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THE PENNY CYCLOPAEDIA

THE SOCIETY

FOR THE

DIFFUSION OF USEFUL KNOWLEDGE.

VOLUME XV.

MASSAGETÆ—MURIDÆ.

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MDCCCXXXIX.


THE PENNY CYCLOPÆDIA

OF

THE SOCIETY FOR THE DIFFUSION OF

USEFUL KNOWLEDGE.

MASSA'GETE, an antient people of central Asia, in an expedition against whom Cyrus is said to have lost his life. (Herod., i. 201-216; Justin., i. 6.) It is difficult to determine their position; but it appears probable that they dwelt north of the Jaxartes (Sibon), in the country which is now present inhabited by the middle hordes of the Kirghis.

Herodotus says that they lived north of the Araxes, by which he probably means the Jaxartes (i. 201), and on the east of the Caspian Sea. According to Pliny, however, the Hyperborei, Sauromates, and Aramisci dwelt above the Euxine, the Ister, and the Adriatic; and the Sacae and Massagetae above the Caspian (p. 507, Casaubon); and a little further he remarks that the Massagetae were to the east of the Dam, which bordered on the Caspian Sea (p. 511).

Herodotus was in doubt whether the Massagetae ought to be reckoned among the Scythians (i. 201); but they were usually regarded as part of the Scythian nation by succeeding writers. (Arrian, iv. 17; Pliny, H. N., vi. 19.) Herodotus appears to have used the name of Massagetae to designate all the nomadic tribes of central Asia east of the Caspian; while he confined that of Scythia to the country north of the Euxine and the Danube. The similarity of their name (Massa-geta; compare Tyri-geta, Thysan-geta) would lead us to suppose that they were connected with the Getes of Europe.

The Massagetae are described by Herodotus as a numerous and powerful nomadic people, whoAstalled the Scyths in their dress and mode of life. Gold and silver were plentiful among them; but no iron nor silver was found in their country. They were however in a very low state of civilization even for a nomadic people. They had a community of wives; and their aged people were killed and eaten by their relations. (Compare Rennell's Geography of Herodotus, sect. x.; and as to the custom of eating of their parents, the article BATTAS, and Moore's Notices on the Indian Archipelago, Singapore, 1837.)

MASSA'RIUM, a provisional generic name of Blainville for Aleyonum Massa of Müller.

MASSILLIA. [Marseille.]

Massillon, Jean Baptiste, was born the 24th of June, 1663, at Hières, in Provence, and at a very early age entered the Collège de l'Oratoire of that town; but his father, intending him for the profession of a notary, withdrew him before he had completed his studies. Massillon however eagerly seized every opportunity of returning, and his father was ultimately prevailed upon to allow him to re-enter the college, which he did in 1681, and commenced the study of theology under P. de Beaujeu, afterwards bishop of Castras. Here he read the sermons of Lejune, and, being pleased with them, made some attempts in that species of composition himself, which, although acknowledged to be successful, did not satisfy his own taste. In 1696 he was called to Paris to direct the seminary of St. Magloire, where he composed his first ecclesiastical conferences, which, although differing in tone from his sermons, were not wanting in vivacity. Although a great admirer of Boudaloue, Massillon did not take him for his model: he was desirous of opening a new way, and of searching the human heart, its secret passions and interests, in order to arrive at the motives and combat the illusions of self-love by reason and powerful appeals to the feelings. In the pulpit he appeared without gesture or any other display of action. Nevertheless when he grew animated, his look and deportment became so expressive, that at this time, when the orators of the pulpit were held in high estimation as patterns of declamation, the celebrated actor Baron, struck with the beauty of Massillon's style, exclaimed, 'There is indeed an orator, but we are merely comedians.' At Versailles he was as successful as he had been at Paris. The court of Louis XIV. was composed of men who might be touched though not convinced. Massillon felt this, and painted the passions with so much truth and such irresistible force, that even those whose vicious tendencies he exposed were constrained to love and admire him.

In 1704 he preached his second Lent sermon at the court, and with so much success that Louis XIV. promised he would hear him every two years; but for some reason unknown, Massillon was never again at Versailles. In 1709 he delivered the funeral oration of the Prince de Conti, which, though much applauded as delivered from the pulpit, was greatly criticised when it appeared in print. After the death of Flechier in 1710, Massillon remained the last of the orators of the grand siècle.

In 1717 Massillon was made bishop of Clermont, and preached before the king his last Lent sermon, which is considered to be his chef d'œuvre; and in 1719 was consecrated in the king's presence by Cardinal de Fleury. Massillon abolished in his diocese those indecorous processions that the ages of ignorance had perpetuated, and also certain superstitious customs spoken of in the Origines de Clermont. He died on the 18th September, 1742, of apoplexy.

The fame of this celebrated man stands higher than that of any preacher who has preceded or followed him, by the number, variety, and excellence of his productions, and their eloquent and harmonious style. Grace, dignity, and force, and an inexhaustible fecundity of resources, particularly characterize his works. His Avent et Carême, consisting of six volumes, may be justly considered as so many chefs-d'œuvre. Massillon, in his sermons, endeavoured to convince the young king, Louis XV., that he derived his authority from the people, and should never exercise it but for their advantage, nor deceive himself by thinking that he could do no wrong.

The most interesting of his works, next to his sermons, are his 'Conferences,' which are discourses addressed to the young ecclesiastics under his direction in the seminary of St. Magloire.

In a discourse entitled De l'Amusement des Clercs, he contends that the Church has no need of great names for its...
support, but of exemplary virtues; and that profane man
ners and worldly inclinations, and not the humble origin of
its clergy, are the things calculated to dishonour it. His
discourse on the application of ecclesiastical revenues is
strangely pathetic, inasmuch as all the consequences
which he foresaw have been verified in a remarkable man-
ner. It is worthy of remark that his sermon 'on the small
number of the elect' received the approbation of Voltaire,
with a laudatory reference to those in England who do be-
ging to a woman of Pembroke's re-
tainers,* who appears to have been employed as a special
message to Queen Elizabeth. In 1602 he was entered at
St. Alban's Hall, Oxford, where he was supported by the
earl of Pembroke. Here, as Anthony d'Wood informs us, he
spent his time in reading 'poetry and romances' rather than
'logic and philosophy, which he ought to have done, as he
was patronised to that end.' Perhaps it is unnecessary to
fall upon Anthony so harshly as Gifford does for this asser-
tion. It is hereafter to be proved that it was
kind of dishonesty to spend the time for which he was in-
debted to another person in studies alien to those which his
benefactor wished him to pursue. Be this as it may, his
works are a sufficient contradiction to the accusation of
wasting the time of Pembroke's chaplain, the world has gained what is worthy many homilies.
Massinger took no degree, and also seems to have lost
his patron's favour. The reason is uncertain, but Gifford
supposes that the poet changed his religion at Oxford, and
evaded his Earl's fantasy. Without doubt he ever did change his religion at all rests on Gifford's in-
ference from certain expressions in his works; but be this
as it may, he was driven to betake himself to dramatic com-
position about the time of his arrival in London. It is prob-
able that for some years beyond assisting others in the
composition of plays, for we hear little or nothing of him as an author until the appear-
ance of his 'Virgin Martyr' in 1622, sixteen years after his
arrival in London. There is evidence moreover to prove that after Beaumont's death in 1615, he assisted Fletcher
in the composition of some of the numerous plays (between
thirty and forty) which appeared under that author's name
during the succeeding ten years. During the rest of his
life, Massinger was employed in writing plays, the last of
which appeared only six weeks before his death, which took
place the 17th of March, 1640, at his own house on the
Bankside. His name is noticed in the Burial Register of St.
l共和国's meeting adjunction 'a stranger,'
keeping that the poverty which pressed through life
had not allowed him resting time enough to make himself
known even to the clerk of his own parish.
Massinger's situation as last in order of time of the great
dramatic writers of the seventeenth century is probably the reason why he was so utterly lost sight of
for seventy years after his death. The first thing we hear
of his works is Rowe's intention of editing them, which he
afterwards changed into an actual piracy, by which he
adapted the 'Fatal Dowry' to suit the taste of the eighteenth
century, under the name of the 'Fair Penitent.' That such
an audacious forgery could have been palpated on the public
and remain undetected for more than half a century is suf-
ficient evidence what easy victims the reading public of
these plays must have been in the hands of fashionable
authors.
In 1759 a bookseller's edition of Massinger appeared,
which was followed in 1761 by another; and in 1777 by a
third, edited by Monk Mason. On these editions Gifford,
the last editor, throws many and apparently well-deserved
alurs. Those who wish to see the whole controversy will
do well to refer to the Edinburgh Review for 1808, where
the battles of the earlier editors are fought with considerable
passion.
Gifford gives a complete list of Massinger's plays, with
the dates of their appearance, which range from 1621 to
1640. They are thirty-seven in number, including those of
which he wrote only a part, but which went under his
name. Sometimes it is probable, and in some cases it is not
impossible, more could have been added to their number had it not

* He either's name has caused some dispute among the editors. Gifford
asserts it to be Archer, to which he is probably right.
MAS

Botanists capable being had the special name. The Manwood comparatively lion-like; the mate dag*; the ratoria is lowish-white Chios. The names the MASTIFF, kingdom coast two rapids, Joul..<br>

Th*e&e, the large grows it in Chios, it resins, and the whole smell. aether, of mastich not; this mastich is not permitted the United of inhabitants. The number of settlers amounted to 1990, of whom 700 were in Monrovia, but it is said that the number has considerably increased of late. The settlers are more occupied in trading with the neighbouring nations than with agriculture. (Innes's Liberia, or the American Colony of Free Negroes on the Coast of Africa; and West African Sketches.)

MASTERY. [Arts.]

MASTEROSS, the old name of an umbelliferous plant with fleshy tuberous roots, growing in moist meadows and woods in the north of Europe and in Newfoundland. It has a stem from one to two feet high, broad twice-terinate leaves, flat large umbels of white or pink flowers, and thin oribcular-scarlet-coloured fruit. Botanists call this plant Imperatoria Ostreachum; it has acrid, bitter, somewhat aromatic root, and had a great reputation as a remedy for toothache, and as a cure for agues, whence no doubt its name has been derived. It retains a place in continental medical practice, but it is disused in England.

MASTIC, a resin which is extracted from the trunk and branches of the Puntana lentea by burning. This tree grows in the Levant, and particularly in the island of Chios. The fluid which exudes soon concretes into yellow-white grains or tears, which are semitransparent, brittle, and have a slight but rather agreeable odour and taste. White gums on them, mastich is also more or less in the burning smell. Its specific gravity is 1·074. It is composed of two resins, one of which is soluble in dilute alcohol, and the other is not; this last constitutes from 1-5th to 1-12th of the whole weight of the mastich, and possesses very nearly the characters of oil, it being soluble in absolute alcohol, ether, and oil of turpentine; these liquids also dissolve mastich without leaving any residue. When the portion which is insoluble in dilute alcohol is reduced to powder, and long exposed to the air, it is rendered soluble by the change which it undergoes.

In foreign Pharmacopoeias mastich is employed in several ointments, pastes, and fumigating powders; it is retained in the Materia Medica of the London Pharmacopoeia, but does not enter into any preparation except as a tinutere for preparing what is usually called eau de luce. Mastich is principally employed as an ingredient in varnish, and as a temporary stopping for carious teeth.

MASTIFF, the name of a variety of dog of a very old English breed, now seldom seen in its original state of purity. Manwood states that the word is derived from mae thefase, because it is supposed to terriify thieves by its voice, which, when the animal is excited, is fearfully deep and loud. This is the Dogue de forte riche of Buffon and the French, the Mastiff of Ray, the Canis Molossus of Linnaeus, and the Villoticus or Catavornus of Dr. Caius. A true-bred mastiff is of considerable size, and very stoutly built. The head is well developed and large, the dogs and pendulous on each side of the mouth, and the whole aspect noble. It appears from Claudian and Gratius that the British dogs, mastiffs probably, were highly prized at Rome; and

Camden notices the employment of a special officer, Procurator Cyngfeti, appointed in Britain for superintending the breed of these dogs and their transmission to that city, where they appeared in the combats of animals at the amphitheatre, and sometimes upon occasions even more cruel, for there can be little doubt that they were set to worry those unhappy Christians whom the tyrants of the time ordered to be sewed up in the skins of beasts and then exposed to the attacks of those powerful and savage dogs. Penny quotes Strabo for the fact that the Gauls trained British mastiffs for war, and used them in their battles. According to Dr. Caius, three were a match for a bear, and four for a lion; but Stow mentions a lion-fight with three of these dogs, in which, though two were disabled, and afterward died, the lion was so much harassed that he retreated, and refused to resume the battle.

The mastiff is capable of great attachment, and when kept as a guard is of unfailing vigilance, giving the alarm by its powerful bark, and never ceasing till it has roused the family or secured the intruder. It is now comparatively little used as a watch-dog, especially in great towns, where an active police has almost entirely superseded it.

Molar tooth of Mastodon, not worn.

And after exposure to a comparatively small degree of detrition it has the aspect represented in the following cut,

B 1
Molar tooth of Mastodon, slightly worn.

But when from longer use the conical tooth-like points are more deeply worn down, the following appearance is presented.

Molar tooth of Mastodon, a good deal worn, seen from above.

The way in which these teeth are set in the upper jaw will be seen from the following cut.

The remains of the Great Mastodon, *Mastodon giganteus*, Cuv., appear to have been the first that attracted attention. These occurred in considerable abundance in North America. They gave rise to much speculation and much erroneous opinion, at first; for though the form and size of the molar teeth forbade the inference that they could have belonged to any of the large existing animals, the formidable appearance of the pointed conical tuberosities of the crowns led to conclusions directly the reverse of truth, as we shall presently see. Daubenton, indeed, at first thought that some of these teeth belonged to the *Hippopotamus*, but he soon perceived that they must have formed part of an animal which had no recent analogue, and Buffon announced that the whole evidence afforded by the remains led to the belief that this antient species, which ought to be regarded as the first and the largest of terrestrial animals, existed only in the first ages of the world ('n a substante que dans les premiers temps'), and never had come down to our time. This opinion of Buffon did not extend beyond the larger molar teeth, and he still regarded the middle sized and worn teeth as those of the *Hippopotamus*; he also followed Daubenton in considering the femur found with the teeth as that of an elephant, though Dr. Hunter (William) had pointed out the differences between it and the same bone in the elephant, as well as the distinctions existing in the teeth and lower jaw. (Phil. Trans., vol. viii.) But while William Hunter did this good service, he introduced no small confusion and error. He had heard of the Siberian *Mammoth*, and not having seen the bones of that animal, he immediately concluded that it was identical with the North American fossil, and gave the name to the latter, a nomenclature which was for some time adhered to both by the Anglo-Americans and the English. The skeleton of the Great Mastodon was exhibited at London and Bristol as the *Mammoth*, and accounts of it under the same name were published in London in 1802 and 1803. Nor was this the only error of which William Hunter was the parent, for notwithstanding the rejection of such an opinion by Camper, the former declared that, from the structure of the teeth, the *Mammoth* as he termed it, was carnivorous; and men, ever prone to catch at the wild and wonderful, greedily adopted this marvellous view, and named the gigantic beast the *Carinorrectous Elephant*. We well remember in our early youth hearing the speculations of some as to the sort of prey on which the monster lived, and as to the great services that its enormous tusks, which in the skeleton above noticed were placed in an inverted position, with the curvature downwards, must have rendered when the animal was on its predatory excursions. The confusion created by the application of the same name *Mammoth* to two different genera was great, and for a long time almost inextricable, notwithstanding the endeavours of Pallas, who clearly refuted the supposed identity of the Siberian and American animals, by showing that the Siberian *Mammoth* is a true elephant. Cuvier at once dissipated the clouds that had gathered over the subject, and while he clearly pointed out the osteological differences between the two genera, gave to the supposed *Mammoth* of America the appropriate name of *Mastodon* (Mammo, a mace; don, to reach).

