their muscular and bony levers, a frog can raise itself twice its own height, and traverse, at a single bound, a space more than fifty times the length of its own body.

Digestive Organs.—The Anuranous Batracians, in their adult state, are, like the greater part of the existing Reptiles, carnivorous, and swallow their living prey without mastication. The mouth is large, so wide, indeed, in some (the large Frogs and Pigs, for instance), as to admit of their swallowing vertebrated animals: but insects, anceloids, and small mollusks form the chief of their food. They have no true fleshly lips, nor indeed have many of the Reptiles; but the mouth is furnished with folds of skin as a covering for their cutting jaws, and perhaps as a more complete apparatus for shutting the mouth. The same conformation is observable in the greater number of the tadpoles of the Batracians, the larger portion of which, in their adult state, have the lower jaw received under a soft skin which covers and edges the mandible. The branches of the lower maxillary bone are rarely soldered at the symphysis, and sometimes, as in the genera Ranus and Hyla, there is, at the point of junction, a mere cartilage which admits of a certain amount of motion. In the Frogs and the Urodèles, the number of pieces composing each of the branches amounts to three. One of these pieces corresponds with the symphysis, and is armed with teeth, the second serves for articulation, and the third is situated backwards, and prolonged below. On the palate of many of the Anuranous Batracians are certain processes which may be termed teeth; but these are pointed, and not tubercular, as the old error of naming some of the teeth of fossil fishes Byfomites might lead us to suppose. These palatal teeth form a part of the bones to which they are attached, as in the case of fishes.

The tongue performs a leading part in the capture and deglutition of the prey. In the greater portion of the Anuranous Batracians the structure of this organ is altogether anomalous, and its insertion is equally at variance with the mode adopted in the other vertebrated animals. It is very soft, fleshly almost throughout, and is not supported at its base by an os hyoïdes. Its attachment is the reverse of that generally seen, for it is fixed in the concavity which is formed by the approach of the two branches of the lower jaw towards the symphysis. In a state of repose, and when the mouth is shut, this tongue, which has its root, so to speak, in the interior edge of the anterior part of the lower jaw, has its free extremity in the back part of the mouth and before the aperture of the air-passages; but when the animal puts it forth, it is considerably elongated and thrown sharply out of the mouth, as if by an effort of expulsion. The end reaches to a considerable distance, as, turned on the pivot of its anterior figure, it is reversed in such a manner that the surface which was below when the tongue was in the mouth, and in a state of repose, is, when
it is thrown out, above; and, when the tongue is returned into the mouth, the surface, which was an instant before above, resumes its original position, and is again beneath. The organ is armed with a tenacious viscid secretion; and when it touches the prey, the latter adheres so firmly to it, that it is carried back with it as far as the mouth. There it is, in most cases, compressed, involved again in a glutinous sort of saliva, and almost instantly submitted to the act of deglutition. The motion of throwing out and returning the tongue is often performed with a rapidity which the eye can hardly follow. In many instances the tongue has been heard to make in a melon-frame, he will see the ants or other insects which come within shot of its tongue disappear; but his vision must be very acute and prompt to detect the action of the tongue. The muscles, whose office it is to move the bones, are attached to the single bone of the mandible, especially upon the lower jaw, upon the bone of the manible, and upon the tongue, which, after being shot forth as we have endeavoured to describe, is returned and swallowed, as it were, with the captured prey, and the act of digestion is continued till the food is digested in the stomach.

The _pharynx_ in mammiferous animals consists of that backward cavity of the throat into which the lower orifices of the nostrils, the orifice of the mouth, the canal of the ear, the oesophagus, the trachea, and the single tube of the lungs open. But there cannot be said to be any true _pharynx_ for the nostrils, as well as the _glottis_, open into the mouth, the _oesophagus_ commences immediately behind the nostrils, and the muscles that act more especially upon these parts and upon the lower branchiæ of the branchial vessels have begun to form; we shall presently see that these same muscles are also put in requisition to force the air necessary for respiration into the _glottis_ and _tracheæ_, in order to supply the cavity of the lungs. The stomach of the Anurous Batrachians is very short, but the intestines become very much lengthened, losing four-fifths of the length which distinguished them when the animal was in its early stage of existence. The vent in the Anurous Batrachians is rounded and wrinkled. The liver generally consists of three lobes, and the gall-bladder adheres to and is hidden in the concavity of the liver, very high up. The spleen in the frog and toad is rounded, not of large dimensions, and situated in the mesial region, under the diaphragm for the animal is nearly, if not quite, pancreas, and the chyliferous veins may be distinctly traced. Thus far we have endeavoured to give a mere outline of the digestive organs in the Anurous Batrachians, in their perfect state; but these organs, as might be expected, vary considerably in this early stage of their development. A mouth furnished with lips, and horn-cutting processes, that act as jaws in the division of the vegetable food which forms their principal nourishment, and their intestinal canal is coiled spirally within their large rounded abdomen. The metamorphosis is complete, internally as well as externally, when this armed little mouth is changed into the widely-opening gape, which reaches beyond the eyes, and the animal swallows its living prey entire. In this their last stage they can endure a long abstinence; they grow slowly, and they live a considerable age. The soft skin which edges their jaws is soft, and forms a sort of gum or external lip; their under-jaw is received into a kind of rim or groove, which runs along the upper-jaw, and its two lower edges are slightly serrated. The tongue has no externally visible ear-drum, the tongue is fastened to the back of the mouth; and in _Pipa_, the tongue is wanting.

The _esophagus_ is a thin canal, with longitudinal folds, and may be considered as a kind of cord or first stomach; and the intestinal canal is hardly 1/2 the length of the whole body, whilst in the tadpole it is more than seven times as long. We must not omit to notice here the remarkable folds of the _peritoneum_, in the thickness of which folds a fatty matter is either deposited or secreted, generally of a yellow colour, and varying much with regard to its disposition in the different species; the use of this substance is supposed to be a provision for the support of the animal during the period of its lethargic hyperbem in the cold months, according to the unique termination in the latter, which is suddenly dilated.

_Circulating System._—The circulation in the Anurous Batrachians varies with the different metamorphoses which the animal undergoes. In the early or tadpole stage, the blood flows in the single vessel by the force of the heart, which is placed near the valves, with a sort of bulb, or contractile swelling. This artery, which contains the black or venous blood, is divided into two trunks, one directed to the right, the other to the left, and these are then subdivided into two, three, and four trunks. These branchiæ of the branchial vessels then form a large number of minute branches upon their arrival there, they insinuate with the venous trunks, and by that time the blood has assumed its arterial quality and colour. These arterial trunks unite progressively, so as to form the main trunk, the principal trunks, the origin of one great artery or _orta descendens_, at the point of its formation, placed near the head, to which it gives off many branches, and continues to descend down the vertical column.

It is at this period of metamorphosis arrives, and when the animal which had been breathing by means of gills is to respire through the medium of lungs, an entire and necessary change takes place. In proportion as the _branchiæ_ of the tadpole are destroyed and absorbed, the calibre of the venous trunks, which were distributed to the branchial vessels, is gradually, till they are at last entirely obliterated. The first of these vessels then develops itself, and receives on each side the whole of the blood, giving off three principal trunks,—one for the head, corresponding to the carotid artery,—one for the trunk, and one for the extremities and hind-quarters, the longest of all, for the cellular lung, which is of considerable volume. The rest of the principal trunk follows the mesial line, and unites with its congener, so as to form a true _orta_ for the supply of the viscera and lower extremities, which acquire their large dimensions at this period.

_Respiratory System and Vocal Organ._—The absence of the ribs prevents any application of costal influence upon the respiratory organs of the Anurous Batrachians, as is the case with the mammiferous animals; but this is made up for, as well as the medium in which they live, is so totally different in the early and late part of their life, the principal action on these organs is nearly the same. The young may be said to swallow water, or at least to receive into the cavity of the mouth, before they force it into the branchial vessels; and though the mode of breathing is so entirely changed in after-life, the operation consists in the perfect animal of a succession of deglutitions of air.

The _branchiæ_ appear externally, like little coloured fringes on each side of the neck, and so they remain in the Urodeles, as long as their lungs are not sufficiently developed to serve for complete respiration. But in the Frogs and other Anurous Batrachians, the branchiæ have disappeared, and the animal is perfectly aquatic, or at least lives a short time. It soon assumes the tadpole form, with an enormous belly and head, in one undistinguished outline, and a long tail. At this period the branchiæ, or gills, are hidden, being contained in a cavity, and then the water enters the mouth by the oriæ of the branchial slits, which are supplied with valves. When in the cavity of the mouth, which is well closed on all sides, with the exception of the throat, where are placed the branchial slits, the water, acted upon by the muscles which cover them, traverses these
spaces, and bathes the branchiae before its exit through the branchial holes. The blood which is pushed into these branchiae is then distributed, as it is in the fishes, and passes, as we have seen, from some of the numerous vessels into the arteries which unite to form the aorta.

On acquiring their perfect form, and when the obliteration of certain points, and the development of the others, have adapted the Anomurus Batrachian for breathing air, by means of its two large lungs, the gills have become degenerate, and the branchiae have assumed the character of mere auxiliary organs for carrying on the respiration. The anterior nostrils, as we have before stated, open nearly straight, by means of simple apertures in front of the palate; the tongue is applied as a kind of stopper upon the back nostrils, and the former are left to serve as a communication to the mouth. The air thus imprisoned, is forced or pumped at each gulp through the glottis, to be distributed over the lungs.

In the museum of the Royal College of Surgeons, are the following preparations, illustrating the action of the blood, in the branchial system of branchiopods, in the early stage of Rana parva. No. 1067 is a larva, with the cavity of the mouth laid open to show the branchial and larval arches: the abdomen is also exposed, to show the rudimentary lungs in situ, with bristles placed in them. No. 1068 is the head of another larva of the same species, exhibiting on one side the branchial and larval arches, and on the opposite side the three series of tubed branchia, projecting from the membranous arches, and exposed by the reflection of the overlying epidermis. No. 1091 is the head of a larva of the same species, and a bistle is passed from the larval aperture directly into the right lung, there being no intervening trachea.

The following are illustrative of the mode of respiration in the adult Anomurus. No. 1090 exhibits a Frog (Rana temporaria, Linn.), with the lungs injected in situ. The left lung is laid open to show the cellular parietes, and the extent to which they encroach upon the cavity of the lung. No. 1092 is a single lung of the Frog, injected and laid open; and 1100, a single lung of a Toad (Bufo viridaris, Linn.); it will be observed that the parietes, like those of the Frog, are cellular, but thinner. No. 1101 shows the lungs of a large Batrachian, one of them laid open, and exhibiting a more minutely cellular structure than in the former. No. 1102, 1103, and 1104, are the lungs and larynx of a Bull-frog (Rana pipiens, Linn.), and a small accessory pouch will be seen appended to each pulmonary sac.

A Surinam Toad (Pipa marmorata, Linn.), is numbered 1103. The ventral parietes of the abdomen are in this animal much more expanded, and so are the lungs, in a much greater degree, than in the Bull-frog. The larynx and larynx of a Bull-frog (Rana pipiens, Linn.), and a small accessory pouch will be seen appended to each pulmonary sac.

The activity of respiration is increased in proportion to the elevation of the temperature of the surrounding air. M. Delarueh found that frogs exposed to a temperature of 27° (exclusive of the air) absorbed four times as much oxygen as those submitted to a temperature of 0° or 2° only.

The organs of the voice in the Anomurus Batrachians are only put in action, generally speaking, at the season of reproduction, and then principally by the males. In the female, the songs of the dactylus when it has been intended to make the one sex sensible of the presence of the other. The trachea is, indeed, very short in the frog; but it is longer in the male than it is in the female, and the rima glottidis is also longer in the former. But, in some frogs, the opening is rather distinguished by peculiar membranous lags. Thus, the Green Frog has two cheek pouches, which are inflated by the animal in the breeding season, by means of two apertures close to the rima glottidis, and the chorinde vocales are very large and distinct. The Toad, on the other hand, appears to have considerable analogy to the upper larynx in Birds; but in the birds, the voice receives its modification only from the edges of the glottis, which shuts the trachea at the point where it opens into the mouth; the sounds being produced by the lower larynx, which is formed at the point of juncture of the two branches which constitute the origin of the trachea. When the air-passages of the reptiles emit sounds, they are produced by the single larynx and the glottis: from the absence of movable lips, and the relaxatio palatai, or their insensible development, those sounds cannot be much modified. Nevertheless, the vocal powers of the species of Anomurus Batrachians vary very much, according to the varying mechanism manifested in each species of this animal. It is impossible to give any attention to the well-known croaking of the common Frog to the bellowing of the Bull Frog: the shrill trebles of the species of Hyla, of the males especially; the flute-like and metallic sounds occasionally given out, and the sort of seemingly verticilloque sounds emitted from the larynx—a sort of falsett or ecorche de teste—from the buccal cavity, or some of the accessory sacs.

As connected with the phenomena of breathing, it must not be forgotten that the lungs of the Frog keep in air and not the Batrachians generally, has the power of acting upon the air in such a way as to fulfil, in a great degree, the functions of the lungs, and that inhaled air may be made subordinate to this cutaneous respiration. The exhalation of carbonic acid from the lungs, and under water charged with air renewed from time to time, and on Toads which have been kept alive for months in nets sunk under running water, at a low temperature, without any direct access to atmospheric air, prove this. These powers, the faculty of enduring long abstinence, their hibernation, and the age to which the Anomurus Batrachians are said to attain, naturally lead us to the consideration of the stories told of the discovery of toads, antediluvian toads: as they were once called, enclosed in solid lumps of ice, or in vessels made of glass, and imbedded in a frame, the former having been supposed to have existed for centuries, deprived of the possibility of access to either food or air; though, when found, they were alive and vigorous. Nor do these stories rest solely on the doubtful hearsay evidence of uneducated persons. They are corroborated, in his time, by the allusions to the account in the Memoirs of the Academy of Sciences for the year 1719, of a toad found alive and healthy in the heart of an old elm; and of another discovered in the year 1731, near Nautz, in the heart of an old oak, within the same visitation. Being removed from the street of the tree, it was concluded that the animal must have been confined in that situation at least eighty or a hundred years. He adds, that, in the many examples of toads found in solid rocks, exact impressions of their bodies, corresponding to the impression of the tree, are found in the stones or trees from which they were dissevered; and he asserts that it was said that there existed, when he wrote, a marvellous chimney-piece at Chatsworth with a print of a toad in it; and that there was a traditio account of the place and circumstances of the printing, and a question as to whether they were true or not.

These and similar facts, adds the author last above quoted, are supported by authorities so numerous and so respectable, that it is unnecessary to quote them. Many abortive attempts have been made to account for an endless number of cases of this nature, and living in the above described, without the possibility of receiving nourishment or air; especially as, like all other animals, when put into an exhausted receiver, the toad soon loses its existence. Upon this subject I shall only hazard two observations. The toad, it is well known, when kept in a damp place, can live several months without food of any kind; though, in its state of natural liberty, it devours voraciously spiders, maggots, ants, and other insects. Here we have an instance where there are many, of an animal whose only food is air, kept, so to speak, alive for several months without receiving any portion of food. According to our ideas of the necessity of frequent supplies of nourishment, it is nearly as difficult for us to conceive an animal able to subsist, like the foregoing, for more than one or two months, or even centuries. The one fact, therefore, may be as readily admitted as the other. The same remark is equally applicable to the regular respiration of air. The toad, and many other animals, from some peculiarity in their constitution or situation, can live long periods without seeming to require other means of respiration.
amining every circumstance with the discerning eye of a philosopher. In rocks there are many chinks as well as fissures, both horizontal and perpendicular; and in old tree trunks—especially in hardwoods—such crevices occur in different dimensions. Through these fissures and vacuities the eggs of toads may accidentally be conveyed by water, the penetrations of which few substances are capable of resisting. After the eggs are hatched, the animals may reach the surface by the aid of currents of air through the crevices of rocks, or the channels of aged trees. But mean not to persuade, for I cannot satisfy myself. All I intend is, to recommend to those gentlemen who may hereafter choose to see such rare phenomena, a strict examination of every circumstance that can throw light upon the subject so difficult and mysterious; for the vulgar, ever inclined to render uncommon appearances still more marvellous, are not to be trusted.

Upon the above observations it will only be necessary to remark, that such phenomena, well-observed and well-explained, the more the writer seems to have been against the alleged discoveries, whilst the reasoning which he puts forth in its favour is, to say the least, very vulnerable, and in some points at variance with itself. It is difficult, indeed, to assign limits to suspended animation; it is very improbable that where, as we have seen, it is probable that nature has made a provision for the ordinary period of hybernation, the animal should continue to exist for many years after the supply must have become exhausted. The theory of the conveyance of air by the moisture of the leaves, which is the chief foundation of this probability will be manifest to those who will consider for a moment the mode of reproduction, and the metamorphoses which the creature undergoes. With regard to positive assertion, we could adduce many instances to show the careless and unfounded confidence of the public, which always relates as facts those appearances which they think they have seen. We once heard a person of no mean attainmerit in one branch of Natural Philosophy, but no zoologist, give an account of a zoological phenomenon which we have not ourselves heard, but which he could not see, nor would we. His statement was, in some points, entirely the reverse of the truth; and yet he did not intend to deceive: but his mind being filled with foregone conclusions, and his observation: if observation it might be called—being inaccurate, the result was, that the gentleman, by the authority of one person, unhesitatingly disbelieved.

Those frogs, toads, snakes, and lizards ‘occasionally issue from stones that are broken in a quarry, or in sinking wells, and sometimes even from strata of coal, at the bottom of a coal-mine,’ may be readily admitted; but, as Dr. Buckland would have us believe, and yet we cannot accept, his observations are subject—and to these we shall presently allude—the evidence is never perfect to show that the reptiles were entirely enclosed in a solid rock; no examination is ever made until the reptile is first discovered by the breaking of the mass in which it is found. The examination is then made without carefully replacing every fragment (and in no case that I have seen reported has this ever been done), whether or not there was any hole or crevice by which the animal may have entered the cavity from which it was extracted. Without previous examination, it is almost impossible to prove that there was no such communication. In the case of rocks near the surface of the earth, and in stone quarries, reptiles find ready admission to holes and fissures. We have a notation of an example of this kind in the lizard found alive in a chalk-pit, and brought alive to the late Dr. Clarke.