The first notice of the teeth and bones of this extinct genus of pachyderms appears to be in 'Phil. Trans.' (vol. xxix., 1714), a century and a quarter ago; and it is not un instructive to observe what rapid strides natural science has made since that time, when the Royal Society of London published in their Transactions Dr. Mather's letter to Dr. Woodward, in which the former gives an account of a large work in MS., in two vols. folio, but does not name the author. Dr. Mather recommends this

Portion of lower jaw of *Mastodon*.

The general contour of the lower jaw as viewed from above may be collected from the following figure.
work, which appears to have been a commentary on the Bible, with large philosophical remarks, to the patronage of ages, specious intentions, to promote the publication of it, and inscribes, as a specimen, a passage announcing the discovery, in 1705, of enormous bones and teeth at Albany in New England, as the bones of a giant, appealing to them as a confirmation of the text in Genesis (vi. 4); another example, if any were wanted, of the folly and danger of mixing up religious questions with scientific inquiries. Portions of remains were sent to France and England at different intervals, and elicited the observations of European zoologists, whilst in America materials were collected for forming two complete skeletons by the zealous industry of Mr. Peale.

Of these two skeletons one was placed in the museum of Mr. Charles Wilson Peale in Philadelphia, and the other was exhibited in London and Bristol by his son Mr. Rembrandt Peale, who published two accounts of it under the name of the Mammoth above alluded to.

One of the principal deposits of Mastodon bones appears to have been the Big-bone Lick in the north part of Kentucky, near the Ohio, whence the Mastodon has been called 'the animal of the Ohio.' None of the remains have the appearance of having been rolled, but seem to have been unmoved since the death of the animal; and it is worthy of remark that those which were found at the river oaks Great Cane Run, which runs into the Missouri a little above its confluence with the Mississippi, were in a vertical position, as if the animals had been bogged or buried in the mud.

The traditions which were rife among the Red Men concerning this gigantic form and its destruction must not be passed over in silence. M. Fabri, a French officer, informed Buffon that the savages regarded these bones scattered in various parts of Canada and Louisiana as belonging to an animal which they named the Pers aux bosaux. The Shawnee Indians believed that with these enormous animals there existed men of proportionate development, and that the Great Being destroyed both with thunderbolts. Those of Virginia stated that as a troop of these terrible quadrupeds were destroying the deer, the bison, and the other animals created for the use of the Indians, the Great Man slew them all with his thunder, except the Big Bull, who, nothing daunted, presented his enormous forehead to the bolts, and shook them off as they fell, till, falling at last wounded in the side, he fled towards the great lakes, where he is to this day.

Buffon seems to have been the first who noticed the occurrence of these teeth in the Old World, and figures one alleged to have been found in Little Tertiary, and given to him by the Comte de Vergennes. This is very large, having from eight to ten points and weighing eleven pounds four ounces. He also figures another from the museum of the Abbé Chappe, said to have been brought from Siberia. Palas announces another instance, and gives a figure of one from the Ouml Mountains. Cuvier states that he for a long time thought that his Mastodon giganteus inhabited the Old Continent as well as America, but he confesses his doubts as to this point. The Abbé Chappe, he remarks, had been in California, and there is no certain evidence that he brought back his Mastodon tooth from Siberia. The tooth figured by Palas, he thinks, may perhaps have belonged to Mastodon angustidens, and he asks, who shall assure us that the Comte de Vergennes was not in error as to the locality of the great molar presented by him to Buffon, and which, together with that formerly in the cabinet of the Abbé Chappe, is in the Paris Museum? Cuvier sums up by saying that he does not entirely pretend to invalidate these three proofs, but that he begins no longer to regard them as sufficient.

The following species have been named: Mastodon giganteus, M. angustidens (Europe, America?), M. Andium (Anales), M. Humboldtii (Concepcion— Chili), M. minutus, M. Taprooides, M. Turcensis, M. Aurnensis (Epplesheim, Puy de Dôme), M. elephantoidea (Irawaddi, Sewali Mountain), M. latidens (Irawaddi, Sewali Mountain), and M. longirostris, Kaup. Professor Owen has referred the teeth from the Norfolk crag to the last-named species.

Example, Mastodon giganteus (Cuv.)—Syn. Mastodon maximus (Cuv.), Mammut Ohioites (Blum,), Harpagontherium Canadense (Fisch.), Elephas carnivorus (Gul. Hunter), Mammoth of William Hunter and of the Anglo-Americans.

Young.—Tetracaulodon, (Godd.).

Locality.—The United States. Europe?

This species must have equaled the Elephant in height, but seems to have been longer and stouter in its proportions.

Remains of Mastodon were found by Capt. Cauley in the Sewali Mountains; and in assigning an age to the formation, the Captain adopts the views of Dr. Falconer, who considers the deposit to be synchronous with that from which Mr. Crawford obtained the remains near Rome, on the banks of the Irawaddi. Captian Cauley having found jaws in which the front teeth are not to be distinguished from the teeth of M. latidens, and those in the rear from the teeth of M. elephantoidea, he conceives that the distinction which was established on detached teeth will be found to be erroneous.

The genus Tetracaulodon of Godmann is, according to the best authorities, the young of the Great Mastodon—Mastodon giganteus. One species only, Tetracaulodon Mastodontoidium (Godm.), is recorded. (Harlan, Bull. des Sci. Nat. et de Géol., 1830.)

Mastodonsaurus, Dr. Jüger's name for an extinct

* Giganteus properly.
saurian found in the alaenschifer, or alum slate (Würtemberg), founded upon teeth, the largest of which, with part of the stone adhering, is figured below, one-half of the size of the original. The other teeth were considerably smaller.

Dr. Jäger is of opinion that these teeth must be held to approach the nearest to those of the animals belonging to some of the species of Monitor. The Mastodontosaurus, from the length of its teeth, may be said, in his opinion, to have equalled the Mosaaurus of Mataró in size; but in the formation of the teeth the former differs from the latter. The small teeth, he observes, agree so much in every respect with the large one, that their difference in size is only to be ascribed to their having belonged to animals of a different age, but not of a different genus, and also to their having occupied different places in the jaw.

Tooth of Mastodontosaurus.

(De. Jäger's memoir, Über die Fossil Reptilien welche in Würtemberg aufgefunded worden sind, Stuttgart, 1828.)

MASULIPATAM, a district of the province known as the Northern Circars in Hindostan. It is bounded on the north by Rajamundry, on the east by the Bay of Bengal, on the south by Guntoor, and on the west by the dominions of the Nizam. The district which now goes under the name of Masulipatam comprises three of the five original Northern Circars, viz. Condapilly, Illur, and Masulipatam, and forms a collectorate under the English government. The population amounted, in 1822, to 434,724, and the public revenue to about 150,000/. This district contains a large proportion of uncultivated grass-lands, and towards the north there is a great deal of jungle. The principal produce is grain, and some cotton of good quality is raised.

MASULIPATAM, the capital of the district, is a seaport of some consequence, in 16° 10' N. lat. and 81° 14' E. long. About a mile and a half south-east from the town is a fort in the form of a parallelogram, 900 yards long by 600 yards broad; there is a straight causeway between the fort and the town upwards of 2000 yards long. There is a considerable manufacture of chintzes in the town and neighbourhood, great quantities of which are exported: they are much esteemed in the greater part of Persia. This is almost the only part of that line of coast on which the surf does not beat; it affords good anchorage for ships of 300 tons burthen. The French established a factory at this place in 1730. It was taken by assault in 1739, by the English under Colonel Forde, and has since continued in our possession. Masulipatam is 203 miles from Hyderabad, 292 miles from Madras, 764 from Calcutta, and 1094 from Delhi, all travelling distances.

MATA BUNGA. [Hindustan.]

MATAGORDA. [Mexico.]

MATAPAN, CAPE. [Laconic.]

MATARÓ, a seaport of Catalonia in Spain, in 41° 38' N. lat. and 2° 30' E. long. It is said to have been founded by the Romans, and to be identical with the Ilium of Ptolemy and Pliny, but the Roman city was further inland than the existing town of Mataró, which was founded and named by the Arabs.

The more antient or Moslem part of Mataró stands on a rising ground at some distance from the sea, it is well built and enclosed with walls; the streets are narrow and gloomy, the exception of one called La Riera, which is broad, straight, and handsome, and intersects the town. The modern part of Mataró is of much greater extent, and stretches northward from the Mediterranean, and the houses are broad, and regular; the houses are nest, and many have their façades painted in fresco as is common in Spain and Portugal. One parish church, five convents (now unoccupied), and an hospital, are the principal public buildings. The population of the convents at the commencement of the present century was about 25,000, and was increasing rapidly, but must now be estimated much lower. The manufactories and commerce of Mataró at the same time, owing to the industrious and enterprising spirit of the inhabitants, were in a most flourishing condition, but the loss of the American commerce to which this town used to export calicocos, laces, velvets and other manufactures in silk, gave the death-blow to its prosperity. The scenery in the neighbourhood of Mataró is exceeded in picturesque beauty. Inland from the town extends a small but most fertile and cultivated plain, the farms in which, says Townsend, are so many gardens, watered by artificial means, and producing on the same spot of ground corn, wine, oranges, and olives. Bounding the plain are ranges of mountains, which are luxuriantly clothed with wood. The red wine grown in the plain of Mataró is esteemed the best in Catalonia.

(Laborde, Itinéraire Descriptif de l'Espagne; Townsend, Journal through Spain; Ingis's Spain in 1830.)

MATE'rIA MEDICA is that branch of medical science which treats of the articles employed in the practice of medicine, and embraces an explanation of the nature and modes of action of all the substances which are used or employed in order to restore the healthy state of the human frame when its functions or structure are impaired by disease. Thus defined it comprehends both pharmacology and therapeutics. The former means an account of drugs, simple or prepared, and the latter means, their use, as exhibited in physical, natural, or commercial history, chemical composition, and modes of exhibition. The latter means an exposition of the principles which should regulate their employment. The pharmacological part of the subject is sufficiently treated of under each article, as it presents itself in alphabetical order, and it is only requisite to treat here of the general principles involved in their practical application. For the full and satisfactory comprehension of this department, a thorough knowledge of the structure of the body, and of diseases and, above all, of general anatomy, and of the respective duties or offices performed by its component organs while in a state of integrity, or physiology, and of the various degrees of departure from these, when from any cause they have been impaired or destroyed, and the signs by which the morbid states are indicated, or nosology, is required. These departments of science are studied only by those persons who intend to follow the medical profession, and at their hands only can a skilful employment of medicines be expected. Something however may be done for the advantage of the public by pointing out how medicines act, and in what way they prove remedial. The object of the administration of a medicine is to arrest the progress of disease, to remove the causes of its existence, that is, to restore the individual to perfect health, such as he enjoyed before the organ or organs received the impression of the morbid cause; or where both or either of these objects cannot be accomplished, so to retard the career of the unhealthy frame, as to prolong life to the latest possible period. To improve and perfect this most important branch of the healing art is the end and aim of all the other branches of medical science. The means of accomplishing this object have varied in the different branches of human civilization, and accordingly in different theories of the nature or cause of diseases have prevailed. Many of the medicines formerly in use were of a disgusting or repulsive nature, or of a kind devoid of any active principle, and therefore inert. Many also owed their introduction into practice to superstition, or to the misapplication of the principles of natural and chemical philosophy, and have long been discarded by scientific pro-
sioners, though frequently retained by the populace or by
quacks. The medicines used in the present day are still
drawn from all the three kingdoms of nature, though the
animal kingdom yields few, the vegetable kingdom a con-
siderable number, and the mineral kingdom the greatest
number and the most active.
In general, a few articles produce much effect on the hu-
man frame, either in a state of health or disease, while
other medicines produce no beneficial effects and others
produce ill effects, and the senses of smell or taste in a
distinct manner. Hence bland
bulk articles are mostly better fitted to furnish nourish-
ment than medicines, being completely digested, and cre-
ing no disturbance or change in the system, while of the
few medicines which the contrary do not appear to be thoroughly digested, but a portion remaining un-
asimilated acts in some measure as a foreign body, and
produces a stimulant or alterant effect on the vital power.
Many medicines are indeed absolutely poisonous if given in
large doses, or where no dis ease of the state of the system requires
their administration. For disease often gives to the system
power of sustaining the action of a dose of medicine which
would produce serious disorder if given to a person in health;
the uncontrolled state of the system seeming to act as an
antidote to the medicine, while the medicine acts as an antidote
to the disease—health being the result of their neutralizing
power.

Medicines produce two distinct effects; one the primary
in some cases, as when given to a healthy per-
son, the physiological effect; the other secondary, or cura-
tive, which can only take place when there exists a dis-
ease to be removed. The former is generally uniform or con-
stant; the latter too often variable and uncertain. Under
the latter and most important of the two kinds of action, many zealous medical men have
instituted experiments with different medicines on them-
selves or others; while chemists have carefully investigated
the chemical composition of medicines, and sought to dis-
cover their own principles, or to explain their modes of
action. Notwithstanding these valuable aids, therapeutics is still the most imperfect of all the departments of medical
practice, partly from the difficulties inherent in the subject, and partly from the uncertainty of all
the various agents, and proper idea of materialism, divested of all unnecessary
consequences. Thirdly and lastly, the name is applied to systems like that of the antient Epicureans, or of
Spinoza, which deny both a future state of rewards and punishments and a Divine Creator, systems for which atheism would be
the better name, inasmuch as materialism fails to denote
their more important and distinctive ingredients.

The following is a brief summary of the views of Dr.
Priestley, who has very clearly stated the principles of materialism in the pure and pro-
per sense of the word. He denies the existence of a sepa-
rate immaterial principle in man, called the mind or soul,
because he thinks that an immaterial principle could not
exist in a material body, and that the material body, and
further that all mental phenomena (as they are called) may
be explained by means of supposed movements arising out of
the bodily organization. The method by which he thus
explains mental phenomena is that of Hobbes, (HAYTLEY.)
Adopting this philosopher's hypothesis of medullary vibra-
tions, he defines mental phenomena as medullary vibrations
perceived; and he contends, principally from the analogy of
brutes, that bodily organization is adequate to produce
perception. Thus, and by means of such hypothesis, he
obeys the theory of atoms to explain the
soul. But denying the existence of a soul, separate from the
body, and capable of surviving when the body perishes, he
does not yet deny the immortality of man, and a future
state of rewards and punishments. On this point he
is theorically the same as any other istic of
authority. It is needless to add that Dr. Priestley does not deny the exist-
ence of a God. (PRIESTLEY.)