The same author remarks, that the first effort of the young toad, as soon as it has left its tadpole state, and emerged from the water, is to seek shelter in holes and crevices of rocks and trees, which individual, which young may have thus entered a cavity by some very narrow aperture, would find abundance of food by catching insects, which like itself seek shelter within such cavities, and may have soon increased so much in bulk as to render it impossible to go back into the common channels of existence. Such a shelter, a small hole of this kind is very likely to be overlooked by common workmen, who are the only people whose operations on wood and stone disclose cavities in the interior of such substances.

Without, then, attempting to throw discredit upon the observations published upon this curious subject by authors whose character for veracity is unquestionable—those of Guettard, in 1771, of Edwards, 1824, and of Mr. Thomas, in Silliman’s Journal, in addition to those above alluded to for example,—we may conclude with Dr. Buckland, in his remarks on the last publication, that the several authentic facts on this well-attested occurrence are inconsistent with no more than a repetition of the facts so often stated and admitted to be true, viz., that reptiles occur in cavities of stone, and at the depth of many feet in soil and earth; but they state not anything to disprove the possibility of a small cavity in a solid rock, and by the action with the external surface, and insects have been admitted. The attention of the discoverer is always directed more to the toad, than to the minuteness of the state of the cavity in which it was contained.

Dr. Buckland commented on his experiments in November, 1825. He caused twelve circular cells to be prepared in a large block of coarse olitic limestone, from Heddington quarry, near Oxford. Each cell was about one foot deep, and five inches in diameter, and had a groove orShoulder at its upper margin, fitted to receive a circular plate of glass, and a circular slate to protect the glass; the margin of this double cover was closed round, and rendered impenetrable to air and water, by a luting of soft clay. Another block of compact siliceous sandstone (Pentamn grit, of the Bristol coal formation), was made to contain twelve smaller ones, each six inches deep and five inches in diameter, and each under the same double cover as the first-mentioned cells. A live toad was placed in each of these twenty-four cells on the 26th Nov, 1825, and the double cover of glass and slate was placed on them, and then luted with the luting of clay. Dr. Daubeney and Mr. Dillwyn, who were present, ascertained and noted the weight of each toad (they had all been imprisoned together in a cucumber frame, some of them for two months previously), as it was immersed. The largest of these toads, weighing 66 and a half ounces, and they were distributed equally, small and large, among the limestone and sandstone cells. The blocks were buried in the earth of Dr. Buckland’s garden, three feet deep. On the 10th of December, 1826, these blocks, which had remained unopened from the first day of their inhabitation, were examined. Every toad in the smaller cells of the sandstone block was dead, and so much decayed, that they must have been dead for some months. The greater part of those in the larger cells of the olitic block were alive. No. 1, its weight unaltered, was examined immediately after its removal from the ground; it was reduced to 698 grains. No. 5, whose weight at the same period was 1185 grains, had increased, it was ascertained, to 1265 grains. Dr. Buckland observes, that the glass cover over this toad’s cell was slightly cracked, so that minute insects might have got in. In another cell, the glass of which was broken, and its tenant dead, there was a large assemblage of minute insects; and a similar assemblage was observed also on the outside of the glass of a third cell. In the cell No. 5, a toad which weighed at the opening 1185 grains, was reduced to 681 grains. The glass cover of this cell was entire, but the luting that secured it was not attentively examined; and Dr. Buckland observes, that it is probable that there was some aperture by which small insects found admission. No. 11 had decreased from 836 to 623 grains.

The result of Dr. Buckland’s experiments was, that all the toads, both large and small, inclosed in sandstone, and the small toads in the limestone, were dead at the end of thirteen months, a fate which befell all the large ones also; but where the exact cause of death could not be determined, it was examined several times during the second year, through the glass covers of their cells, but without removing them to admit air; they appeared always awake, with open eyes, and never in a state of torpor. In the third year, they became more and more meagre, till at last they were found dead. The two toads which when first examined had increased in weight, and were at the end of the first year carefully closed up again, were not exempt from the common fate. They were inclosed, dead, and before the expiration of the second year.

When Dr. Buckland enclosed these toads in stone, he at the same time placed four other toads, of moderate size, in three holes cut for that purpose, on the north side of the trunk of an apple-tree. Two were the largest cells, and each of the others in a single cell, the cells being circular, about five inches deep and three inches in diameter. These were carefully closed with plugs of wood, so as to exclude access of insects, and were apparently air tight. Every one of the toads thus piggled in the
chord; and the nerves which are given off from these sources to the different organs of the body. So far the system is modelled upon that of mammiferous animals and birds, but the Chelonia is proportionally much less. The reptiles have also a gangliogony nervous system, or a great double sympathetic nerve.

**Touch.**—The naked skin and its sensibility to variations of temperature would seem to indicate a considerable degree of tactile sensibility in all the Anurae. They have, indeed, no nails on their toes, which are also longer than on the toads; and in most of the genera and species the toes are terminated by fleshy appendages, as in *Pipa*, which has also an elongated fleshy muzzle; the tree frogs also (*Hyla*), have the extremities of their toes dilated into fleshy disks, which, like the acetabula of the *Spermatophyta*, adhere by their circumference, and enable the animals to walk in all directions upon flat surfaces, and to adhere to them even when they are of the smoothest nature. The sense of touch is probably more highly developed where this organization is manifested.

**Smell.**—This sense would seem to be almost rudimentary in the Batrachians. A simple opening pierced from the side of the head into the nasum, and the concave membrane at its external extremity, moving in unison with the respiratory action, is strongly contrasted with the intricate and beautiful structure of the nasal organs, which are so highly developed in the *Carnivora* mammalia.

**Hearing.**—There is a considerable difference in the structure of the organ of hearing among the Anurae Batrachians. The *Pipor*, for instance, have a sort of small valve upon the tympanum, somewhat similar to that possessed by the crayfish and the young water-fowl, and which is intended to protect the membrana tympani against the pressure of the water when the animal resorts to great depths. *Hyla* and *Rana* have the tympanum distinctly manifested by the delicacy of its structure when compared with the other integuments of the head. In the former the tympanum is not apparent, but in the latter I find a good example of the organ of hearing in a preparation (No. 1375), in the Museum of the College of Surgeons. It is the head of a bull-frog (*Hyla papaera, Linn*), showing the free and wide external communication, or "meatus" of the organ of hearing, the tympanum, or brachium tympani, the drum, or drum of the ear, which is stretched across the entrance of the meatus, and is adapted to respond to the impulsion of sound conveyed through the air. The cavity of the tympanum is laid open on the left side from below, showing the long, narrow, tubular organ connecting the tympanum with the cranial cavity, which forms the medium of communication between the membrana tympani and the labyrinth or internal ear. The wide vertical passage, or Eustachian tube, by which the cavity of the tympanum communicates with the faces, is also laid open on the left side, but is seen entire only from above. This communication preserves the equilibrium between the air in the cavity of the tympanum and the atmosphere without; and an equable pressure is consequently conveyed by the membrana tympani under every particular variation. It may be observed, also, by Dr. Townson, one of the authors of the Catalogue, that the extent and freedom of the Eustachian passage are in relation to the size and expanded condition of the tympanic membrane, and perhaps also to the form, in that the tympanum is not apparent and therefore the more liable to be affected by undue pressure from without, being only supported behind at a small part of its circumference. (Cf. Gallery Physiol. Series, vol. i., part 1.)

**Sight.**—The precision with which a toad measures the distance of objects, as well as the position of them to the observer, is considerable. It is certain that at the moment the victim is within reach of that organ, shows a high and accurate development of the organs of sight, as applicable to short distances at least. The pupil is, in general, round, but in the Anurae Batrachians, whose hol's are more unequal in size, it is also long and oval. The humours vary in their proportions in the different genera, but the crystalline humour has been noticed of great density and of a more spherical figure in the aquatic species. The orbits are generally incomplete, and sometimes protected, as in *Ceratophyly*, by folds of thickened cuticle.
In the Anuran Batrachians there are lachrymal glands, and the *Bufo conjoined* is so placed as to permit the tears to run into the cavity of the mouth.

Reproduction.—The male organs of generation in the Anuran Batrachians consist of true testicles situated in the cavity of the abdomen below the kidneys, and the ducts convey the testicu lar fluid through the body to the external male organ. The ovaries in the females correspond in situation with that of the testicles of the males, and are of considerable volume. Their free extremity forms a sort of trumpet-shaped opening, and the oviduct terminates in the cloaca, whereas the testicles and oviducts are connected by a tube. Each tube describes the frogs of his country as having a large uter us divided by an internal partition into two cavities, from which two long convoluted oviducts arise, and terminate by open orifices at the sides of the heart. The ovaria, he says, lies under the testicles, and by the term oviduct he describes how the eggs get into the above-mentioned openings. The uterus, he adds, opens into the cloaca. The toads, according to him, have not the large uterus; but their oviducts terminate by a common tube in the cloaca.

The above, besides the vocal manifestations, there are others which visibly distinguish the male in many of the Anuran Batrachians. At each croak, the male green frogs project from the commissure of the mouth two globular bladders into which the air is injected during the act of croaking, and become inflated. In the males of the red frog the thumbs of the anterior feet become considerably swollen and covered by a black and rughose skin at this period. The usual mode of union of the male and female, which generally takes place in the water, is too well known to require description. It consists in the former excluding the latter to exclude the eggs, and fecundates them as they are protruded. These eggs are enveloped in a sort of delicate, mucous, permeable membrane; they are, when excluded, most frequently agglomerated either in glutinous masses or in cones consisting only after they are plunged in the water. There are however some curious modifications of the disposition of the eggs in certain species of the Anuran Batrachians. The accoucheur toad (*Bufo Chloropus* of Laurenti), for instance, assists in the process of fertilization by excluding the eggs, and dividing them round his thighs, something in the form of a figure of 8. He is said to carry them about till the eyes of the embryo become visible. At the proper period for hatching, he conveys his progeny to some stagnant piece of water, and deposits them, when the eggs break and the tadpole comes forth and swims about. The male *Pelops*, or Surinam toad, as soon as the eggs are laid, places them on the back of the female, and fecundates them. The female (see the cuts at the end of this page) has in her cells five to six thousand eggs, each of about the size of her back swells, and forms cells in which the eggs are hatched, and where the young pass their tadpole state, for they do not quit their domicile till after the loss of their tail and the development of their legs; at this period the mother eggs are laid in groups as the metamorphic stages of Rana paradoxo, with dissections demonstrative of the internal branchia, the convoluted intestines, and the rudimentary extremities. We would particularly draw the student's attention to a female *Pelops* with the eggs just under the skin in the above-described dissection, and a section showing that the cells are only skin deep, and that the cutis is separated from the subjacent muscles by large lymphatic reservoirs. Another female specimen shows the cells in progress to disappear after having been removed from the female.

Swammerdam gives the number of eggs in a female frog as 1400, and M. de Montbeillard counted 1300. In these eggs there is a greenish albumen which is entirely coagulable. The yolk or vitellus is absorbed by the embryo, and an abdominal cleft indicates the umbilicus of the young individuals. It is not rare to meet with double genns in a single egg, but most of these prove abortive, though some give birth to monsters with two heads, six legs, and conjoined tails, as well as to hermaphrodites. The eggs of the *Bufo* are the same in both the Chelonians and Anuran Batrachians; and is recorded as being prolonged from a period of eighteen days to thirty-one and upwards before the male quits the female. There seems to be a great want of knowledge on the subject, as the number of eggs may probably be ascribed the frequent occurrence of frogs and toads sticking on the heads of fishes, such as carp and trout.

In the Eel, the early part of the spring is the season of reproduction, when the frogs and toads of both sexes quit the locality of their hibernation. The females increase in ordinary haunts, and move instinc tively to those stagnant waters which are proper for their purpose, and where they are then collected in swarms.

The young Anuran Batrachian enters life under an egg-sac covered by a membrane that forms its skin at first; it degenerates and assumes; and undergrows, like the insects, a series of metamorphoses or transformations till it arrives at its perfect state. In their first stage, the young have an elongated body, a laterally compressed tail and external branchiae; their small mouth is furnished with horny hooks or teeth for the separation of vegetables, and they have a small tube on the lower lip by which they attach themselves to aquatic plants, &c. The external branchia next disappear, and become covered with a membrane, being placed in a sort of sac on the side of the head; the tail gradually becomes longer and less, shrinks, and seems at last to be absorbed; the mouth widens, and looses its horny processes or jaws; the eyes are guarded by eye-lids; the belly lengths and diminishes in comparative size; the intestines become shorter; the true digestive tract appears; there is the internal branchia, the circulation undergoes an entire change; and the animal, hitherto entirely aquatic and herbivorous, becomes carnivorous, and for the most part terrestrial.

Mr. Thomas Henry Huxley (Journ. Asiat. Soc., Vol. XXII, March, 1857) observes, that when the right gill of the tadpole disappears, it is not, as is usually supposed, by the closure of the fissure through which it protrudes, but by the extension of the opercular fold on the right side towards that of the left, forming but a small fissure; the closer approximation of the latter to the opercular cavity, through which the left gill still protrudes. He also remarks, that conditions analogous to these which occur during several stages of this process exist in the branchial fissures of the anguilliform genus, *S. hasebranche*, *Monopterus*, and *Syngnathus*.

In the museum of the Royal College of Surgeons there are numerous instructive preparations illustrative of the reproductive function in the Anuran Batrachians; they are at present unnumbered, but their numbers will be soon increased, and students, being furnished with a larger volume of the "Physiological Series" (Gallery). In this interesting collection will be found the male organs in *Rana*, *Bufo*, and *Pipa* (Asterodactylus of Wagner), and the female organs in the same genera, both in the unexcited and procreative state. There is a very beautiful series illustrating the metamorphic stages of *Rana paradoxa*, with dissections demonstrative of the internal branchia, the convoluted intestines, and the rudimentary extremities. We would particularly draw the student's attention to a female *Pipa* with the eggs just under the skin in the above-described dissection, and a section showing that the cells are only skin deep, and that the cutis is separated from the subjacent muscles by large lymphatic reservoirs. Another female specimen shows the cells in progress to disappear after having been removed from the female.

Particular Excretions.—The alleged venom of the common toad, so long a subject of popular belief, had been rejected by many modern naturalists, among whom Cuvier may be particularly mentioned. Dr. Davy however found the venomous matter to be contained in follicles strictly in the true skin and about the head and shoulders, but not distributed generally over the body and on the extremities. Pressure causes this fluid to exude or even spirt out to a consider able distance, and the true venomous matter may be thus collected for chemical analysis. Dr. Davy found it to be highly influenced by all fluids since it is acid; aqueous by acid when applied to the tongue, resembling the extract of aconite in this respect; and it even acts upon the hands. With a small residuum it is soluble in water and in alcohol; can also be reduced to a low alkaline state by means of a little alcoholic solution; and the residuum which appears to give it consistence seems to be albumen. More acid than the poison of the most venomous serpents, it produces no ill effect when introduced into the circulation. A chicken injected with this has been observed to live perfectly well, though that this 'swelled venom' is a defence to the toad from carnivorous animals; and we have seen a dog, when urged to attack one, after some hesitation, drop the animal from
and he appears to have been misled into the second by the assertions of Dr. Garden. In the last edition of the "Systema Naturae" (the 12th) he places the great genus Rana between the genera Testudo and Draco, making it the second genus of his third class Amphibia. The Reptilia he shortly characterizes as "pedati, spirantes ore," and admits it into the genus Lacerta in addition to the genera above stated. The 'Amphibia Serpentes' and 'Amphibia Nantes' form the other two orders.

Passing by Klein (1751) we come to the work published with the name of Dr. Laurenti, which has done so much for this branch of zoology. The class 'Reptilia' comprises, in this book (1768), three orders only, viz. the Salamandridae, Gymnophiona, and Chamaeleonidae. The Salamandridae comprise the Anuran Batrachians, consisting of the following genera: the Pipas (Pipa), the Toads (Bufo), the Frogs (Rana), and the Tree-Frogs (Hyla). The author adds the genus Protaeus, founded on the larva of Rana paradoxa.

at the end of the Caspian. However, the 'Specimen Medicinum' of Laurenti, Roessel published his magnificent work on the Frogs of his country (Nuremberg, 1758). He is justly noticed by Cuvier as one of the most ingenious observers and elegant designers of subjects of natural history.

Serpul (1777) varies so little in constitution from Linnaeus, though the characters are differently but not better worded, that he need not detain us from the work of Lacépède, published (1788, 1790) as a continuation of Buffon, under the title of 'Histoire Naturelle des Quadrupedes' (Pt. 3). The conclusion of the author's description of its ovisprous quadrupeds he ranges the Frog tribe in three genera, Les Grenouilles, Les Raies, and Les Crapauds, and these genera comprise 33 species.

M. Alex. Brongniart (1759, 1806, 1803) divides his orders Reptilia in two, the first being the Chelonia, Serpentes, Ophidia, and Batrachians: in this fourth order he adds the genera Grenouille, Croupaud, Raine, and Salamandre. Lastrellée (1801, 1825) makes the Amphibia a class, which he divides into two orders, the Caducibranchia and Perennibranchia, and Caducibranchia is divided into the Anurae or tailless, and the tailed (Urodèles). The first subdivision comprises the genera Pipa, Bufo, Rana, and Hyla.

Daudin, in his 'Traité Général' (1802, 1803), adopts the method of Brongniart, and seems to have bestowed much research on the Anuran Batrachians, of which he has left an 'Histoire Particulière,' in one vol. 4to, with 38 plates representing 34 species.

Cuvier (1796, 1817, 1829) admits the following genera among the Anuran Batrachians in his last edition of the 'Règne Animal':—Rana, Ceratophy, Dactylythera, Hyla (Calamita of Schneider and Merrem), Bufo, Bombydr (Rhinella of Fitzinger, Groprynchos of Speix), the Otilophet (C. Bomqvici of Merron (Engystoma of Fitzinger in part), and Pipa.

M. Duméril, who states that he has made Reptiles his particular study, and who succeeded to the chair of M. Lacépède, has published much on the subject, and promises a large work on this volume on the 'Reptiles' ('Sauts d'Buffon') to present a complete table of arrangement. This work has not yet advanced to the Batrachians.

Oppo, besides his memoirs in the 19th vol. of the 'Annales du Muséum de Paris,' one of which was upon the Batrachians, published in 1841, his third order of 'Naked Reptiles or Batrachians is included into the Apoda (Cecilia), the Ecaudata or Anuran Batrachians (Frogs), and the Caudata, Urodèles or Tailed Batrachians. Bufo, Pipa, Rana, and Hyla, are the genera of the Anuran Batrachians.