One word more on the absurdity of coupling the denial of a future
state with the denial of an immaterial soul, which is the
making atheism synonymous with materialism. To deny a
material soul is necessarily to deny an immortal soul, but
to deny that to an immortal man. And even to the
deny the existence of everything save matter in the universe, is
not necessarily to deny a Divine person. It is indeed one
by many of the antient schools of philosophy (KELESTIC PHI-
LOSOPHY), nor even to deny a moral Governor, as is shown
by the philosophy of Hobbes, who, denying in one part of

system which denies the existence of a spiritual or imma-
ortal principle in man, called the mind or soul, distinct
from matter, or which (changing the phrase) denies the
immateriality of the soul. The name is applied to systems
which differ very widely from one another, in respect of the
consequences deduced from the denial of the soul's imma-
teriality: and thus it comes to pass that the popular mean-
ings of the word are loose and incorrect, compre-
hending what are no better than accidental consequences of the
pure and proper idea. Such accidental consequences are the
denial of a future state and absolute atheism; and it need not be said that atheism and materialism are treated in
current conversation; mediocrity is therefore not in the
name materialism also is one of that sort for which
Mr. Bentham has constructed the epithet dyalogistic. As
applied in current conversation, it always carries with it
falsehood. This arises, of course, from the nature of the acci-
dental consequences which have been indicated, and which
mankind regard with horror: but inasmuch as the name
still continues to be applied to systems from which unchris-
tian and atheistical consequences are expressly excluded,
and even to some systems (such as that of Hartley) which
admit the existence of a separate soul, but whose method
of explaining mental phenomena there is a dash of mate-
rialism, the censure that has come to be indisputably
associated with the name often falls with grievous injustice.
Indeed there is hardly a single word in the whole range of
philosophic terminology which is so ill fitted to identify the
evil of looseness of application, or of allowing feelings to
manifest and discomfit the notions conveyed by names.

The systems to which the name materialism is applied
must be roughly divided into two classes. First, it is applied (as has been always said) to a system like
that of Hartley, which admits the existence of a soul, but which,
attending to explain mental phenomena physically or by
movements arising out of the bodily organization, seems
to admit of its material nature, but whose method of
Middlesex, and of the French school of writers,
of which De la Mettrie may be taken as a specimen, which
distinctly deny the existence of a soul as a separate princi-
ple in man, but which do not deny either a God or a future
state of rewards and punishments. In the systems of Hobbes and Priestley, and of the French school of writers,
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state of rewards and punishments. In the systems of Hobbes and Priestley, and of the French school of writers,
of which De la Mettrie may be taken as a specimen, which
distinctly deny the existence of a soul as a separate princi-

his writings the existence of all spirit, and in this respect carrying his views further than Dr. Priestley, yet makes God the corner-stone of moral and political science. [Hobbes.] Hobbes distinctly says that there being nothing, in his opinion, but matter in the universe, it follows that God must exist.

But it is to be remarked in opposition to materialism, even as it is put forth by Dr. Priestley, that it is devoid of philosophical foundation, and rests on a disregard of the life of truth. It holds that man has an inborn desire to be tested by observation. When we go beyond what are called the qualities of the mind, or of matter either, and speculate upon what it is, whether it is something else, or different from that something, we have no help but in supposing and conjecturing and imagining. Such speculations may doubtless be interesting, and they may have their use too as an exercise for the imagination, but we cannot calculate upon their results. Much mischief is done moreover by mixing up these results with the results of observation, by jumbling together conjecture and philosophy. The true philosopher, not desiring, but setting aside as irrelevant to his object, all speculations on the origin and nature of mind, or of matter, will, in all these cases, and will apply himself to observing their qualities and capabilities and laws: and the results will be sound psychology and sound physics.

The converse of the word materialism is immaterialism. That is to say an abstract body, and even thus very seldom: spiritualism being generally used in its place.

MATERIALS, STRENGTH OF. The strength of any material object, as a rod, bar, beam, chain, or rope, is that power by which the substance resists an effort to destroy the structure or its parts. It evidence depends on the position of the particles relatively to each other, on the intensity of the force by which the particles cohere together, and on the manner in which the straining power is applied.

The inquiry into the laws by which the materials employed in the construction of public or private edifices, and with which they are to be used, is one of the most important branches of mechanics. It follows that, within certain limits, the cohesive power between two particles of an elastic body is proportional to the straining power. In a sense this may be expressed by a formula, or may be described as a law of nature. The power by which the particles in any body resist the action of a force tending to separate those particles in the direction of the length of the body may be considered as constituting the direct or absolute strength; and it is evident that the strength in resisting may vary as the strength would be proportional to the number of particles in a transverse section; that is, to the area of such section, while the strain is proportional to the weight applied. Therefore, if the number of particles be designated by the number of square inch, the law may be expressed in the form of a formula, as: F = A W.

The formula for the absolute strength may be considered as a force or resisting whatever the dimensions of the rod are given. For instance, if we consider a piece of wood, and have the experimental values of F, the reader must be referred to the extensive tables which have been published by Barlow (Essay on the Strength of Timbers); Rennie (Phil. Trans. 1818); Tredgold (Principles of Carpentry); and Hodgkinson (Manchester Memoirs, vol. ii.). Our limits permitting us to introduce only the few determinations which follow.

The area of a transverse section of each rod is one square inch, and the values of F are expressed by the breaking weights in pounds avoirdupois.

<table>
<thead>
<tr>
<th>Material</th>
<th>Breaking Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>English oak</td>
<td>8,000 to 12,000</td>
</tr>
<tr>
<td>Fir</td>
<td>11,000 to 13,486</td>
</tr>
<tr>
<td>Beech</td>
<td>11,500</td>
</tr>
<tr>
<td>Mahogany</td>
<td>8,000</td>
</tr>
<tr>
<td>Teak</td>
<td>10,000</td>
</tr>
<tr>
<td>Cast-steel</td>
<td>134,256</td>
</tr>
<tr>
<td>Iron-wire</td>
<td>93,964</td>
</tr>
<tr>
<td>Swedish bar-iron</td>
<td>72,064</td>
</tr>
<tr>
<td>Cast-iron</td>
<td>18,656 to 19,488</td>
</tr>
<tr>
<td>Wrought iron</td>
<td>18,793</td>
</tr>
<tr>
<td>Platinum wire</td>
<td>22,587</td>
</tr>
<tr>
<td>Silver</td>
<td>38,357</td>
</tr>
<tr>
<td>Gold</td>
<td>30,988</td>
</tr>
<tr>
<td>Zinc</td>
<td>22,521</td>
</tr>
<tr>
<td>Tin</td>
<td>7,019</td>
</tr>
<tr>
<td>Lead</td>
<td>3,146</td>
</tr>
<tr>
<td>Rope (1 inch circumference)</td>
<td>1000 lb, F = 11,566</td>
</tr>
<tr>
<td>Whale-line spun by hand</td>
<td>2,240</td>
</tr>
<tr>
<td>Castle chain (1)</td>
<td>2,240 in; 7,037</td>
</tr>
</tbody>
</table>
weights which those bars will sustain without bending are inversely proportional to the squares of the lengths.

It is also found, if \( w \) be a weight applied as above, and forming a flexure \( p \), measured at the middle of the bar

\[
W = \frac{4wL^4}{bd^4}
\]

perpendicularly to its length, that \( d = \frac{aw}{adp} \); this being substituted in the expression for \( W \), the latter becomes

\[
W = \frac{\pi wL^4}{3b^2}
\]

The most important inquiry concerning the strength of materials is that which relates to a beam or bar supported at its extremities on two props, and strained transversely by a weight acting perpendicularly to its length at a given point between the props.

In order to simplify the investigation, it is usual to imagine that the beam, its breadth and depth being supposed uniform, is made to rest on one prop at the place where the weight may have been applied in the former case, suppose in the middle of its length, and that from the points where the two props were situated weights of the same diameter equal to the reactions of those props in consequence of the first weight; that is, to half the whole weight in the middle. Then, supposing the deflection of the beam to be very small, so that, in the former case, the beam did not slide on its points of support, the effect of the two weights breaking the beam on its single prop will be the same as that of the one weight applied as at first supposed. Again, if a beam of equal dimensions with respect to breadth and depth were made to rest on one prop, that at the middle of the beam, the part projecting from the face of the beam equal in length to half that of the former beam; and if a weight were applied at the opposite end equal to each of the two weights applied to the beam on one prop, the effect of this weight to break the beam at the face of the wall will be equal to that of the two weights to break the beam on the one prop, or of the double weight to break the same beam on two props. The investigation for the case at first supposed is therefore reduced to that of finding the strength of a beam attached at one end to a wall, and strained by a weight at the opposite extremity.

![Fig. 1.](image)

Let \( A \) \( B \) (fig. 1) be the face of a wall, and let \( M \) \( N \) represent a vertical section of the beam in the direction of its length. Let it be supposed that the beam consists of an infinite number of fibres parallel to \( MP \); then, if these fibres were supposed to be rigid and incompressible, the effect of a weight at \( P \) would be to bring the beam to an inclined position, as \( MN \), producing a fracture on the line \( MQ \) by drawing the particles on that line away from those which were at first nearly contact. But from experiment it is found that, when a beam is so strained, while the upper fibres are in a state of tension, the lower ones are in a state of compression; and consequently that there is a certain point \( O \) in the depth of the beam at which neither of these effects takes place. A line passing through this point perpendicularly to the plane \( MN \) is therefore called the neutral axis of the beam, and the termination of the fracture may be supposed to be at \( O \) instead of \( Q \); the fibres below the former point having no effect in resisting the tendency of those above to be broken, yet constituting part of the strength of the beam by the power with which they resist compression, and thus oppose the tendency of the beam to turn about the neutral axis. The position of the neutral axis is uncertain; but Mr. Barlow, from experiment, has found that in rectangular beams of wood (the faces being in vertical and horizontal positions) its distance from the upper surface at \( M \) bears to the whole depth \( MQ \) the ratio of \( 1 \) to \( 1+\frac{5}{4} \), or nearly that of \( 4 \) to \( 11 \). Therefore, \( d \), representing the depth \( MQ \), let \( OM \) be represented by

\[
\frac{1}{11}d
\]

Now adopting the hypothesis of Leibnitz, which is founded

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<table>
<thead>
<tr>
<th>Material</th>
<th>Crushed weight (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elm</td>
<td>1,292</td>
</tr>
<tr>
<td>White deal</td>
<td>1,229</td>
</tr>
<tr>
<td>Oak</td>
<td>3,860</td>
</tr>
<tr>
<td>Chalk</td>
<td>334</td>
</tr>
<tr>
<td>Red brick</td>
<td>538</td>
</tr>
<tr>
<td>Portland stone</td>
<td>547</td>
</tr>
<tr>
<td>Limestone</td>
<td>5,803</td>
</tr>
<tr>
<td>Aberdeen granite</td>
<td>7,726</td>
</tr>
<tr>
<td>Cast-iron</td>
<td>661,376</td>
</tr>
</tbody>
</table>

If a bar or pillar, resting on one end in a vertical position, and considered as a perfectly elastic body, be compressed by a weight acting verticallie at the proper point, the pure theory gives the following equation for the value of the compressing weight when the pillar begins to bend:

\[
W = \frac{\pi wt^2}{12bs} \quad (\text{Poisson, Mécanique, tom. i., No. 313})
\]

where \( W \) = the compressing weight; \( t \) = the length of the pillar; \( a \) = the area of the transverse section; \( d \) = the thickness perpendicularly to the bending surface; \( \pi \) = the element of deflection; and \( \pi = 3.1416 \). It follows that, when in bars of like material \( a \) and \( d \) are respectively equal, the P. C. No. 913.
on the elasticity of the fibres, that the force of cohesion in any one fibre is proportional to the tension to which it is subject, or to the distance of that fibre from the axis about which the beam turns in consequence of the strain; that is, from the neutral axis just mentioned: if $x$ be the distance of any fibre above $O$ from the latter place, and $f$ represent the force of cohesion in the fibre at $M$, we shall have
\[
\frac{4}{11} \cdot f = x = \frac{11}{4d} x \text{ and the last term will express the force of cohesion between two particles at a distance above $O$ equal to $x$. Consequently, $dx$ expressing the indefinitely small depth of a fibre, we have $\frac{11}{4d} x \cdot d x$ for the cohesive power of a fibre at the same place. But this power acting at a distance from $O$ equal to $x$, we have $\frac{11}{4d} x^2 \cdot d x$ for the momentum of that force, and its integral will express the strength of all the fibres in the vertical section represented by MN. The transverse section of the beam being supposed to be rectangular, the breadth will be constant; let it be represented by $b$: then the integral of $\frac{11}{4d} x^2 \cdot d x$ (between $x = 0, x = \frac{4}{11} d$), that is, $\frac{16}{23} b^2 f$, will express the strength by which all the fibres above the axis at $O$ resist the beam.

A corresponding expression for the strength arising from the resistance of the fibres below the neutral axis to the force of compression would be the integral of $\frac{11}{7d} x^2 \cdot d x$, (between $x = 0, x = \frac{2}{7d} d$), that is, nearly $\frac{2}{7d} b^2 f$ (being the force by which a fibre at $Q$ would resist compression), and the sum of the two integrals will be the whole strength of the beam to resist a transverse strain. Now the ratio of $f$ to $f'$ is different in different materials; and if we take $f' = \frac{1}{2} f$ (which is the case in some kinds of wood), the said sum will be $= \frac{1}{2} b^2 f$ nearly.

But when the beam is strained by a weight $W$ applied at $P$, so that it take the inclined position $mn$, if we join $O$ and $p$, and let fall the perpendicular $p r$ on $A B$, we shall have $W, p r$, or $(t f b l$ be the length of the beam), $W, f \cos O P R$, for the moment of the weight. Then $W, f \cos O P R = \frac{1}{11} b^2 f$, becomes the equation of equilibrium, $W$ representing the weight which will just break the beam; and when $\angle O P R$, or the deflection, is small, its cosine may be considered as equal to unity. It follows that the strength by which beams of the like material resist this kind of strain will vary as $\frac{W}{l^2}$.

If a perfectly elastic beam or bar were attached horizontally to one end to a wall, and were strained by a weight $W$ at the other end, the mathematical theory would give for the deflection of the opposite end of the beam (that is, the distance to which this end would be drawn in a vertical direction from the original position of the beam) $\Delta = \frac{a d^2 l}{W, l}$ (Poisson, Mécanique, tom. i, No. 310), where $\Delta$ is that deflection; $l$ is the length of the beam; $a$ is the area of the transverse section; $d$ is the depth; and $\delta$ is the element of deflection. Therefore, if $a$ be found from experiment on a beam or bar in which $W, l, a, d$, are given, we may from this equation obtain $\delta$; and subsequently the value of $\Delta$ may be found for any beam, the materials being of the same kind. Again, the straining power by which a beam fixed at one end to a wall is dilated in the direction of its length is expressed by $a, D, l$, (Bar. No. 388), where $D$ is the element of dilatation. Now, if $w$ be the weight which would produce the deflection $\delta$ and dilatation $D$, we should have $w = \alpha D$; whence $\frac{1}{\omega} = \frac{1}{\alpha} \delta$; and the first member of this equation being substituted for its equivalent in the above expression for $\Delta$, the latter becomes $\Delta = \frac{D, W, l}{\omega a^2} \cdot d^2$; or since the elongation of the whole beam is proportional to the length, and may be represented by $D, l$, if we put $\omega$ for this elongation when $\omega = W$, we shall have $\Delta = \frac{E, D}{\omega} \cdot l^2$.