Merrem (1790, 1820, 1821) makes his second class, the Batrachians, consist of three orders, viz. 1. Apoda (Cecilia); 2. Salamandria; and 3. Gradantia. Among the Salamandria, which are the Anuran Batrachians, are comprised the genera Hyla, Calamita, Rana Bruniceps, Bombydr, Pipa, and Bufo.

M. de Blainville (1816, 1828) divides the Reptiles into two classes, the second of which, Ichthyophia Amphibia or Nudiperiphraxes (naked-skinned) Reptiles, has for the first of the four orders the Batrachians, which consist of the four leading generic forms of Anuran Batrachians, and are

\* There are those who attribute this leading work to Winter, a chemist, and the companion of Cuvier's travels.

\+ Type, Rana Maritima.
separated into two suborders according to their habits, the first being the Aquiporous, and the second the Dorsigenous (Pipo).

Mr. Gray (1825, 1831) considers the Amphibia a separate class, and, like Fitzinger (1826), divides them into those which undergo a metamorphosis and those which do not. He subdivides the Amphibia into the genera Rana, Ceratophyrs, Hyla, Bufo, Rhinella, Dactylethera, Bombinator, Strombus, Breviceps, and Asterodactylus (Wagler), or the Pipa.

In 1833 he introduced to the Zoological Society a toad (Bombinator Austrilia) from Swan River, observing that this form had not been previously met with out of Europe.

The zoological divisions of MM. Carus and Ficinus appeared about the same time, and they adopt, with regard to the Reptiles, very nearly the classification of Merrem and the views of Oken, whose works were published in 1809, 1816, and 1821.

Dr. Harlan, in 1825, published his account of the American Reptiles, which he divides into Batrachians, Ophidians, Saurians, and Chelonians. Several species of the Caudated Batrachians are enumerated, and they are followed by the Tailess Batrachians, as Rana, Bufo, Hyla.

Mr. Haworth, in his dichotomous or binary method (1823), divides the Batrachia into Apoda and Podata: the latter he subdivides into Salientia, as Pipa, Hyla, Bufo, Bombinator, Breviceps, Rana; and Gracilipes, which he subdivides into the Mutabilia (those which undergo a metamorphosis, Salamandra for instance) and the Immutilalia (those which do not, Proteus and the Sirens).

Fitzinger (1826) separates the Reptiles into the Monopodia and Dipoda, and the latter he subdivides into—1, the Mutabilia; 2, the Immutilia. In the first subdivision are found the Ranoids, the Bufonoids, the Bombinatoroids, the Pipoids, and the Salamandries. The four first embrace the whole of the Anuranous Batrachians. The Pipoids are characterized as having no tongue, an organ which exists in the three other families. In the Bombinatoroids the tympanum is hidden, whilst it is perceptible in the Bufonoids, which have no teeth, and are thus distinguished from the Ranoids, where the teeth are distinct.

Rögen (1828) divides the Anuranous Batrachians or Pygopodii into the Tree-Frogs, Bddallipodobatrachians; the Frogs, Phyllopodobatrachians; and the Toads, Diadactylobatrachians.

The system of Wagler (1830) takes organization as the basis of its arrangement, and he makes the class Amphibia consist of eight orders, viz.: the Tortoises, the Crocodilians, the Lizards, the Serpents, the Orcets, the Cecilius, the Frogs, and the Ichthyodes.

He then characterizes the seventh order, that of the Frogs (Rana), as having no penis, and undergoing a metamorphosis; and divides them into two families, the first consisting of those without a tongue (Aglossae), and the second of those which possess a tongue (Phanoglossae). The first of these consists of but one genus, Asterodactylus (Pipa); the rest of the genera of the Anuranous Batrachians belong to the second. Such are Xenopus (Wagler), Microps (Wagler), Calamita (Fitzinger), Hypoboa (Wagler), Auletris (Wagler), Hyla (Wagler), Phyllomedusa (Wagler), Scinax (Wagler), Dendrobates (Wagler), Phyllopteryx (Wagler), Enystyrhum (Wagler), Cistognathus (Wagler), Rana (Linnæus), Pseude (Wagler), Ceratophrys (Boehm), Megalophyrs (Kuhl), Hemiphractus (Wagler), Symula (Wagler), Chaunus (Wagler), Pulchridens (Wagler), Pelobates (Wagler), Astes (Wagler), Bombinator (Merrem), Bufo (Linnæus), Brachycephalus (Fitzinger).

Müller (1832) divides the Amphibia into two great orders, the Scaly and the Naked. The Anuranous Batrachians belong of course to the latter. He thus places the characters of the two orders in opposition to each other.

Scaly. Naked.

Occipital condyle simple . . . . . Double.
True ribs . . . . . None or mere rudiments.
Auricle of the heart double . . . . . Simple.*
Internal ear with fenestra ovalis and rotunda . . . . . Fenestra ovalis only.
Cochlea (limacon of the French), distinct . . . . . None.
Penis, simple or double . . . . . None.*

* Dr. Dury and MM. Saint Ange and Wéber have, as we before stated, demonstrated that the auricle, which is apparently simple, is in reality separated into two divisions by a complete partition.

No metamorphosis . . . . Generally a distinct metamorphosis.
No branchiæ , . . . . Distinct branchiae, with either persistent or non-permanent holes.
Skin scaly, escutcheoned, or eurinated . . . . . Naked.

Schinz (Naturgeschichte und Abbildungen der Reptilien, Leipzig, 1833) follows for most part the classification of Wagler. There are numerous plates, collected from the best authorities, and it may be considered a good class-book.

The following cuts will convey to the reader an idea of some of the leading forms among the Anuranous Batrachians in their adult state.
Fossil Frogs.

Fossil frogs have been found in the coal-formation of the Rhine (Fayer--holt) in company with the fishes **Lepiscus mucratus** and **L. papryrus**. Two species have been described, and there are many examples in the museums at Bonn. In this country specimens are to be found in the collections of Lord Cole and Sir Philip Egerton, bart.

**Frogs** is the common name of a wild water-plant, called **Hydrocharis Morsus Ranarum**.

**Froissart** (Jean, or John), was born at Valenciennes about 1337. He was the son, as is conjectured from a passage in his poems, of Thomas Froissart, a herald, and of no considerable profession in the days of chivalry. The youth of Froissart, from twelve years upwards, as he himself informs us, was spent in every species of elegant indulgence. In the midst of his dissipation however, he early discovered the ardent and inquisitive spirit to which he owes so much; and even at the age of twenty, at the command of his "dear lord and master, Sir Robert of Namur, lord of Beaufort," he began to write the history of the French wars. The period from 1326 to 1336 was chiefly filled up from the chronicles of Jean le Bel, canon of Liege, a friend of John of Hainault, and celebrated by Froissart for his diligence and accuracy. It is reasonable to believe that this work was interrupted during a journey to England in the train of Philippa of Hainault, the heroic wife of Edward III., and mother of the Black Prince. Froissart was for three or four years secretary or clerk of her chamber, a situation which he would probably have retained but for a deep-rooted passion for a lady of Flanders, which induced him to return to that country; a circumstance equally favourable to the history of the Continent, and unfortunate for that of Britain. During his residence in England he visited the Scottish mountains, which he traversed on a pilgrimage, carrying his own portmanteau, and attended only by a greyhound. His character of historian and poet introduced him to the court of David II., and to the hardly less honourable distinction of fifteen days' abode at the castle of Dalkeith with William, earl of Douglas, where he learned personally to know the race of heroes whose deeds he has repeatedly celebrated. He was in France at Melun-sur-Seine about April 20th, 1364; perhaps private reasons might have induced him to take that road to Bordeaux, where he was on All Saints' day of that year, when the princess of Wales was brought to bed of a son, who was afterwards Richard II. The prince of Wales setting out a few days afterwards for the war in Spain against Henry the Bastard, Froissart accompanied him to Dax, where the prince resided some time. He had expected to attend him during the continuance of this great expedition, but the prince would not permit him to go farther; and shortly after his arrival sent him back to the queen his mother. Froissart could not have made any long stay in England, since in the following year, 1368, he was at different Italian courts. It was this same year that Lionel, duke of Clarence, son of the king of England, espoused Isabella, daughter of Galeas II., duke of Milan. Froissart, who probably was in his suite, was present at the magnificent reception which Amadeus, count of Savoy, summoned the Count Vert, gave him on his return: he describes the feasts on this occasion, and does not forget to tell us that they danced a trelay of his composition. From the court of Savoy he returned to Milan, where the same count Amadeus gave him a good cotarde, a sort of coat, with twenty florins of gold; from thence he went to Bologna,
and Ferrara, where he received forty ducats from the king of Cyprus, and thence to Rome. Instead of the modest equipage he travelled with into Scotland, he was now like a man of importance, travelling on a handsome horse, attended by a hackney. It was about this time that Froissart held, he himself, his first interview with that of John of King of France. Having however lost his patronage, he did not return to England, but went into his own country, where he obtained the living of Lesteines. Of all that he performed during the time he exercised this ministry, he tells us that he continued in the charity of the people, and that the tavern-keepers of Lesteines had five hundred francs of his money in the short space of time he was there. It is mentioned in a manuscript journal of the bishop of Chartres, that Froissart, in a town at the gate of Lesteines, had entertained the keepers of the town with bread and wine, and given them a certain amount. The manuscript further states that Froissart was present in the town on the day of the seige of Wenceslaus of Luxembourg, duke of Brabant, perhaps in quality of secretary. This prince, who had a taste for poetry, commissioned Froissart to make a collection of his songs, roundels, and virelais; and Froissart, adding some verses of his own to those of the prince, composed some verses of romance, under the title of "Mélidor; or, the Knight of the Sun;" but the duke did not live to see the completion of the work, for he died in 1384.

Immediately after this event, Froissart found another patron, in John of Anjou, who engaged him as his clerk of the chaple, for which Froissart testified his gratitude by a pastoral and an elegy dedicated to him, and which he published in the following year. He was appointed to the parish church of Saint John the Baptist in the town of Biéville, in the diocese of Cambrai, and, as such, he maintained the chapel, which he had in charge, and which was the property of the town. He was a man of high character, and was held in great respect by the people of the town.

In 1393 Froissart revisited England, where he was received with marks of high favour and affection by Richard II. and the royal family. He was therefore kept in the town for some time, and was entertained with great hospitality. During his visit, he was presented with a silver goblet containing a hundred nobles. He finally settled at his house of Chimay, and employed as usual the hours of his leisure in arranging and detailing the information collected in his travels. Four years brought him to 1397, where he had already made good progress in the history of the death of King Philippus, which took place in 1369. He composed a lay on this melancholy event, of which, however, he was not a witness; for he says, in another place, that in 1395 it was twenty-seven years since he had seen England. According to Vossius and Bullear, he wrote the life of queen Philippus; but this assertion is not founded on any proofs.

Independently of the employment of clerk of the chamber to the queen of England, which Froissart had held, he had also the honour of being a knight of the Holy Ghost, a title which was conferred on him by the king of France. He was also admitted to the Order of the Garter, as a mark of distinction, and was appointed to the parish church of St. John the Baptist in the town of Chimay, which was his residence at the time of his death. The parish church of St. John the Baptist in Chimay was dedicated to St. John Baptist, and was a handsome structure, surmounted by a quadrangular tower with a neat spire. The average net income of the vicarage is 720, and the patron is the marquis of Bath. The town is said to be prosperous, and contains several extensive manufactures of woollen cloth, mills for rolling iron, and some considerable breweries. According to the census taken in 1831, its population was 11,240. There is a grammar-school of the foundation of Edward VI., besides several other institutions, some of which are of considerable importance. The market-day is Wednesday. The cattle-fairs are held on 24th February, 22nd July, 14th September, and 25th November.

Carole's Top. Dict.; Collinson's Hist. and Ant. of the County of Somerset, Bath, 1791; Beauties of England and Wales; ParKE'S ANGL. AND WELSH.

FRO, river. [Somersetshire.] FROND, a botanical term intended to express such organs as are composed of a stem and a leaf combined; the leaves of ferns and palms were thought to be of this nature; but since the time of Linnaeus, the fronds of ferns and of the higher grasses are generally preferred to this term. The term frond has ceased to have any precise meaning, and is disused by the best botanists.

FRONDI, in the midst of the war between France during the minority of Louis XIV, which was hostile to the prime minister, Cardinal Mazarin, and to the queen regent, who supported him. In consequence of some disputes between the parliament of Paris and the court, on the occasion of some new taxes levied by the minister, the car-
dinal ordered the arrest of the president and one of the councilors of the parliament in August, 1648, and this act was the signal of a civil war. The party opposed to the court afterward prevailed, and the new government, but only against the cardinal, whom they attacked by accusations and laments, from which they derived the name of 'Frondeurs,' 'censurers,' or 'jeerers.' They had for leaders the duke of Beaufort, the duke of Nice, and the cardinal de Fdémone, the abbé de Rotz (afterwards cardinal), marshal Turenne, and other men of the first rank, as well as ladies, among others the duchess of Longueville, who was a most conspicuous and violent partisan. The people of Paris took part with the court, and with great energy, spelled with an ancient street which he attacked the troops, and obliged the queen to liberate the two members of the parliament. This was called 'the day of the barricades.' A kind of truce took place, but the parliament continued refractory, the court hostile, and the people of Flanders, with the queen's consent, joined with the Spaniards and French, in January, 1649, to remove from Paris with her son to St. Germain, charged the duke of Orleans and the prince of Condé with the task of reducing Paris by block-ade. Louis XIV. was then little more than ten years of age, but no longer forgot the humiliation of being obliged to leave his capital, and this was the first cause of his subsequent hostility towards the parliament. That court, in the mean time, exercised sovereign power in the capital, levied troops, and passed a resolution declaring cardinal Mazarin a tyrant. The following is a Prize ("Le Prix de l'Ambas- sade de Paris," Amsterdam, 1679.) After some fighting in the neighbourhood of Paris a truce was made, a general amnesty was granted by the queen, the parliament retained full liberty to assemble, and the queen, king, and minister resided in Paris. In Paris, and in many other places, on the frontier, new insurrections, however, continued in the provinces, especially in Provence and Guérande, where the local parliaments resisted the authority of the respective royal governors. In 1650 the queen, but the overbearing tone and high pretensions of the prince of Condé, made the court believe that the Frond leaders, and caused the princes of Condé and Conti to be arrested. Upon this the duchess of Longueville, marshal Turenne, and others, raised the standard of revolt in the south; and the town of Provence joined the Spaniards from Flanders. The war, which now assumed a more serious aspect, continued till 1653, when Turenne made peace with the court, and Mazarin returned in triumph to Paris.—[Condi, Louis de.]

FRONTO. MARCUS CORNELIUS, born at Cirra, in Africa, of an Italian family, after studying in his own country, came to Rome in the reign of Hadrian, and acquired great reputation as a rhetorician and grammatist. Anto-
nius Pius appointed him preceptor to his two adoptive sons Marcus Aurelius and Lucius Verus, whose confidence and affection he gained, as is proved by their letters. After being consul, Fronto was appointed to a government in Asia, but had not been prevented from filling this post. His learning and his instructive conversation are mentioned with praise by Aulus Gellius, the historian Apian, and others of his contemporaries. He died in the reign of Marcus Aurelius, at an advanced age. Until of late years we had nothing more of him but the ten lost books of "Diferentiae Verborum," being a vocabulary of the so-called synonyms; but in 1815 Angelo Mai having discovered in the Ambrosian library at Milan a palimpsest MS. on which had been originally written some letters of Fronto to his two sons, S. P., 1823, has given us the complete text, not entirely obliterated, and published it with notes. It happened, by singular good fortune, that Mai, being some years after appointed librarian of the Vatican, discovered in another palimpsest volume another part of Fronto's letters, written in the same language, and the volumes came originally from the convent of St. Columbia, at Bobbio, the monks having written them over with the Acts of the 1st council of Caerleon. It happened that one of the volumes was transferred to Milan, and the other to Rome. In 1819 Fronto was born. Corneli Frontonis et M. Aureli imperatoris epistula: L. Veri et Antonini Pii et Appiani epistularum reliquia: Fragmenta Frontonis et scripta grammatica, 18v. Rome, 1823. These letters are very valuable, as throwing addi-
tional light upon Roman life and manners in the age of the emperors. The fragments are not the less interesting, as we know of the excellent character of Marcus Aurelius, and also showing his colleague Verus in a more favourable light than he had been viewed in before. The affectionate manner in which both emperors speak of their father-tity are interesting. Two or three other epistles of Antonius Pius are also interesting. There are besides many letters of Fronto to various friends, a few of which are in Greek. The work was translated into French, and pub-
lished at Paris, 1830.

FRONISONE, DELEGAZIONE DI, a province of the Papal state, is bounded on the north and west by the Comarca or province of Rome, east by the Terra di Lavoro in the kingdom of Naples, and south by the Mediterranean. Its greatest length, from north to south, is about 40 miles; its greatest breadth, from east to west, is about 12 miles. (Neigeber, "Germil Italiae."—It its population in 1850 was 123,300. (Calindri, "Saggio Storico dello Stato Pontificio." This province includes also in its jurisdiction the small district of Ponte Corvo, which is in the valley of the Liris, within the limits of the ecclesiastical province of Bene-
po. The province of Fronisone consists of four natural divisions: 1. The Valley of the Sacco, which is fertile; 2. The mountains north of it, the Hernica Saxa, or Rocks of the Hernici, which are mostly barren; 3. The Mounts Leoni, or mountains of the Sacco, which are partly cultivated; and 4. The Pomponi Marshes, extending south of the Mounts Leoni to the sea-coast as far as Monte Cieluccio and Terracina. The province contains 7 towns and 45 villages, the capital being the municipal town of Fronisone, built on a hill above the junction of the river Coasa with the Sacco, is the capital of the province, and the residence of the delegate. An account of the principal towns of this province is given under CAPABOGIA DI ROMA.

FRONT, Frontispiece.

FRONT-BEARER, or Crysophorus, an instrument invented by Dr. Wollaston for exhibiting the freezing of water in vacuo, and at a distance from the source of cold; his direction of making it is given in the "Philosophical Transactions" for 1815.