Whence the elongation of an elastic rod by a weight or power acting in the direction of its length is to the deflection of the same rod by a weight or power acting perpendicularly to its length, as the square of the depth or thickness is to the square of the length.

The relations between the strength and strain when a beam or bar, as MN in the preceding figure, is fixed at one end in a wall, and when a beam, as FM in the annexed diagram (fig. 2), of equal dimensions with respect to breadth and depth, but twice as long, is supported on a prop at its middle point (the weight at each extremity of the latter being equal to that at the extremity of the former), are the same. Also the angle VOP of deflection (OV being in the direction of PO produced), when a beam is supported on a support at O, and OP at the angle HOP, in the preceding figure (OH being drawn perpendicular to the wall, parallel to the horizon, and the beam MN being equal in every respect to one of the half-beams on the prop). For the angles MO and MN are equal in both cases; since the weight produces only the same effect as the support of the wall: and hence it follows that the angle HOP of deflection, with respect to the horizontal line HH', will be equal to only half the angle HOP. The same relation subsists between the deflections when the beam PMP is supported on the same points at the extremities.

It will follow, from what we have stated, that a beam attached at one end to a wall in a horizontal position will bear suspended from the other extremity only half the weight if the same beam will bear on its middle point when made to rest loadily on the two props. If the ends of the beam were prevented from rising on the props, the strength would, on account of the additional weight necessary to produce deflection or fracture at each end, be increased in the ratio of 4 to 3 nearly.

The following table contains a few of the results obtained from experiments made by Messrs. Banks, Barlow, and Tredgold, on wood and iron, when supported loosely on props and subject to a transverse strain at the middle point.

| Young oak (English) | 4.28 | 1.98 | 1.87 |
| Ship timber | 4.16 | 2.94 | 2.84 |
| Oak (English) | 4.67 | 3.73 | 3.17 |
| New England fir | 4.48 | 2.21 | 1.78 |
| Riga fir | 4.66 | 2.21 | 1.78 |
| Oak | 4.88 | 3.73 | 3.17 |
| Cast-iron bars | 3.17 | 1.56 | 1.34 |
| Ditto | 3.17 | 1.56 | 1.34 |

Since the strengths of beams attached at one end or supported on props, the other dimensions being the same, vary as the square of the vertical depth, it follows that in bars in feet; the third, the areas of the transverse sections in square inches; the fourth, the breaking weights in pounds; and the last, the deflections at the middle points in inches.

$\Delta = \frac{a d^2 l}{W, l}$

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in a hollow cylinder whose thickness, in the direction of the radius, is infinitely small and equal to \( dx \). Then, by the rules of integration, we have for the strength of the whole cylinder the expression 

\[
F' = \frac{4}{r^2} - r, 
\]

where, between \( x = 0 \) and \( x = r \), the term \( \frac{4}{r^2} - \frac{1}{r} \) will represent the sum of the forces \( F' \) in the latter circumference, and \( F' \cos \theta \, dz \) will represent the sum of the forces in the former circumference.
matematical reasoning is useful and interesting, and, as a safeguard, even necessary. It is not long since a school of metaphysicians existed, who imagined that because all mathematical definitions are arbitrary, there is no foundation. It was not to them a necessary result of the constitution of our faculties that the three angles of every triangle make up the same amount, but a consequence of definition, which might have been otherwise if any other definition had been adopted. We can hardly undertake to explain what we do not understand, but we recommend every beginner in the subject to seek no knowledge about the character of fundamental propositions until he shall have become well acquainted with those and how we feel compelled to admit notions which are not, or cannot be, made most evidently true; and he will find that all axioms, as they are called, have the highest sort of certainty, namely, that they cannot be imagined otherwise.

Whatever may be the metaphysical hypothesis to which it is referred, it is certain that there is a real distinction between a mathematical assertion and one of any other kind. If we say that an unsupported bit of lead will fall to the ground, we state a fact of which we are as certain, in the absence of any consideration of the laws of dynamics, as the two straight lines cannot enclose a space. But in the former proposition, an exception, or even a permanent alteration of the law, is conceivable by the imagination: in the latter there is no conceivable state of the physical condition of the world which can construct the idea of an enclosure bounded by only two straight lines. No distinctive phrases can be too strong to express the essential difference of these two assertions; but it is a misfortune that all terms which create a sufficient distinction are employed in a general sense for the expression of the human mind.

If the mathematical student can receive these terms as indicative of the difference of species, without boding before an hypothesis about the conformation of his own reason, he will do well to adopt them; if, on the other hand, he feels compelled to agree with any one system of mental philosophy, he will neither impede nor advance his mathematical career.

The sciences of which we speak may be considered either as disciplines of the mind, or as instruments in the investigation and advancement of the arts. As in the former point of view their object is to strengthen the power of logical deduction by frequent examples; to give a view of the difference between reasoning on probable premises and on certain ones, by the construction of a body of results which is independent of any other and from the previous introduction of that which may be false; to form the habit of applying the attention closely to difficulties which can only be conquered by thought, and over which any one with the means can exert himself; to establish confidence in abstract reasoning, and to exhibit processes whose results may be verified in many different ways; to help in enabling the student to acquire correct notions and habits of generalisation; to give caution in receiving conclusions; to point out the enormous extent of the consequences which may be developed out of a few of its most inherent notions, and its utter incapacity to imagine, much less to attain, the boundary of knowledge; to methodise the invention of the means of expressing thought, and to make apparent the advantages of system and analogy in the formation of language and symbols; to sharpen the power of observation, and the faculty of suggesting new combinations of the objects of thought; to train the historical student to look at men of different races, opinions, and habits, in those parts of their minds where it might be supposed a priori that all would most nearly agree; and to give him the habit of pursuing a study in which self-interest cannot lay down for him the lines of thought. As instruments in the investigation of nature and the advancement of the arts, it is the object of the mathematical sciences to give correct habits of judgment and ready means of expressing the same, the judgment involving degree and magnitude of all kinds; to teach the method of combining phenomena, and ascending from the complicated forms of manifestation to the simple law which regulates them; to trace the necessary consequences of any law, assumed on suspicion, in order to comprehend its phenomena; to construct hypothetical representations of laws, and applications to laws, which shall sufficiently represent phenomena; to convert processes of known accuracy, but complicated operation, into others which make up in simplicity for a certain amount of inaccuracy, and to devise means for the discovery of that amount of inaccuracy, and confining it within given limits; to account for the most probable result of observations or experiments which are discordant with each other either from errors of measurement or unknown causes of disturbance; to point out the species of experiments which are necessary for the discovery of the data, the extent of information, or to decide between two laws which existing phenomena both indicate as of nearly equal creditibility; to make all these investigations, which are necessary for the calculation of results to be used in practice, as in nautical tables, and which are also necessary to the formation of the theory of money transactions; in a word, though that word by itself would have not presented a sufficiently precise idea, to find out truth in every matter in which nature is to be investigated, or her powers and those of the mind to be applied to the physical processes of the human race, or their advancement in the knowledge of the material creation.

The main branches of mathematical science were formerly stated to be arithmetic and geometry, springing out of the simple notions of number and space. This is too limited a description. Upon the nature of these propositions, strictly and demonstratively treated, and that of geometry, or the deduction of the elementary properties of figure from definitions which are entirely exclusive of number, there has been considered as the foundation of mathematics, but not as the ultimate division of mathematics.

To them we must add the science of operation, or algebra in its widest sense,—the method of deducing from symbols which imply operations on magnitude, and which are to be combined in the same manner as those of common routine of life. It is the most exact of the exact sciences, according to the idea of their exactness which is frequently entertained, being more nearly based upon definitions than either arithmetic or geometry. It is true that the definitions of algebra are not so extensive, the application to number, space, force, time, &c., or the science, would be useless in mathematics, commonly so called; but it is not the less true that a system of methods of operation, based upon general definitions, and conducted by strict logic, may be said to apply either to natural philosophy or geometry, according to the manner in which the generalities of the definition are afterwards made specific.

The common division however of the mathematical sciences was divided into arithmetic and geometry; but as described, the science of operation being more or less mixed up with arithmetic in common algebra, and in its application to geometry. We may describe this division as follows:

1. Pure Arithmetic, subdivided into particular and universal. It is the former, the common science of numbers (integral and fractional) and calculation; the latter, the science of numbers with general symbols, or the introduction to algebraical methods, restricted to purely numerical processes. The science which treats of the peculiar relations of numbers, and subordinates them into classes possessing distinct properties, is called the theory of numbers, and is an extension which frequently requires a higher algebra.

2. Pure Geometry, which investigates the properties of figures in the plane or in space; is the science of Euclid, which confine the student to the straight line and circle as the means of operation and the boundaries of figure. [Geometry, p. 153.] This science includes solid geometry, as far as figures bounded by planes, the properties of the plane, curves, and straight lines are considered, but it does not allow any conic section, except the straight line and circle, to be employed in the solution of problems.

3. Algebra, including the general calculus of operations (though this is not an elementary branch), and all methods of calculation not necessarily belonging to the differential calculus. The distinction between it and universal arithmetic is an extended use of operations, preceded by an extended definition of their meaning.

We have supplied the word particular, as opposed to universal; algebra was considered universal and geometry particular, a distinction, however, natural, owing to its being obvious to those who studied algebra, that arithmetic, however general its symbols may be, is only a part of algebra.
4. Application of Algebra to Geometry.—This includes trigonometry, and all those parts of geometry in which problems are numerically solved, and the method of Euclid is abandoned. It is not a trigonometry, but it includes the conic sections as commonly taught, and in its higher parts is an application of the differential calculus, as well as of algebra.

5. Differential and Integral Calculus.—Under this term we include the general theory of limits, that is, all digested methods of operation on those, and the calculus of infinitesimals which are treated as algebraical quantities under specific symbols. This distinction is necessary, since the notion of a limit, and even propositions which belong to the differential calculus in everything but form, are contained in the elements of Euclid. We require much more of the latter than of the former; the latter is a calculus, the former is not.

The calculus of differences and the calculus of variations are usually placed under this head: the former, in its elementary parts, might be referred to common algebra; the latter is an extension of the differential calculus.

The distinction of the mathematical sciences is not pure and mixed; it is convenient in some respects, though liable to lead to mistake. By the former term is understood arithmetic, geometry, and all the preceding list; by the latter, their application to the sciences which have matter for their subject, e.g. the sciences of society. But considering that in all these subjects a few simple principles are the groundwork of the whole deduction, they might be explained as intended to answer two distinct questions: first, what are the consequences of such principles? and, secondly, are these consequences found to be true by matter of itself, and are the assumptions therefore to be also regarded as true? In the reply to the first question, the science is wholly mathematical; to the second, wholly empirical; and in the latter its reasoning; and this is the mixture from which the joint answer to both questions derives its name, and not from any difference between its mathematics and those of the pure sciences. Again, a science does not take the name of mixed mathematics because it is possible to apply mathematical aid in the furtherance of its legitimate conclusions: such a use of terms would be trifling with distinctions, since it would bring political economy, chemistry, geology, and almost every part of natural knowledge, under this denomination. Indeed, it is more convenient to handle such sciences in a way not so far removed from the ordinary use of language, which are more easily, and if necessary, to be suggested by the circumstances of the speaker, the context of the words, or the tone in which they are delivered. Before the phrases of demonstration can be made to convey the meaning they are intended to suggest, the steps by which they are arrived at must be made a study; if this has been neglected, the words of any book may pass between the teacher and the learner, but no precaution has been taken to secure their conveying the proper meaning, neither too much nor too little.

On observation, we might first explain that we hold many points of controversy very cheap, as far as they concern the discipline given by the most elementary branches of mathematics. It matters nothing, in our view of the case, whether an axiom be really incapable of proof, or whether the substitution of another word would not place the science on a more simple basis. The habit to be formed is that of tracing necessary consequences from given premises by elementary logical steps: the premises to be true or false, the consequences to be true if the premises be true, and false if the premises be false. The only error which, at the stage in question, it is intended to avoid, is the deduction, as a necessary consequence, of that which is not so. The mind of the learner however is allowed to dwell too much at the outset on the abstract truth of the facts, and too little on their connection with the premises: hence it arises that when a process occurs in which it is essential to examine that connection for its own sake, it is the universal complaint that the demonstration is obscure. From what other cause arises the dislike of the indented demonstration? [Absurdum, Reductio Ad Absurdum.]

Unfortunately for the mental progress of the student, he is often allowed to use premises of an easy form, in cases where a complete preparation for the subject would require more extended first principles and greater prolixity of deduction. To this, as before observed, no objection can be taken in itself, provided that no consequences be admitted except the legitimate ones. But something more is admitted: that the substitution of another word will improve the connection to one set of premises, with the consequences of another, and is allowed to make believe that he has come fairly by the latter. Thus, by a theory which applies only to the ratio of number to number, he is permitted to draw general conclusions. We believe that the conclusions of the first studies should be demonstrative and rigorous, we do not imply, for instance, that the more difficult system should in all cases be preferred to the less complete but more simple: we confine ourselves to the conclusion that there must be, the conclusions should really follow; and that if the latter be necessarily of a limited character, the limitation should be stated.

The work of Euclid is preferable, in our opinion, to any system which has been proposed to supply its place; simply because the dependence of conclusions upon premises is more distinct than in any other geometrical writing.
The present article deals with the history of arithmetic and its development, focusing on the works of mathematicians throughout history. It discusses the contributions of figures such as Matheus, Charles, and others, and includes references to key works like "De Temporibus," "De Arithmetica," and "De Mathematica." The text covers the evolution of mathematical thought and the role of mathematicians in shaping the field.

MATHEW S. CHARLES, an eminent mathematician, was born on the 16th June, 1766, at Sunderland, in the County of Durham. His father, a bookseller in the Strand, and intended Charles, who was his seventh son, to follow the business. A strong and early inclination for the stage however induced the son, after two or three attempts to build something with, to turn his attention to the parts of Richard III., and Bowkitt in 'The Son-in-Law,' at the Richmond theatre, Saturday, Sept. 7, 1793, and on the 19th of June, 1794, he made his first appearance as a regular comedian at the Theatre-Royal, Drury Lane, during the short season of 1794, and to the benefit of his character of Jacob in 'The Chapter of Accidents,' and Linge in 'The Agreeable Surprise.' In 1797 Mr. Mathews married his first wife, Miss Eliza Kirkham Strong, the daughter of a physician at Exeter. She died at York in 1802; and in 1803 Mr. Mathews was united to his second and present wife, Miss Anne Jackson, at that time a member with himself of the York company. On the 15th of May in the same year Mr. Mathews made his first bow to a London audience at the Haymarket theatre, and on the 17th of December, 1804, his first attempt at the character of Don Manuel, in 'She would and she would not.' On Wednesday, April 12, 1808, at the Theat re-royal, Hult, he made his first trial of those popular performances, that of James Enright, in the recital of his 'Mail-Coch Adventures, or Rambles in Yorkshire.' On the 22nd of July, 1814, Mr. Mathews was severely injured by being thrown out of a tilt in which he was driving his friend Mr. Terry. The effects of this unfortunate accident didn't last long, and on the 2nd of April, 1818, he commenced his extraordinary engagement with Mr. Arnold of the English Opera House, and gave his first the 'At Home' in London, an entertainment well received. Thirty-nine nights to overflowing houses. In 1822 he paid his second visit to the Adelphi theatre, and in 1826 produced his entertainment entitled 'A Trip to America.' In January, 1829, he accepted a short engagement at Drury-Lane, and in the autumn of the same year became joint proprietor with Mr. Yates of the Adelphi theatre. He purchased his second and final wife, Mrs. Terry's share. In 1834 he again visited America, but was compelled by ill health to return prematurely, having played only thirty nights. On Tuesday, 26th of June, 1835 (his birth-day), he expired at Plymouth, after considerable suffering, and after having been a considerable length of time resident in the midst of the fashionable life of St. Andrew's church in that town. As a comedian Mr. Mathews ranked deservedly high; but his greatest popularity was certainly achieved by his wonderful talent for personation and imitation, in the exercise of which his success was universal, and in 1834, at the age of 56, he was even to the most sensitive of those whose peculiarities of voice, manner, or person he so happily assumed. In private life Mr. Mathews was universally respected, and with the stage lost a valuable talent, as well as a distinguished professor. His memoirs, partly autobiographical, and edited by his widow, have been recently published in 8vo.
latter are called Luperasia by De Candolle, and are remarkable
for their dingy flowers, which are exceedingly fragrant
at night, but at no other time. M. lavidia, tristis, and L. odorata
are the best known of them, and are frequently
cultivated in greenhouses.

MATILDA, or MAUD, Empress. [HENRY L. II.]

MATILDA, Countess of Tuscany. [GREGORY VII.]

MATRESS, a glass chemical vessel, employed for the
purpose of digesting, boiling, and distillation, and sometimes
while one is used as the body, another serves as the receiver
in the last-mentioned operation. Florence flasks are very
commonly used in this, and they answer sur-
mirably, on account of the excellent nature of the glass,
which is such as to resist the effects of sudden alterations of
temperature. Sometimes matrasses are very conveniently
formed with flat bottoms, instead of their being round as in
matresses.

MATRIX, or GANGUE. Metallic ores are seldom
found unalloyed in the places in which they occur; they not
only accompany each other, but are frequently associated
with useless stony bodies, and these are called the matrix,
or gangue.

It also happens that ores in some cases become gangues
with relation to more precious minerals; those which may
be distinguished as metallic gangues are lime pyrites, spar-
those iron-ore, oxide of iron, hydrate of iron, and blende;
the carbonates of copper, and cobalt are usually quartz, felspar,
carbonate of barytes, sulphate of lime, sulphate of barytes,
and flour-spar.

MATRONS, JURY OF. When a widow alleges herself
to be with child by her late husband, and it is suspected
that her former conjugal relations were not of this next life,
and a de ventre inaspiendo may be obtained out of chancery,
on behalf of the next heir, whose rights might be prejudiced by a
supposititious, or spurious, child. Under this writ a jury of
"discerners and lawfull sorts" is impanelled, to try, by in-
spection of her person (et ubera), and by the coroners of uiros
whether the widow is with child or not, and if with child, to
inquire of the time of conception, and of that of the expected
delivery. If the widow be found to be pregnant, the sher-~
shere, a grand marshal, writes, certifies the court of common
law of this dimension to the diocese of her diocesan, or of the
diocese of the heir. (Bracton, lib. 2, cap. 32; Croke,
Eliz., 566; 6 Vesey, 360; 21 Viner's Abr., 547.)

In the parliament roll of 9 Edw. II. (1 Rot. Pat., 353,
354), is a curious proceeding, instituted on the 13th July,
1316, when, Richard, earl of Gloucester, who had died on the 30th June, 1314, to recover their inheritance out of the king's hands, notwithstanding the
alleged pregnancy of the countess, his widow. At the
parliament held in January following (more than eighteen
months after the event), the judgment of the court was, that the
alleged that it was still the duty of the crown to retain pos-
session of the estate for the benefit of the expected offspring,
whose birth had from natural causes (permentente natura)
been so long deferred; and it was not until Easter term, 1316,
that the impediment was treated as removed.

A jury of matrons is also summoned to inquire into the
fact of pregnancy in cases where a woman convicted of treason
or felony, upon sentence of death being pronounced, may,
in her own petition, that she is with child. If the mater-
ning be impanelled, the question put, whether the
one, or more, the inquiry seems to have been general, namely,
true, the convict, whether she be married or unmarried, is
resumed until after her delivery. In some of the cases
reported, the matrons have been directed to inquire whether
the conviction be true; in other cases, and those by
far more numerous, the inquiry seems to have been general,

denied, 
awarded against her, the convict cannot plead that she is
again with child; such further pregnancy being considered
not to be a sufficient ground for suspending, for a second
time, the execution of the sentence. The case is, under
such circumstances, punishable for his negligence. But
if the ground of the first postponement was the preservation
of the infant, there seems to be no reason why the life of the
second child should be sacrificed.

The form of proceeding when a woman alleges herself
to be with child by her late husband, which is described in
the passage of Bracton already referred to, is evidently taken
from the Roman form of proceeding in a similar case, as
described by Alph sprzedaż, tit. 4, 'De Insapcio Vintre, custo-
diendique Partu.'

MATSYS, QUINTIN, an eminent painter, born at
Antwerp in 1469, is said to have followed the trade of a
blacksmith or farrier till he was at least twenty years of age.
In quitting his trade his apprenticeship has been ascribed to
different causes. The story that has gained most credit
(perhaps because it is the most romantic) is that he fell in
love with a young woman whose father was resolved she
should marry none but an artist. At all events he appears
of a manly character, and it is said that he differed from that of any other master; his design is correct and true to nature, and his colouring forcible. His pictures are
carefully finished, though rather dry and hard. It is thought
by competent judges, that if he had been in Italy, or in
a man school, he would have been one of the most eminent
painters of the Low Countries. Though he generally took
his subjects from ordinary life, he sometimes ventured with
success into the higher departments of the art. One in-
stance of this is the representation of The ParalyMER of
the cathedral of Antwerp, and now in the museum of that city.
His most remarkable and best known picture is that of the
'Two Misers,' of which there are numerous copies. The
picture in the Royal Gallery at Windsor is supposed to be
the original, but Dr. W. Granet does not ascribe it to him.
On the other hand he speaks in the highest terms of a 'Mary Magdalen,' half-length, three-quarters the
size of life, in the gallery at Corsham House, the seat of
Lord Methuen, and says that these drawings are extremely rare. He
died at Antwerp in 1599.

MATTER is the name given to every thing which is not
died. Such seems to be the only way of defining the
word; and though the definition may appear to assume
that mind is not matter, the contrary of which is, to be
contended the class of writers called materialists (Ma-
terialism), yet it does not really do so. For whatever
theory may be adopted as to the nature of mind, whether
it is considered as a separate principle from matter, or
not, it is still matter that is the subject of investigation. Here
the word mind is indifferently retained; and our definition
may consequently be at once reconciled with the materialist
theory by paraphrasing it thus:—matter is the name which is
given to the substance composing the universe, under all its
different modifications. But, keeping only that one which is known
by the name of mind.

Matter then is the name for that out of which all objects
external to the mind are thought to be composed, the
question being reserved, whether the mind is or is not composed
of the same substance. What this substance is, to which
the name of matter is given, we do not know, and have no
means of knowing. Various speculations have been made
as to its nature, and theories formed concerning the manner
in which it is composed, or on what basis it is con-
structed. Other speculations have been formed on the
nature of matter, and on what is there a such thing as matter or not; and some philos-
ophers have seen in the solid world around us nothing but a
creation of the mind. (Berkeley; Idealism.)

There is nothing in these speculations. It is sufficient to know and say that man, sub-
etect to certain affections of his senses, is led to assign those
affections to an external cause. This external cause is that
which he calls matter. What this matter is in itself he
knows not. He knows only its capability of producing in
him certain affections, the ordinary affections of the five
senses (sensations, as they are called), and those which give
the ideas of extension and resistance. Thus, having al-
ready supposed something without, he pronounces these
affections of matter, and judges from their nature what
that something is, and knowing it only as the sub-
stratum of the qualities.
MATTHEW, ST., the Apostle and Evangelist, was a native of Galilee, and a publican or collector of customs and tribute under the Romans. While employed in his office at the city of Capernaum, he was called by Christ to follow him (Matt. x. 9.), and was one of the seventy chosen to be one of the apostles (Matt. x. 3.). An account which corresponds in all respects to that of the conversion of Matthew as related by himself is given by Mark (ii. 14), and Luke (v. 27), restricting a publican he named Levi, the son of Alpheus. Gedaliah and others have supposed that Matthew and Levi were different persons, whose conversion took place at the same time; but if so, why should Matthew relate his own conversion and omit all mention of that of Levi? That two of the three narratives plainly refer to the same time and place, and as Levi is not mentioned among the apostles, nor in any other passage of the New Testament, we may safely conclude that Matthew and Levi are names of the same person. Perhaps Levi was his proper name and Matthew a surname given him after his conversion, as that of Peter was to Simon. The Hebrew word Matthew (יוחנן, יוחנן) signifies a gift of Jehovah, from יְהוָה, a gift, from יְהוָה to give.

In the Acts of the Apostles (i. 13), Matthew is mentioned with the other apostles as remaining in Jerusalem after the ascension of Christ. His subsequent history is quite uncertain. According to Socrates, an ecclesiastical historian of the fifth century (Hist. Eccles. iv. 32. viii. 19), he was martyred at Thessalonica; but according to another tradition, to Parthia. It has been a commonly received opinion that he was put to death at Naddabar, a city in Ethiopia (Cave's Lives of the Apostles, p. 178), but Herachon, a Valentinian of the second century, denied this, and said that Matthew was a Levite who escaped martyrdom. The passage is cited by Clement of Alexandria ( Stromata, lib. iv., p. 302 B).

MATTHEW, ST., THE GOSPEL OF, is a canonical book of the New Testament, ascribed by the unanimous consent of the early Christian writers to the apostle Matthew. It is not easy to determine the language in which this gospel was composed. That it was written in Hebrew (by which we mean to understand the Syro-Chaldaic dialect spoken in the time of Christ) and that of which is composed for the Jewish Christians, is asserted by Papias (Eusebius, Hist. Ecc. iii. 30.), Irenæus (Ibid., v. 8.), Origen (Ibid., vi. 25.), Eusebius (Ibid., iii. 24.), and Jerome (Comment. in Matt., proef, and De Vir. Illust. c. 3); and their account is followed by others of the early Christian writers. On the other hand it is argued in favour of a Greek original that these testimonies are inconclusive, for that Papias was a weak and credulous man, and that the other writers merely followed his account; that we find no traces of the same language among the writings of the Hebrew Gospels, and that the quotations in the works of the early fathers are made from the Greek copy which we now have; that explanations are introduced which would be useless to Jewish readers (see Matt. iii. 2; xxvii. 39-46); that parallel passages of the Old Testament are quoted from the Septuagint; and that the Greek Gospel which we now have bears every mark of being not a translation but an original document. In order to reconcile these facts with the statements of the early writers, Dr. Whitby and others have supposed that there were two originals of the Gospel, one written in Hebrew for the Jewish converts, and the other in Greek for general use. They account for the absence of quotations and omissions in the Hebrew Gospel in the writings of the Fathers, by supposing that Matthew was contented by the Judaizing heretics to such a degree as to lose all authority, and that in this corrupted state it was the same document as that mentioned by Origen and other Fathers under the title of the Gospel according to the Hebrew.

[Go spel.]

The date of St. Matthew's Gospel has been the subject of as much dispute as its original language. If it were written at first for the use of the Christians in Judæa, the date of its composition would be early; but if it were written after the return of the Jewish exiles, it is probable that the exhortations which it contains to patience under persecution would be most acceptable to the Jewish Christians in their persecution by the Sanhedrin soon after the ascension of Christ. None of the early writers, except Irenæus, give an explicit testimony as to the date of its composition. But their statements appear to imply that this was the first and the only one of the four Gospels, and also, what indeed Eusebius expressly asserts, that it was composed before Matthew left Judæa. On these grounds, and from the supposed improbability of the Christians remaining long without some written account of the life of Jesus, many critics have assigned it the date of about A.D. 35.

But Irenæus says that it was not put forth while Peter and Paul were preaching at Rome and laying the foundations of a church there. (Adv. Haer., iii. 1, in Euseb., Hist. Ecc., v. 8.) On the strength of this testimony Michaelis, Lardner, and others have fixed the date at A.D. 61 or 63, and have endeavoured to shew that there is a favourable account of this date from the internal evidence of the book itself, in which he endeavours to show that Matthew understood many points in the Christian system which the Apostles did not understand till some considerable time after Christ's ascension. But the reader will at first glance see that the words and actions of Jesus, and not his own opinions, we cannot see any force in the argument.

Some of the advocates for a double original refer the Hebrew copy to the earlier date, and the Greek to the later. The genuineness, authenticity, and canonicity of this Gospel are established beyond dispute by the unanimous testimony of Christian writers from the earliest age, and by its place in the antient versions. But many critics have doubted the genuineness of the first and second chapters, chiefly on account of the difference between the genealogy of Christ in the first chapter, and that given by St. Luke (iii.), and other discrepancies between these chapters and Luke's account of the early life of Christ, and other internal discrepancies in the Gospels. The first chapter of St. Matthew is founded on the copies used by the Nazerene and Ebionites, which however were undoubtedly corrupt. The chief arguments on the other side are, that these chapters are contained in all the antient MSS. and versions, that they are referred to in the epistles of the New Testament, and that the narrative at the beginning of the third chapter shows that something had gone before, and that the style of these two chapters agrees with that of the rest of the Gospel, especially in the manner of quoting the prophecies of the Old Testament.

The general scope of St. Matthew's Gospel appears to be to show that Jesus Christ answered to the character of the predicted Messiah. It has been divided into four parts, as follows:

Part I.—The genealogy, birth, and infancy of Christ. (Chaps. i. and ii.)

Part II.—The preaching of John the Baptist, Christ's baptism by him, and the temptation in the wilderness. (iii., iv.—11.)

Part III.—The public ministry of Christ. (iv. 12—xx. 16.)

Part IV.—His journey to Jerusalem, transactions there, his death and resurrection. (xx. 17—xxviii.)

The coincidences and discrepancies between this Gospel and those of Mark and Luke have been spoken of under Luke, Mark, and John. St. Matthew was an Apostle and an eye-witness of the acts of Jesus, at least of those which were done after his call. His narrative has therefore the highest degree of credibility. His style of narration is simple and effective, and he has recorded the sayings and actions of Christ with clearness, and often with great energy.