Let a glass tube be taken, having its internal diameter about one-eighth of an inch, with a ball at each extremity of about one inch in diameter, and let the tube be bent to a right angle at the distance of half an inch from each ball. One of these balls should contain a little water, but if it is
more than half full, it will be liable to be burst by the ex-
pansion of the water in freezing; the remaining cavity
should be as perfect a vacuum as can be readily obtained.
One of the balls is made to terminate in a capillary tube,
and the other is fitted for a cinder. The cinder has been
kept over a lamp for a considerable time, till all the air is
expelled, the capillary extremity, through which the steam
is still issuing with violence, is held in the flame of the lamp
till the force of the vapour is so far reduced, that the heat of
the air is sufficient to melt the wax gently.

When an instrument of this description has been suc-
cessfully exhausted, if the ball that is empty be immersed
in a freezing mixture of salt and snow, the water in the
other ball, though at the distance of two or three feet, will
be soon reduced to ice. The wax contained in the empty ball is
condensed by the common operation of cold, and the vacuum produced by this con-
densation gives opportunity for a fresh quantity to arise
from the water in the opposite ball, and when there is so great a redu-
tion of its temperature, that the water freezes.

According to the doctrine which does not admit of the
existence of positive cold, we should represent the heat of
the warmer ball to be the agent in this experiment, gene-
rating steam as the only body which can be decomposed
by it. But if we should express the cause of its abstract,
we must say that the cold mixture is the agent, and
may observe in this instance, that its power of freezing is
transferred to a distance by what may be termed the
medium of a vacuum.

FROZEN OCEAN, a term used to indicate the seas sur-
rounding the Poles, in which great masses of ice swim about.
It is consequently synonymous with Ice Sea, and in some
degree also with what are called the Arctic and Antarctic
Sea, or the Arctic Ocean.

FRUIT, in botanical language, signifies that part of
a plant in which the seed is lodged, whatever its size, colour,
or texture may be, so that the seed-like grain of a sage, the
grain of corn, the nut of a chestnut, the dry capsule of a
lime bush, or the interior hard mass of a pomegranate or a
pine-apple. In the ordinary acceptation of the term
however the word fruit is exclusively applied to seed cases
which are edible, and generally such as require no pre-
paration to render them fit for food.

The fruits of the temperate regions are of so much
importance to the comfort as well as luxury of society,
that without entering much into details we shall here intro-
duce some general observations, which will inform our
readers, what are the kinds of fruits, and in what season or
confinement gardens. In doing which we have the advan-
tage of producing in a condensed form the important
results of the laborious and costly investigations con-
ducted for so many years in the garden of the Horticultural
Society of London. These valuable works have already been
published in the second edition of the ‘Catalogue of Fruits,’
cultivated in that establish-
ment; and our only task is to make a judicious selection from the
thousands of varieties included in the Society’s list.

The species of cultivated fruits are far from numerous,
and most of those of the temperate regions have been in-
troduced, at one period or another, into Britain. The genera
from which these have sprung are comparatively few, and
chiefly included in the natural orders Rosaceae, Vitaceae, Ur-
ticaceae, and Grossulariaceae. To the first of these are to be re-
ferred the genera producing the species called apples, pears,
plums, cherries, apricots, peaches, and nectarines, quinces,
medlars, raspberries, and strawberries; to the second, the
vine; to the third, the fig and mulberry; and to the fourth,
the beeches. The cherries and pears are green, orange and
flibberts belonging to Corylaceae; walnuts to Juglandaceae,
and the melon and pine-apple respectively to Cucurbi-
taceae and Bromeliaceae.

We may now briefly enumerate what we may consider
the most valuable of each of these objects of cultivation.

APPLES are the most numerous class in cultivation.
It has been conjectured that they were brought to this country
by the Romans; but it is doubtful whether the varie-
ties then introduced would succeed in this climate, presum-
going on the fact that the Malo di Carlo, well known as being
so exceedingly beautiful and delicious in the North of Italy,
has, in one of our finest English summers, proved pale and insipid,
and that the apples of the South of Europe are gen-

erally worthless in England. A hawthorn breed, it is more
than probable, was introduced by the Normans, especially
of such as were suited for the manufacture of cider.

Apples are usually divided into three principal sorts,
according as they are fitted for dessert, for kitchen use, or
for cider. For dessert we have early varieties, such as the
Early Red Margaret, Early Harvest, Oslin, Kerry Pippin,
and Summer Golden Pippin. In succession to these, the
Wormsley Pippin, King of the Pippins, Golden Rainette,
Ribston Pippin, Court of Wick, Yeardley’s Plate, a re-
markably hard and of a tart character, and Freshwater,
one of the very highest excellence, Hughes’s Golden Pippin, He-
refordshire Pearmain, Lamb’s Abbey Pearmain, Court-Pendu
plate, which blossoms late, thereby escaping the spring frosts,
Reinette du Canada, Old Noupard, and Scratch Noupard.

Of early cider varieties we have the early apple, known as
Hawthorn, and Early Transparent, one of our hardest, and
most satisfactory fruits, the three varieties by which we are
named, and which last deserves particular notice on account of its beautiful transparency when made
into apple jelly, for which purpose it is the best sort known.

Of winter and spring use, from many excellent varieties, the
following are selected: Blenheimking, which may be also
used at dessert, Dumelow’s Seckelling, Bedfordshire
Foundling, Alfriston, Gloria Mundi, Royal Russet, Brabant
Belledeur, Northern Greening, Norfolk Beautin, from
which chiefly our best cider is made. Another of great value
for cider is Brown Beauty, or Brune, so very much in
London shops are prepared; and French Crab, which will
keep above a year. For cider, Siberian Bitter-Sweet, Foxley,
Red Streak, Fox Whelp, Golden Harvey, Coccage, Haygrove
Crab, and Cooper’s Red Streak, are amongst the most
celebrated.

Of the varieties of PEARS, few, till lately, have originated in this country; most of the kinds in former cultivation
were from France, but they generally required the protect-
ion of walls. The greater intercourse with the continent
has of course been frequent upon the establishment of
the introduction of a number of new and hardy varieties of
this fruit from Belgium, where its cultivation and improve-
ment had been, and still are, attended to with great assidui-
ty. These new varieties, with some of equal merit, and even
superior, together with certain old-fashioned sorts, as
Dowton castle, in Herefordshire, now compose the prin-
cipal part of the most select lists, and are at the same time
rapidly excluding the old French varieties from cultivation.

Peas are divided into three classes, dessert, kitchen,
and Perry. The following are amongst the finest for dessert,
Citrón des Carmes, Jargonelle, which requires a wall;
Summer St. Germain, Ambrosia, Fondante d’Automne,
White Doyenné, if grown as an open standard; Seckle,
Louise Bonne Beautin, or Bonne de Jérusalem; and
Boulard in the London shops are prepared; and French Crab, which will
keep above a year. For cider, Siberian Bitter-Sweet, Foxley,
Red Streak, Fox Whelp, Golden Harvey, Coccage, Haygrove
Crab, and Cooper’s Red Streak, are amongst the most
celebrated.

The best varieties of PLUMS for the dessert are the
Green Gage, Washington, Reine Claude, Violette, Drap d’Or,
Kirke’s, Coe’s Golden Drop, Blue Imperatrice. For kitchen use
use : Orleans, White Magnum Bonum, Shropshire Damson,
which last is excellent for preserving, as are also the
St. Catherine, Coe’s Golden Drop, Green Gage, and
Quetsche; the latter is the sort of which the German Prunes
of the shops are made, by slow and repeated drying in an
oven.

SWEETBERRIES, it is said, were first cultivated in this country at
Sittingbourne, in Kent, where they are supposed to have been introduced about the time of Henry VIII. That
county is still famous for a sort called the Kintail cherry,
identical with some of the varieties of the Montmorency
cherrys of the same country, which are the best for
jam, jelly, and acid, and much used for pies. They have also the
peculiar property of the stalk adhering so firmly to the
stone that the latter may be drawn out without breaking the
skin, excepting at the base. The fruit is then dried in a
sieve in the sun, or other gentle heat, put into an oven
for a few minutes, or heated oven; the cherries will then keep for a year, and have
the appearance of raisins. The best cherries for dessert are the
Elion, Dowton, May Duke, Royal Duke, Knight’s
Early Black, Early Purple Guince, Bigarreau, Florence.
For preserving, the Kintail and Morello are best.
APRICOTS in cultivation are of few varieties compared with any of the preceding kinds of fruits, and of those the most useful are the following: Large Early, Breda, Mooipark, Royal, and Turkey. Breda is the best for standards, and when the season is favourable, the fruit on such, although smaller than that grown against a wall, is, notwithstanding, higher flavoured. A variety called the *Marsch-Marsch* may be noticed, although not recommended for the drying market. In the case of fruit grown in Upper Egypt, where it produces in great abundance, the fruit being dried, and in this state forming an article of commerce for exportation. The apricot blossoms earlier than any other fruit-tree cultivated in this country; being perfectly hardy, it was cast by Jesu, even by the Romans, a corruption of which name is traceable in the modern one of Apricot. In consequence of the tree blossoming so early, its blossoms, particularly in the case of young trees, are extremely liable to drop off in setting. This is not to be wondered at, and it is considered that if it is preferable to the Sweetwater, which generally forms a ragged bunch in consequence of a great number of the berries being small and abortive; the Black Prince and Esperion will sometimes succeed; and the Early Black and Austria are well棱-tted and the varieties grown in the open stendi, but the bunches of the latter are very small. The only fruits still remaining to be noticed, the varieties of which are of any importance, are figs, gooseberries and currants, and pine-apples.