(Lardner's Credibility and Lives of the Apostles and Evangelists; Cave's Lives of the Apostles; Kuinoel, Comment. in Hist. N. T. Proleg. in Matt.; and the Introductions of Michaelis, Eschhorn, De Wette, Hug, and Horne.)

MATTHEW OF WESTMINSTER, one of those valuable old writers, the Latin chroniclers of England, who have left us more complete information concerning the manners, customs, deeds of the sovereigns and the persons who guided public affairs at a remote period. Matthew spent his life near the ancient palace of the kings of England, where the parliaments were usually held and the most important affairs transacted; for he was a monk of the house of Westminster, the church of the abbey being the usual place of interment of the kings and their families, and still remains to show of what a splendid establishment it formed a part. Matthew's date is the reign of Edward II. His history closes with the death of Edward I.; little or nothing is known of his personal history.

He entitles his work 'Flora Historiarum.' He begins with the creation of the world, and the first and last valuation of the history of the Jews in the half of the second subject; and then begins the history of his own before the Conquest. Two hundred and thirty-six pages in the Frankfort edition contain the history from the Conquest to the death of Edward I. This portion is very highly esteemed.
The reigns of female sovereigns have usually been favourable to our national history. In the reign of Elizabeth many of our best historians were printed, and of some of them more than one edition appeared. In the reign of Anne, Rymer's great collection of treatises and other important historical documents appeared. Matthew of Westminster was published in London in 1567, and again at Frankfurt in 1601 in the same volume with Florence of Worcester. The anonymous writer of the same class and a continuation of Matthew to the year 1377, the year of the death of Edward III.

MATTHIAS, Emperor. [HASBURG, HOUSE OF; GERMANY, p. 190.]

By Dr. Frederick, born at Holendoldeben, near Magdeburg, in 1761, was a posthumous child, and brought up by his grandfather, a village pastor, until the age of fourteen, when he was sent to the school at Klosterbergen, and afterwards to the university of Halle, to study theology. His natural taste however led him to apply himself more to philosophy and general literature. Instead therefore of entering the church, he supported himself for some time as a private tutor at Altona, Heidelberg, and Mannheim, after which he resided for two years in London, and friend Benjamin Franklin, who conducted him through Great Britain. In 1754 he obtained the appointment of reader and travelling companion to the reigning princess of Anhalt-Dessau, and during the next seven or eight years visited Italy, the Tyrol, and parts of France. The course of six years' residence in Berlin and his 'Erinnerungen' furnish many interesting details, besides numerous sketches and anecdotes of distinguished literary persons and others with whom he became acquainted in the course of his tours. Although somewhat deficient in regularity, it is an interesting volume, the first institution of his kind, was a considerable advantage as a prose-writer; but it was as a lyric poet that he was the favourite of the German public, and will long continue to be admired for the happy delineation of external nature, and the touching melancholy and charm of sentiment which characterize his poems, besides their charms of style and versification. His 'Elegy in the Ruins of an old Castle' is hardly less popular than that of Gray is with us, being one of those productions which are in the habit of being inserted in vol. xxvii. of the 'English Repository.' Matthison also performed a good office for the poetical literature of his country by his 'Lyrische Anthologie,' a collection in twenty volumes, published at Zürich, 1805-7, and containing select pieces and specimens from 292 lyric poets, commencing with Weckerlin, Zinzgref, Opitz, and other earlier poets, and terminating with Tiedge. These volumes may be considered as a gallery where the specimens of the different masters are arranged chronologically, and exhibit the characteristic qualities of each. Matthison died at Zürich in 1819.

MATTINS (from the Italian mattina, or the French matin, morning), strictly the first part in the daily service of the Roman church. Mattins or matins however were divided into two parts, which were originally distinct offices and hours; namely, the matins and lauds. The nocturna or vigils were derived from the earliest period of Christianity. We learn from Pliny the younger, as well as from Justin Martyr, Tertullian, and various writers of the first three centuries, that the Christians in those times of persecution held their assemblies in the night, in order to avoid detection. On these occasions they celebrated the memory of Christ's death in the holy mysteries. When persecution had intermitted and finally ceased, although the Christians were permitted to celebrate the sacred mystery in the day-time, yet a custom which had commenced from necessity was retained from devotion and love; and nocturnal assemblies for the worship of God in procession and reading still continued. The monastic orders, which had been founded, placed Pater Novus, Anthony, Basil, and others, in Egypt, Pontus, and Syria, tended to preserve this custom of nocturnal vigils; and in the following centuries we find, from the testimony of Cassian and other writers, that the monastic orders remained in most parts of the East and West. In the sixth century Benedict the great founder of monastic societies in the West, prescribed the same in his Rule; and nocturnal assemblies were common about that time, especially in silver, and such as were called laudes. They followed next after the nocturns, and were supposed to begin with day-break. We find allusions in the writings of Orosian, and all the subsequent fathers, to the morning as an hour of prayer; but whether there was in the third century any assembly of the church for the purpose of public morning worship is uncertain. However, about the end of the third or beginning of the fourth century there was published, as we learn from the ' Apostolic Constitutions,' where we have the order of the service. (Bingham's Antiquities of the Christian Church, b. xiii. ; Palmer's Origins Liturgice, s. v., Oxford, 1832, vol. i., p. 2. [Apostol. Constil.], l. viii., c. 38.)

MATTO GROSSO. [BRAZIL.]

MATUTA, the name of a genus of brachyrhynchos cruscaneae. [OXYSTOMES.]

MATY, MATTHEW, M.D., the son of Pair Henry Maty, a Protestant pastor, was born at Holmen in March 1737, at Montfort near Utrecht, and was originally intended for the church; but in consequence of some mortifications which his father received from the synod on account of particular theological sentiments, his thoughts, when he grew up, were turned to physic. He took a degree at Leyden; and in 1740 came to settle in England, his father being determined to quit Holland for ever. His earliest patron in England appears to have been Lord Chesterfield. In 1745 he began to publish, in French, an account of the productions of the English Museum. In 1769 he became surgeon to the Hague, under the name of 'Journal Britannique,' a publication which Gibbons praised, as exhibiting a candid and pleasing view of the state of literature in England for the latter part of the eighteenth century. It was published in 1755. It answered its intention, and introduced Dr. Maty to the most eminent literary persons of the country. In 1756, as soon as the establishment of the British Museum was completed, he was appointed one of the first under-librarians in 1758 he became the curator of the coins. In 1766, upon the resignation of Dr. Birch, was chosen Secre¬ tary of the Royal Society. In 1772, upon the death of Dr. Gowin Knight, Dr. Maty, by his majesty's appointment, became principal librarian of the British Museum. He died of a lingering disorder, about two months before the death of Dr. Tiedge. He was buried on the 26th of September. Dr. Maty was an early and active advocate for the establishment of the Royal Society, and when a doubt was entertained that a person might have the smallpox, after inoculation, a second time, he tried it upon himself, unknown to his family. Besides various smaller pieces, he published,—1, 'Mémoire sur la Vie et sur les Écrits de M. Ab. de Moivre,' 12mo.; Haye; 2, 'Au¬ thentic Memoirs of the Life of Richard Mead, M.D.,' svo., London, 1755. At the time of his death he had nearly finished the 'Memoirs of the Earl of Chesterfield,' which were never published. At his death no less than 40,000 pounds were left, and was fixed to that noblemen's 'Miscellaneous Works,' 2 vols. 4to., 1777. Dr. Maty was Lord Chesterfield's executor. (Nichol's Anecd. of Boyer; Gibbon's Memoirs, vol. i., p. 87. ; Biéob. Universelle, i., xxvii., p. 485-487.)

MAURICE. [ORD.]

MAULBEON. [PYRENÈES, BASSES.]

MAUNDY THURSDAY, the Thursday preceding Easter, on which the king or queen distributes sums to a certain number of poor persons at Whitehall; so named from the maunds, or baskets, in which the gifts were formerly contained. It was also called Shere Thursday, as we read in the 'Festival' of 1511; because antiently 'people would at that day shere their bedes and clsypp their bedes, and goent every man to his own place.'

The following was the ceremonial of the maundy as practised in 1731. Thursday, April 15th, being Maundy Thursday, there was distributed at the Banqueting House, Whitehall, to forty-eight poor women (the king gave forty-eight), boiled beef and shoulds of mutton, and small bowls of ale, which is called dinner; after that, large wooden platters of fish and loaves, viz. undressed, one large old ling, and one large dried cod; twelve red herrings; twelve white loaves; and four half-quarter loaves. Each person had one platter of this provision; after which was distributed to them shoes, stockings, linen and woollen cloth, and leathern bags, with one-penny, two-penny, three-penny, and four-penny pieces, for each above four pounds in value. His grace the lord archbishop of York, lord high almoner performed the annual ceremony of washing the feet of a certain number of poor in the royal chapel, Whitehall, which
was formerly done by the kings themselves, in imitation of Our Saviour's pattern of humility.

James II. was the last of our kings who performed this ceremony of washing the feet in person. In 'Le Guide de l'Espère,' by Casini, we are informed by the author that this ceremony was performed by the grand aumônier of the court, and that the king himself did not take part in it.

Italy. — In Italy, the custom of the king of Naples was to wash the feet of the papal college on the Tuesday following the vigil of St. John Baptist. In Charles the Fifth's time, the ceremony was performed by the archbishop of Naples; but the present grand aumônier performs it in same manner as the king of France.

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agulators on the Figure of the Earth," Oldenb., 1738 (this book, by some attributed to Maupertuis, is supposed to have been written by the Count de Béville). 'The Figure of the Earth, as determined by the Observations of MM. Maupertuis, Clairaut, Camus, Le Monnier, Outhier, Celsius, &c., near the Polar Circle,' Paris, 8vo, 1738. 'Letter to Madame de Derville,' Paris, —. —. 'Letter to Euler,' —. —. 'Letter of an English Clockmaker to an Astronomer of Paris,' the latter province, 1 vol. of MM. Maupertuis, Clairaut, Camus, Le Monnier, Outhier, Celsius, &c., near the Polar Circle,' Paris, 8vo, 1738. 'Letter to Madame de Derville,' Paris, —. —. 'Letter to Euler,' —. —. 'Letter of an English Clockmaker to an Astronomer of Paris,' the latter province, 1 vol.


(Life of Maupertuis, by Delambre, in the Biographie Universelle, vol. xxi. "Histoire des Mathématiques," etc. MAUR, ST. There appear to have been two persons of this name: one a disciple of St. Benedict, who is mentioned in St. Gregory's "Dialogues," and who is said to have died in 584; the other, abbot of Glenfeul, who lived till 649, and who appears to be the author of the "Rule of St. Benedict." Of the former of these a Life is extant in the great work of the Bollandists. His day was the 15th of January. (Moreri, "Diction. Historique," tom. vii. fol., Par., 1769., p. 337.) An Account of Butler's "Lines of the Saint," 8vo, Dublin, 1779, vol. i. p. 169.)

MAUR, ST. CONGREGATION OF, a celebrated society of Benedictines in France, who professed to follow the primitive rule of that order. It was first established in 1618. Pius V., in the second year of his pontificate, confirmed it by a brief dated 17th May, 1621; and Urban VIII. granted it new privileges by a bull dated 21st January, 1627. The report of the sanctity of this congregation induced several bishops, abbots, and monks to submit their monasteries to the rule, and the number of these had become divided into six provinces, of which each contained about twenty religious houses. The most considerable were, St. Denis, St. Germain-des-Prés, St. Remi at Rheims, St. Cadog at Portland, near Hereford, St. Benoit sur Loire, Fescamp, and the Trinité de Vendôme. The monks, besides the rule of St. Benedict, had other particular constitutions and statutes, and were governed by a general superior, assistants, and visitors, who held a general chapter every three years at Marmoutier. Those who have any acquaintance with the history and progress of learning in Europe will readily acknowledge the advantages which letters have derived from this famous congregation, whose researches took in the whole circle of sciences, philosophy excepted. Among its more eminent members in the seventeenth century may be enumerated Hugh Menard, Luc d'Archeri, Jean Mabillon, Thierry Ruinart, and Bernard de Montfauccon. Moreri gives a list of the general-superiors of this congregation from 1630 to 1756.

Before the war with Jugurtha, the Romans had little or no knowledge of Mauritania; of which Bocchus was at that time the ruler. (Sallust, "Bell. Jugurth.," c. 19.) Mauritania was shortly afterwards divided into two kingdoms. One of these (according to Strabo and other ancient historians) was called Tingitana, which was afterwards divided into two provinces: the western part retained the name of Cassaria, but the eastern was called Styfennua, from Styf (Sethif), a town on the borders of Numidia.

Mauritania contained many towns of considerable importance under the Roman empire. Of these, the principal in Mauritania Tingitana were, Rusadir (Messila), a seaport, and a Roman colony, west of the Moesotum; Tingis (Tangier), at the entrance of the Straits of Gibraltar, which received special marks of favour from Augustus Caesar (Don, xlvii., p. 439), and became a Roman colony under Claudius (Pliny, v. i); Ziris or Zela (Arzila), a Roman colony under Augustus, on the eastern coast of the modern kingdom of Morocco; and Zilis, placed under the same jurisdiction as the province of Beticia in Spain (Plin., v. i.): it was situated a little to the south of C. Speriel, which is called Cotes by Strabo (p. 835, Casabun), and Ampelussia by Mela (c. 5); Lixus, the modern Lix, Luzius, and Lucius, is a Roman colony, 12 miles from Maslag in Spain, and a Roman mile south of Zilis, situated on a river of the same name, which must not be confounded with the great river Luxus mentioned in Hanno's "Periplus," which is probably the same as the modern St. Cyrilian (Hanno's "Periplus"); and Lixus, a Roman colony, 45 miles from the above station, is situated on the Subur (Sebba); and, 50 miles south of the Subur, Sala (Salea or Seli), of which there are extensive ruins. The chief towns in Mauritania Cassaria were: Salda, Sarsa, or Saidin (Bonjayaht), a seaport and a Roman colony, which divided the kingdom of Juba from the province of Numidia (Strabo, p. 831); Julia Cassarea (Zeralh, see Shaw, p. 40, 41, ed. of 1738), situated on the coast west of Salda, a Roman colony, which was originally called Iol (Pliny, p. 831, Pliny, v. i); Siga (Tubautn), which Pliny (v. i) calls the modern Siga, and in the interior, south-west of Citra, the important town of Sethif (Sethif), a Roman colony.

The physical features, &c. of Mauritania are described by Moreri and other articles of the "Dictionnaire Historique du Temps de J.-B. de Sillery sur le Bas Empire," vol. iv. of that work. The account of the eastern part of Mauritania is in Shaw's "Travels in Mauritius," which is called also ISLE DE FRANCE, is situated in the Indian Ocean, between 19° 45' and 20° 33' S. lat., and between 56° and 57° E. long. From north to south it is 334 miles, the area is about 780 square miles, or nearly the extent of the county of Worcester.