In some parts of the country the Fig bears in the open air; but in order to ensure its doing so, a warm, or more strictly speaking, a dry subsoil is absolutely necessary, whether it be grown as a standard in the open ground or against a wall, or forced under glass. Wherever the soil is retentive of water, it will retain the heat long after the spring. In fact, if the subsoil be very wet, its temperature will approximate to that of spring water, which in England is little above 50° Fahrenheit, throughout the whole year; an amount of cold which the roots of the fig are certainly not able to stand. In greenhouse cultivation there is a great advantage in keeping the subsoil dry and bare, as the root-stock is much superior when the warmer, more moist condition of such cultures is employed towards the water. Some of the finest varieties of figs for this climate are the Brown Turkey, Brunswijk, White Marseilles, Nerif, Progusata, White Ischia, Brown Ischia, Yellow Ischia. The Black Turkey and the Turkey Rabbet, and the orange-figure the Persian, White Marseilles, and the White, Brown, and Yellow Ischias are also proper.

GOOSEBERRIES are brought to greater perfection in Britain than in any other country. The varieties are numerous, and many of them have been raised in England, chiefly from the domesticated population, with a view to prizes. It is to be regretted that the latter have generally been awarded solely with reference to weight; hence a number of large but coarse sorts have been brought into cultivation. In making the best selection, flavour and not size must be kept in view.

**Fruit, red**: Red Champagne; Red Warrington; Keen's Seedling Warrington; Rough Red, used for preserves; Red Turkey; Roy; Ironmonger. **Fruit, yellow**: White Golden Drop. **Fruit, green**: Early Green Hairy; Pittamson Green Gage; Green Walnut; Parkinson's Laurel; Massey's Heart of Oak; Edwards's Jolly Tart. **Fruit, white**: White Champagne; Early White; Woodward's Whitesmith; Rodrigues Sweet; Taylor's Bright Venus; Cock's White Eagle; White Honey.

The varieties of CURRANTS preferable for cultivation are very few. Of black currants, the Black Naples and the Black Grape are the best. The White Dutch, Red Dutch, Knight's Sweet Red, and Knight's Large Red, are the best sorts of white, and red currants.
The PINK-APPLE is the only tropical fruit which is cultivated to any extent in this country. The best varieties are the Queen, Mos, Black Jamaica, Brown Sugar-loaf, and Black Antigua; the Enville and White Providence are cultivated more for their size than for flavour.

FRUITS, PRESERVATION OF. The apple and pear, the two staple fruits of the country, are of such much importance to great numbers of persons, that we shall not dismiss this subject without giving some information concerning the best means of preserving them during the autumn and winter; for it is an object of no little moment to be able to prolong the duration of the season of these fruits even for a short month. A few early varieties may be eaten from the tree, or when recently gathered; but the greater and by far the most valuable portion require to be kept for some time uneaten, in barrels, bins, or in wharves. The most pears are extremely hard when gathered; some even remain so during the winter, and only become melting, or of a buttery consistency, in the spring. Apples, although it is their property to remain a long time nearly as crisp as when gathered, yet are at first too acid for the dessert, and require to be stored up in the same manner as pears, until their juices acquire a rich sugary flavour. Many varieties indeed permanently retain their acidity, but such are only proper for culinary purposes, for which indeed their briskness renders them invaluable.

With regard to the gathering and storing of apples or pears, having in view their most perfect preservation, it is necessary that the gathering should be performed in all cases when the tree is in the best state; the first instant of ripeness is generally specified as to the period of the season when any particular variety ought to be taken; for this is influenced variously by circumstances connected with soil, climate, and situation. The best general rule is, to gather when the fruit-stalks separate; but particularly, their bottoms are turned up the hand from its natural or pendulous position. There are scarcely any exceptions to this rule, unless as regards a few of the summer and early autumn varieties, in which the flavour is improved by gathering a little earlier than is directed.

The treatment of the fruit after gathering is by no means uniform; some lay it directly on the shelves of the fruit-room, or wherever else it is intended to remain till fit for use; others cause it to undergo a process of fermentation, called sweating, by throwing it in a heap, and covering it with some dry substance, generally straw; in some instances even blankets have been used for this purpose. After it has perspired for ten days or a fortnight, it is spread out at a temperature when the air is dry, in order to expedite the evaporation of the moisture. All unsound specimens, or even such as are suspected of being so, are then separated. In the case of particularly valuable sorts, it has been recommended to wipe off the moisture with flannel, but this proceeding, for reasons already pointed out, is not at all necessary. To avoid all risk in this way, their rough dry coat being in less immediate contact with the cold juices of the fruit.

From the above it is sufficiently evident that variations in the state of the atmosphere, as regards its temperature, have injurious effects by the expansion and condensation of the juices, and by the deposition of moisture on the surface, partly owing to atmospheric humidity, but chiefly to the circumstance of the latter being condensed upon the fruit, as above explained. This deposition of moisture tends to unpoise the fruit, and to render it more susceptible of injury by a great deposit of moisture, as will be the case with a glass filled with water colder than the atmosphere of a room into which it is brought. The more smooth and glossy the variety of apple or pear, the greater is the condensation on its surface. The blue stains, exhibited on the skins of those pears which, by reason of their waxiness, are exposed to the elements in this way, their rough dry coat being in less immediate contact with the cold juices of the fruit.
test, in a great measure, the skin from the effects of moisture. Some fruit-growers are so well aware of this that they will not even handle their most choice wall-pears in gathering, except by the stalk.

Light is found to be injurious; all agree that fruit keeps best in total darkness. This arises from a specific stimulus being exercised upon the vegetable tissue by this agent. If a leaf, a green branch, or such a green surface as that of an apple or pear be exposed to light, even in the most diffused state, evaporation takes place; but as soon as the stimulus of light is withdrawn, evaporation ceases. Speaking of plants in general, evaporation from the green parts takes place all day long and ceases at night.

The preceding observations will explain the reason why a fruit-room is best in a dry situation, on the north side of a wall or other building where the sun’s heat will not readily disturb the temperature. The roof should be double, and the walls hollow; the windows small. There should be a full command of ventilation; but the room should also be capable of being entirely shut up.

Ventilation should be used only when the air, owing to the exhalations from the fruit, is not perfectly sweet; when this is not the case, air must be admitted in whatever condition it may happen to be; but it would be most desirable to admit air copiously only when it is of an equal temperature with that of the interior of the room. The latter should be in two or three compartments, in order to keep the late sorts entirely free from the contaminating effects of exhalations of fruit in a fully ripe state.

These being the conditions under which the ripening, decay, and preservation of apples and pears always take place, the reader will have no difficulty in judging of the relative advantages of the 16 methods already named. It is obvious that Nos. 1, 2, 3, 4, 5, 6, 7, are plans in which the circumstances essential to the preservation of fruit are nearly completely complied with. Nos. 8, 11, 14, 15, and 16, are bad, either because of the liability of the material in which they are packed to decomposition, by which the fruit acquires a tainted musty taste, or because they can only be applied on a very small scale. Nos. 9 and 12 are chiefly objectionable because, owing to the almost total absence of evaporation, the fruit, although well preserved and plump, is apt to be watery and tasteless. No. 17 is a troublesome and dirty practice; Nos. 13 and 18 are excellent when opportunity occurs of practising them; but No. 10, in dark but airy vaults, is undoubtedly that which most completely complies with the conditions necessary for preservation, and is much the best. We have known apples, that are usually decayed in February, preserved till Midsummer in this manner, in all their freshness and colour, and nearly all their flavour.

With regard to nuts and walnuts, the only precaution that it is necessary to take for their preservation is to maintain the air in which they are placed in a constant state of moisture. Burying in the earth, placing in a damp cellar, mixing with damp sand, and many such plans have been recommended; but they are all objectionable, either because they keep the fruit too moist, or do not offer any impediment to its becoming mouldy. We believe the best of all plans is to pack them in glazed earthen jars, throwing a small quantity of salt on the last layer before the jar is closed.

Apples and pears dried in ovens may be preserved for years. Bosé states that he has tried the latter, after three years' preservation, and found them still good; but they are best during the first year. They are placed in the oven after the bread is drawn. The process is repeated a second, third, or fourth time, according as the size or nature of the fruit may require. The heat must not be so great as to scorch, nor must the fruit be dried to hardness. When properly done, they are kept in a dry place. Another method, chiefly practised on the rousselets, and of these the rousselet de Rheims is the best for the purpose, is to gather the fruit a little before maturity; after being half boiled in a small quantity of water, they are peeled and drained. They are then placed in the oven, and heated to a suitable degree, for twelve hours. They are then steeped in syrup, to which have been added brandy, cinnamon, and cloves. They are again returned to the oven, which is heated to a less degree than at first: this operation is thrice repeated.

The flattened dried apples, called beaufins, so abundant in the London shops, are prepared in Norfolk, from a variety of apple called the Norfolk beaufin: it has a thick skin, which resists, without bursting, the heavy pressure to which the apples are subjected in the oven, during the slow and lengthened process of drying.

FRUME/NTIUS. [ARMSHINIAN CHRISTIANS; AXUM.]  
FRUSTUM, a portion cut off from any solid figure. The term is most frequently applied in the case of the cone, and conoidal surfaces of revolution. By 'frustum of a cone' is meant any part cut off from a cone which does not contain the vertex. This distinction is drawn because any part of a cone which contains the vertex is another cone.

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