The island is surrounded by a coral reef, generally running parallel to the shores, at the distance of one or two furlongs, and mostly dry at low water. In this reef occur several small areas of land, from the thickness of a man's hand to about 100 feet square, which a considerable burden may approach the island. The water between the reef and the shores, being less agitated than the open sea, affords facilities of communication between the places along the coast, which are, therefore, more accessible to each other than they would be if they were connected by an island of intermediate height. The interior of the island consists of a great number of lofty hills, which however are mostly isolated, except between Cape Brabant and Port Souillac, where they constitute a small chain, and another chain runs from the mountain of Payer Bette to Cannonière Point. Some of the hills attain a considerable elevation, especially the Brabant mountains, near Cape
the negro slaves. The number of whites amounts to about 9000 individuals: the greater part of them are descendants of French families, and speak the French language.

Port Louis, the capital and only town of the island, is situated near the north-western extremity, on a small bay called Port North-West, or Port Louis. This bay is a narrow arm of the sea, some thirty miles long, and about five hundred yards broad. A reef runs out from its mouth, passing close to a small island, called Tonneller Island, a coral rock, near which vessels usually anchor, as the wind continually blows out of the harbour. The harbour is sufficiently deep to allow to the largest merchant ships, and during the fine season perfectly safe. At its extreme south-western corner the town is built. The streets are straight but not paved; the principal street runs parallel to the shore, and has a double line of houses, with only one floor. The town contains 26,000 inhabitants, of which number 15,700 are slaves, 4000 whites, and the remainder coloured free people. One of the suburbs contains about 3000 Malabar fishermen, and another about 7300 free negroes. There is a library containing more than 60,000 volumes, mostly French books, a good botanical garden, and some docks for the repair of vessels.

On the windward coast of the island is Port Grand, also called Port South-East, which is large, but its entrance very difficult, being narrowed by several shoals. It can only be entered and left with a fair wind, as it is impossible to tack. It is not much frequented.

The commercial relations of Mauritius extend to Batavia, Bombay, Pooz, and Arabia Gaffs, the western coast of Africa, the Cape, and Madagascar; but a considerable portion of its produce comes to England. Besides sugar, small quantities of indigo, coffee, cotton, and rye are converted into flour, and some wines are exported. The island receives from England and India a considerable quantity of textiles, and besides, cloth, wine, oil, hats, iron, and steel utensils, with some smaller articles. Madagascar supplies the Mauritius with cattle and rice, and receives in return manufactured goods. Coffee, tea, and Persia are supplied with sugar from the Mauritius, and send in return dry fruits and some smaller articles.

Mauritius, with the neighbouring island of Bourbon, was discovered by the Portuguese under the command of Magalhaes in 1505, and the whole group was called the Mascarenhas Islands; but though the Portuguese took possession of Mauritius in 1545, they apparently formed no settlement on it. The Dutch surveyed it in 1596, and called it Mauritius, in honour of Maurice, stadtholder of the republic of Holland. They found it more useful to the Dutch as slaves, and had run away from their masters and concealed themselves in the mountain forests. In 1715 the French took possession of the island, formed a settlement at Port North-West, and called the island Ile de France. They remained in the undisputed possession of it to the year 1810, when it was taken from them by the British, who since the peace of 1814 have retained it in their possession.

(A Voyage to the Island of Mauritius, by a French Officer; Tombe's Voyage aux Indes Orientales; Prior's Narrative of a Voyage in the Indian Seas; Grant's History of Mauritius.)

MAUROLI, or MARULLO, FRANCIS, abbot of Messina, afterwards bishop of that place, September 16, 1494, and died there, July 21, 1575. Several accounts, which do not conceal the age which he attained, state that he was prematurely sacrificed to excess of study. His life was written by his nephew of the same name, and was published at Messina in 1613; we have not ourselves read it. He is elsewhere quoted, in the Abbé Domenico Seina's 'Elogio,' Palermo, 1808, which contains a full but flattened account of the life and writings in question. Maurolli taught mathematics and philosophy, and was invited in 1569 by Cardinal Bembo, and there his and his being obliged, much against his will, to suppress a part of his dissertation on comets, on account of the offence which some passages gave to certain Venetian noblemen, are the only circumstances of his personal life which are worth recording.
The printed works of Maurolico are numerous, and those which he wrote still more so; a list of all (but without titles or dates for the printed works) is given by the Abbé Scina.

Among the former must be mentioned an edition of Autolycus with commentaries, Messina, 1558, folio; of Archimedes, 1670 (misprinted 1570 in the article cited) and 1681 (or 1685); the Phenomena of Euclid, 1588, and an edition of Theodosius and Menelaius in the same year, which contains a table of solstices, being the first introduction of these tables: "Opuscula," printed at Venice, 1575, containing treatises on the sphere, the calendar, astronomical instruments, gnomonics, music, and arithmetic; treatise on Cosmography, 1543. Other works have been stated as printed, but we have only inserted those which have good authority.

In his writings, particularly his manner of treating the conic sections, by his optical theorems, and by his arithmetical works; but the interest which attaches to his writings connects them rather with the genre of general geography, where, as there are no very prominent discoveries to record. In his arithmetical he proceeds upon geometrical principles, as his eulogist states (and with confirmatory descriptions and citations), but at the same time with an style that is graceful rather in being restrained than in making them in a form closely approaching to the modern algebra, to the spirit of which they approach, without the language.

It is to be remembered that before the time of Vieta the method of expressing general formulae, which now consti-
utes the elements of algebra, there were that celebrated 'Ars Magna' of Cardan, and it seems to us, from such parts of Maurolico's writings as we have seen cited (the works themselves are very scarce), that the transition from the arithmetical of Euclid to that of Maurolico is an approach to algebra of a character which must be explained probably by the latter not being in the last stage of the transition, Cardan both who first introduced the use of letters instead of numbers, and who gave the first rules of the algorithm of algebra.

Not having examined Maurolico ourselves, we can only say that neither Wolff, nor Cassiri, nor the Abbé Scina, could find this out; and it must be a point upon the Grotius, and we are unable to understand, the algebra, without the language.

Perhaps however the assertion of M. Casseri may provoke some attention to the subject, and excite an inquiry into the extent of the claim which Maurolico really has to be considered as one of the founders of algebra. (De Cirtitute Div., v. 2; De Unitate Credendi, c. 17.)

The only work of Mauro which has come down to us is entitled 'De Litteris, Syllabus, Pedibus, et Metrica Carmen.' It is included in the 'Grammatici Veteres,' edited by Pata-

The Mausoleum is now used as a general term applied to a sepulchral chapel or edifice erected for the reception of a monument; but it originally designated the magnificent structure raised by Artemisia as the tomb of her husband Mausolus, king of Caria, at Halicarnassus, n.c. 352. Of this monument, once reckoned among the wonders of the world, no remains now exist; but from Pliny's description (xxxv. 5) it appears that it had been nearly square in its plan, measuring 113 feet on its sides, and 93 on each of its ends or fronts, and to have been decorated with a peristyle of thirty-six columns (supposed by Hardouin to have been 60 feet high, or upwards), above which the structure was carried up in a pyramidal form, and surmounted at its apex by a marble quadriga executed by Pythis, who, according to Vitruvius, was joint architect with Satyrus in the building. It was further decorated with sculptures and reliefs by Scopas, Bryaxis, Timotheus, and Leochares. The entire height was 140 feet.

The mausoleum erected at Babylon by Alexander the Great, in honour of Hephæsten, appears to have been still more magnificent, and somewhat extravagant in its decorations, as far as can be gathered from the account given of it by Diodorus (xiv. 115). It was adorned below by the gilded columns, or beaks, of the temple and an ornamental stair, or succession of towers or story was enriched with a profusion of sculpture, representing various animals, fighting centaurs, and other figures, all of which were gilt; and on the upper part were the statues of king and queen, made hollow, in order that the singers who chanted the funereal dirge might be concealed within them.

Those of Augustus and Hadrian at Rome were structures of great magnitude and grandeur, and resembled each other in being semicircular, and in having the two stories. The Campus Martius, where remains of it yet exist in the two concentric circles forming the first and second stories of the building, and the vaulted chambers between, which supported the first or lowest terrace. Of these terraces the lower, which is now entirely for the use of the public, is gradually decreasing in diameter, the uppermost of which was crowned by a colossal statue of the emperor. The terraces themselves were planted with trees. From traces of the kind that yet remain, it is conjectured that there was originally a fountain, with the building in the same manner as that of the Pantheon, though considerably smaller in proportion to the rest of the plan, as it could not have carried up higher than the steps of the Octagonal to take the building by storm. Neither are any remains now left of the uppermost stage of the edifice, which assumed the form of a circular cryptal temple, whose diameter was about one-third of the larger circle. According to tradition, its peristyle consisted of the twenty-four beautiful marble Corinthian columns which afterwards decorated the basilica of San Paolo fuori delle Mura (partially destroyed some few years ago by fire, but now nearly restored); and its tholus or dome was surmounted by a colossal pine-apple in bronze, now placed in the gardens of the Vatican.

Such places as Henry VII's Chapel and the Pantheon of the Escorial may also be considered as mausoleums; but the term is generally restricted to a detached edifice erected in memory of one person, or to the tier of tombs. There are several structures of the kind in the parks of our nobility; among the most remarkable is that at Castle Howard, the seat of the earl of Carlisle, and one of Hawksmoor's best works, a noble circular edifice in the Roman-Scaligero style, of four tiers and a dome.

The Mausoleum of Louis, queen of Prussia, at Charlottenburg near Berlin, has a Greek-Doric portico, but is not so remarkable as a building for containing the sarcophagus on which is the recumbent figure of that princess, the chef d'œuvre of Rauch's chisel.
MAWES, ST. [CORNWALL.]

MAWMOISINE, or MALVOISINE, WILLIAM DE, was born in France, and has been thought by some to have been a native Frenchman. He afterwards came to Scotland, where he was made one of the clericis regii, and archdeacon of St. Andrew's, in which latter capacity he was present at the baptism of Prince Alexander, afterwards King Alexander II. of Scotland. He was made a bishop of St. Andrews in 1198, and consecrated the following year by special precept from the pope. (Fordun, vii. 61.) In the year 1202 he was translated to the see of St. Andrew's, when he seemed to have retired to the office of chamberlain. In September, 1208, he dedicated a new monastery at Dryburgh Abbey. (2 Chalm., Caled., 339.) He afterwards made a visit to the Continent; and having returned, we find him and the bishop of Glasgow, in 1211, possessed of legatean powers from Rome, or vice versa. For a great council of the clergy and people, to press upon the nation the pope's will and command that an expedition be undertaken to the Holy Land. (Fordun.) In 1214 he attended the coronation of King Alexander II. (Id., ii. i.), and is said to have drunk at the king's table. The next year he went with the bishops of Glasgow and Moray and the mitred abbots of Kelso to the Fourth Lateran Council, where the doctrines of Wycliffe were condemned, and seems to have returned about the same time. From the Continent he brought with him into this country various orders of monks and mendicants, till then unknown here, and had convents of Black Friars erected at Aberdeen, Ayr, Berwick, Edinburgh, Elgin, Inverness, Montrose, Perth, and Stirling, and monasteries for the monks of Valleraculum at Pluscardine, Beauly, and Ardchattan. He wrote lives of the popish saints Ninian and Kentigern. It was to him and in his time that Pope Innocent III. sent the decretal letters which we find in the 'Corpus Juris Canonici' (Cap. i., Greg. b. iii., tit. 49, c. 6), to the king of Scots, and (b. iii., tit. 24, c. 9; b. iv., tit. 20, c. 6; and b. v., tit. 39, c. 28), to the bishop, archdeacon, and abbots of St. Andrew's, respectively.

But zeal for the church was by no means this prelate's only passion; for we find that on one occasion, noticed by Fordun (viii. 62), he deprived Dunfermline Abbey of the presentation to two churches, because the monks had failed to provide him wine for supper. Fordun adds that the monks had indeed supplied wine; but the bishop's own attendants had drunk it all up. It may be that the name of Malvoisine was originally but a mere sobriquet, from his malady bippening propitious, as if it were 'William of the Malseyne-butt.'

Conrad, the bishop of St. Andrew's till his death (Keith's Bishops), which happened on the 9th July, 1238 (3 Chalm., Caled., 616); and he is remembered in a composition respecting tithes, anno 1297 (2 Connell, On Tithes, 413).

MAVXENTIUS, MARCUS AURELIUS VALERIUS, son of Maximianus, the colleague of Diocletian in the empire, was living in obscurity when, after his father's abdication, and the elevation of Constantine to the rank of Caesar, he became envious of the latter, and dissatisfied with the neglect of Galerius towards him. Accordingly he stirred up a revolt amongst the praetorian soldiers at Rome, and was proclaimed emperor, a.d. 308. Galerius, who was then in the East, sent orders to Severus Caesar, who had the command of Italy, to march from Milan to Rome with all his forces, and put down the rebellion. In the meantime Maximius, who lived in retirement in Campania, came to Rome, and was proclaimed emperor as colleague with his son, a.d. 307. Severus, on arriving with his troops near Rome, was deserted by most of his officers and soldiers, who had formerly served under Maximianus, and was still attacked by their old general. Upon this he retired to Ravenna, where he soon after surrendered to Maximianus, on being promised his life and liberty; but Maximianus put him to death. Maximianus proceeded to Gaul to form an alliance with Constantinus, leaving Maximius at Rome. Galerius soon after arrived in Italy with an army; but not finding himself strong enough to attack Maximius in Rome, and fearing the same fate as that of Severus, he made a precipitate retreat. Maximius, returning to Rome, rejoiced for some months together with his son, but afterwards quarrelled with him, and took refuge with Galerius, who acknowledged him as emperor. There were then no less than six emperors, Galerius, Maximianus, Constantinus, Maximentius, Licinius, and Maximinus Daza. In the following year, 309, Maximentius was proclaimed consul at Rome, together with his son, M. Aurelius Romulus, who in the next year wasacusently drowned in the Tiber. Maximentius possessed Italy and Africa; but Africa revolted, and the soldiers proclaimed an emperor an adventurer of the name of Alexander, who reigned at Carthage for three years. In the year 311 Maximentius sent an expedition to Africa, defeated and killed Alexander, and burnt Carthage. Proud of this success, for which he had the honour of a triumph, Maximentius made great preparations to attack Constantine, with whom he declared war. Constantine moved from Gaul into Italy, advanced to Rome, and defeated Maximentius, who was drowned in attempting to swim his horse across the Tiber, a.d. 312. (Constantinus, Flavius Valerius.)

COIN OF MAXIMINUS.

British Museum. Actual Size, Gold.

COIN OF LICINIUS.

British Museum. Actual Size.

MAXIMA AND MINIMA. These Latin words, which simply mean 'greatest' and 'least,' are used to imply, not the absolute greatest and least values of a varying quantity, but the values which it has at the moment when it ceases to increase and begins to decrease. Thus if it is said that the height of the barometer was a maximum at ten o'clock, it means that up to that hour the barometer rose, and then began to fall; in which case it would still be said to have been a maximum, even though it should afterwards cease to rise, and stand at a greater height than at ten o'clock. Thus it is possible that there should be several maxima and minima in one day, and even that one of the minima should be greater than one of the maxima: that is, at one moment when the full case of a maximum has been reached, the barometer may then be higher than it was at another time when a rise had ceased and a fall begun.

The theory of maxima and minima is, mathematically speaking, very simple. It is obvious, from the definition of a differential coefficient, that if $y$ be a function of $x$, and if $x$ be increasing, then when $y$ also increases, $\frac{dy}{dx}$ is positive; and when $y$ diminishes, $\frac{dy}{dx}$ is negative. If the words increase and diminution have their full algebraic sense, this proposition is true whatever the sign of $y$ may be. It follows that when increase ceases and diminution begins, $\frac{dy}{dx}$ changes from positive to negative, and when diminution ceases and increase begins, it changes from negative to positive. But as a quantity cannot change its sign without becoming either nothing or infinite; it follows, first, that $y$ can only be a maximum when $x$ has such a value that $\frac{dy}{dx}$ is nothing or infinite; secondly, that there is not then a maximum unless the latter changes from positive to negative, when $x$ increases through that value; nor a minimum
MAX

unless the same differential coefficient changes from negative to positive, in the same case.

Thus when \( y = a + x - x^2 \), the differential coefficient of which is 1 - 2x, we see that the latter changes sign when \( x \) changes from less than \( \frac{1}{2} \) to greater than \( \frac{1}{2} \); and the change of sign is positive to negative. There is therefore a maximum when \( x = \frac{1}{2} \), and this maximum is \( a + \frac{1}{4} \). When \( \frac{dy}{dx} = 0 \) (which is by far the most common case), and there is a maximum, it changes sign from + to -; or diminishes, algebraically speaking: therefore \( \frac{d^2y}{dx^2} \) is negative. Similarly, when \( \frac{dy}{dx} = 0 \), and there is a minimum, \( \frac{d^2y}{dx^2} \) is positive. But when \( \frac{dy}{dx} \) is infinite, and there is a maximum or minimum, this additional rule does not apply.

Works on the differential calculus give the development of this theory and examples. We shall only here add one of the rules for determining the maximum or minimum when there are two variables.

When \( z \) is a function both of \( x \) and \( y \), two variables independent of one another, there may be a maximum or minimum when \( \frac{dz}{dx} \) and \( \frac{dz}{dy} \) are both nothing, both infinite, or one nothing and the other infinite. When they are both nothing, which is the only case in which this theory is of any practical application, it must be determined as follows, whether there is any maximum or minimum, and which it is.

Find the values of \( x \) and \( y \) which make \( \frac{dx}{dy} = 0, \frac{dy}{dx} = 0 \), and with any pair of these values find the value of the expression

\[
\left( \frac{d^2z}{dx \, dy} \right) - \left( \frac{d^2z}{dy \, dx} \right)
\]

If this be negative, or nothing, there is a maximum or minimum; if it be positive, there is a mixture of the two which can only be satisfactorily explained by illustrations drawn from the theory of curved surfaces. When the expression is negative or nothing, there is a maximum if \( \frac{d^2z}{dx \, dy} \) and \( \frac{d^2z}{dy \, dx} \) be both negative, and a minimum if they be both positive.

The usual method of establishing all the preceding formulae, namely, by the application of Taylor's theorem, applies only to the cases in which the differential coefficients become nothing, and not to that in which they become infinite. It is also frequently stated that there is always a maximum or minimum where a differential coefficient vanishes, which is not true.

MAXIMIANUS, MARCUS VALERIUS, a native of Pannonia, born of obscure parents, served in the Roman armies with distinction, and was named by Diocletian his colleague in the empire, a.d. 286. The remainder of his life is given under Diocletian, Constantine, and Maximianus. He was put to death at Marseille, by order of Constantine, for having conspired against his life, a.d. 310.

MAXIMIANUS, GALERIUS VALERIUS, was surnamed Armentarius, on account of having been a herdsman in his youth. The events of his life are narrated under Diocletian, Constantius I., and Constantine. According to the historians, he died (a.d. 311) of a loathsome disease, which was considered by his contemporaries and himself as a punishment from heaven for his persecution of the Christians.

Coin of Galerius Valerius Maximianus.
British Museum. Actual Size.

MAXIMILIAN. [Habsburg, House of.]
MAXIMINUS, CAIUS JULIUS VERUS, was originally a Thracian shepherd. He was of gigantic size and great bodily strength. He entered the Roman army under Septimius Severus, and was rapidly advanced for his bravery. Alexander Severus gave him the command of a new legion raised in Pannonia, at the head of which he followed Alexander in his campaign against the Germans, when the army being encamped on the banks of the Rhine, he conspired against his sovereign, and induced some of his companions to murder him in his tent, as well as his mother Mammea, a.d. 235.

Maximinus, being proclaimed emperor, named his son, also called Maximinus, Caesar and his colleague in the empire. He continued the war against the Germans, and devastated a large tract of country beyond the Rhine, after which he repaired to Illyricum to fight the Dacians and Sarmatians. But his cruelty and rapacity roused enemies against him in various parts of the empire. The province of Africa revolted, and proclaimed Gordianus, who was soon after acknowledged by the senate and the people of Rome, a.d. 237.

But Capellianus, governor of Mauritania for Maximinus, defeated Gordianus and his son, who fell in the struggle, after a nominal reign of little more than a month. [Gordianus, Marcus Antonius Africanus.] Rome was in consternation at the news, expecting the vengeance of Maximinus. The senate proclaimed emperors Claudius Pupienus Maximus and Decimus Celsus Balbinus, but the people insisted upon a nephew of the younger Gordianus, a boy twelve years of age, being associated with them. Maximus marched out of Rome with troops to oppose Maximinus, who had crossed the Isenzo and laid siege to Aquileia. Maximinus experienced a brave resistance from the garrison and people of that city, which excited still more his natural cruelty, and the soldiers, being weary of him, mutinied, and killed both him and his son, a.d. 238. Maximinus the father, then sixty-five years old, was a ferocious soldier and nothing else, and wonderful tales are related of his voracity, and the quantity of food and drink that he swallowed daily. His son is said to have been a handsome but arrogant youth. (Catoeipus, in Historia Augusta.)

Coin of Maximinus.
British Museum. Actual Size. Copper.

MAXIMINUS, DAIA, or DAZA, an Illyrian peasant, served in the Roman armies, and was raised by Galerius, who was his relative, to the rank of military tribune, and lastly to the dignity of Caesar, a.d. 303, at the time of the abdication of Diocletian and Maximianus, when he had for his
MAXIMUS, CLODIUS PUPINUS. [BALDINES] MAXIMUS PLANV'DES. [PLANVDES] MAXIMUS MAGNUS. [GRATIAN; THODIDION]


Maximus Tyrius, a rhetorician and Platonist philosopher, was born in the latter half of the second century, during the reign of the Antonines and of Commodus. He resided principally at Athens, but sometimes visited Rome: he does not seem to be the same person as the stoic Claudius Maximus, who was one of the philosophical friends of the emperor M. Aurelius, though some critics have been of this opinion. (Life of Aurelius, by J. Capollinio, c. 5.)

There are extant forty-one dissertations (Rouz'Uoc or n'koc) of Maximus Tyrius on various points connected with the Platonic philosophy, which are written in an easy and pleasant style, and more commendable for the expression of the doctrine than the matter. The following examples will give some idea of the subject of these dissertations: - 'On Plato's opinion respecting the Deity'; 'Whether we ought to return Injuries done us'; 'Whether an Active or a Contemplative Life is to be preferred?'; 'Whether Soldiers or Husbandmen are more useful in a State'; 'On the Diuomous of Socrates'; 'Whether Prayers should be addressed to the Deity'.

The best editions of Maximus Tyrius are by Stephanus, Paris, 1557; by Heinnaeus, Leyden, 1607, 1614, reprinted at Oxford, 1677; by Davis, Cambridge, 1703, reprinted at London with notes by Markland, 1740. The dissertations have been translated into French by Morel, Paris, 1607, by Forney, 1764, and by Boumais, 1802; into Italian by Petro de Bardi, Venice, 1642; and into German by C. T. Damm, Berlin, 1764. There is, we believe, no English translation of this author.

There were several other ancient writers of the name of Maximus, of whom the most celebrated was Maximus of Ephesus, who initiated Julian into the Eleusinian mysteries, and had subsequently great influence in the councils of that emperor.

Maximus, the Greek, a celebrated poet in Russian church history, was a native of Atilia in Albania, where he was born towards the end of the fifteenth century. After studying at Paris, Florence, and other cities then distinguished as seats of learning, he entered the cloister of Mount Athos, where he took the monastic vows; but the grand duke Vassili Ivanovitch, having desired the patriarch of Constantinople to send two persons to arrange and describe a vast number of Greek manuscripts and books that had recently been discovered in some part of the palace, the choice fell upon Maximus for one of them. He accordingly set out for Moscow, and was astonished to meet with such a prodigious store of Greek literature. He was directed by Vassili to examine the books, and to translate them as were most deserving of translation; but as he was then wholly ignorant of the Slavonic tongue, he had first to prepare a Latin version, which was afterwards rendered by others into Slavonian. It was thus that the translations of a Pellicer with a commentary, and Chrysostom's 'Homilies on St. John,' were produced. Desirous of returning to his convent, it was only at the instances of the Tsar, who wished him to revise the earlier translated books of the Greek church, that he remained and prosecuted that task, for which he was so well qualified by having been well versed in a term a competent knowledge of Slavonian. The diligence with which he executed it tended however only to raise up numerous enemies against him, among the rest Daniel, the metropolitan, and none but Maximus seem to have been able to make so numerous as to give great offence to the more zealous. What more immediately tended to his disgrace was the firmness with which he opposed Vassili's divorce from his first wife Salome (on account of barrenness), and his marrying, in 1546, the princess Guiana. He was condemned by a synod, excommunicated as a heretic, and imprisoned in the Orotuck monastery at Tver, in 1522: in this confinement he was treated with great rigour till the death of the metropolitan Daniel; after which the bishop of Tver interceded on his behalf, and obtained his release, on condition of his remaining a monk and renouncing his writings. At length the next Tsar, Ivan Vassilivitch, consented to his being removed to the monastery of St. Sergius, where he continued until his death in 1556. A great number of works are extant by him (chiefly in manuscripts) on a variety of subjects, both practical and theoretical, moral, philosophical, &c.; from which considerable information has been derived with regard to the opinions and prejudices of the clergy and people in that age; nor was he at all times inaccessible to the abuses and abominations that alone would account for the persecution which he drew down upon himself; but after his death even those who had been among the more violent against him, admitted his innocence, nor was it long before his memory came to be regarded with veneration.

MAXWELL, ROBERT, LORD, son of John, third Lord Maxwell, who was killed at Flodden, in September, 1514. He had been knighted, and appointed steward of Annandale, on the resignation of his father, on the 19th of June, 1500, and in 1517 he was appointed warden of the West Marches. In 1524 he was provost of Edinburgh, and in that capacity chosen one of the lords of articles for the commissioners of buroughs: a solitary instance, it is supposed, of a peer being so elected. He was afterwards chosen chaplain to the royal family, and in 1533, appears in the sederunts of the Court of Session as an extraordinary lord of session. In 1536 he was appointed one of the lords of the realm to whom the government of the kingdom was intrusted. He was created a baronet by James V. on his matrimonial expedition to France; and the next year he was himself despatched to negotiate the marriage of Mary of Lorraine. He is said to have advised the expedition which terminated at Solway Moss, but was so incensed at the command of the army being given to Ochterlony, that in common with most of the Scots nobility he mutinied and yielded himself up a prisoner to the English, who had a force much inferior to their opponents. On the death of King James V. he was ransomed and allowed to return to Scotland, in the hope that he would further the projects of King Henry VIII, in reference to the marriage of the young queen of Scots. In the first parliament of Mary, which met in March, 1543, he presented to the lords of articles one of the most important acts of the time, which had undoubtedly considerable effect in accelerating the progress of the Reformation. This was a writing, or as we should now term it, a Bill, for an act of parliament to allow the reading of the Scriptures in the vulgar tongue. He recommended that a royal commission be appointed to translate the Bible, which was accordingly brought into parliament, and passed into a law notwithstanding the protest and opposition of the lord chancellor and the whole hierarchy of the kingdom. Towards the end of the same year, Bются became chancellor, and Lord Maxwell was successful in the attempt to make his escape almost immediately after. He died on the 9th of July, 1546.

May, the fifth month of our present year, was the second in the old Alban calendar, the third in that of Romans,
and the fifth in the calendar of Numa Pompilius. In the Alban calendar it consisted of twenty-two days; of thirty-one in the calendar of Romulus; and of thirty in that of Numa. Julius Caesar restored it to the odd day of which Numa had deprived it, and of which still it keeps possession. Its etymology is doubtful. Ovid, in the fifth book of his Phaen., proposes three derivations: one from majestas; another from majores, a term which signified the patres, or governing body of the city of Romulus, and the third from majestas, a term which signified the protection of Apollo; and on account of the celebration of the Lemuria, marriages undertaken during its course were considered ill-omened. (Ovid, Fasti, v. 483-490.)

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MAY-DAY and MAYING. It was antiently the custom, observes Brand, for all ranks of people to go out a-maying early in the morning, and as far as possible, to have their fields decked it Maymouth; and, in their native language, Tri-miliche, three-milk month, when cows were milked three times a day.

MAY-DAY and MAYING. In 1637 May was appointed by Sir William Davenant as candidate for the office of laureate, which the death of Ben Jonson had left vacant. Sir William was successful, and his success so exasperated May, that although hitherto a courtier, he became hostile to the king's party, and wrote a history in verse, which was not published till 1656, when he was found dead in his bed. It is supposed that he was strangled by the tightness of his nightcap-strings. He was buried in Westminster Abbey, near John Cambden the historian; but his body was taken up after the Restoration, and reburied in the church of St. Matthew, Westminster, and his monument in the abbey pulled down.

Besides a history of parliament, he wrote a history of Henry II., and made a translation of Lucan's Pharsalia, with a continuation both in Latin and English. His plays were supposed to be five, and were named Agrippina, Antigone, Cleopatra, The Heir, and The Old Couple. The last two are comedies, and are printed in Dodsley's Collection. Phillips and Winzelber, allowing of this as an original play, calls it The Old Wife's Tale, and Orlando Furore, but the dates assigned to the first publication of these pieces, if correct, render the supposition impossible.

MAYBOLE, a parish and market-town in the district of Dunfermline, county of Fife, in Scotland. It lies upon a small eminence surrounded by hills, and its direct distance is about 5 miles from the sea-coast and 70 south-west by west from Edinburgh. It was erected into a burgh of barony by a charter of James V., dated 24 Nov., 1516, but it was not till the 17th century that the burghers appear to have availed themselves of the privilege thus conferred upon them of electing their own magistrates. The management of the affairs of the burgh is vested in a council, consisting of seventeen members, who hold their places for three years. The revenue is derived from landed property and an annual tax called 'stint,' averages 65l. per annum, which is about equal to the expenditure. The streets are cleansed and kept in repair at the expense of the turnpike-road tax. No person but he can legally carry on any manufacture or trade within the burgh; the charge for admission into their body is 1l. 1s. or 10s. 6d., according as the applicant is a stranger or the son of a freeman. There are however no manufacturing establishments, although the chief part of the inhabitants are employed in hand-loom weaving for the Glasgow houses. The principal building is the church; it is large, and surmounted by a steeply in very bad taste. The population of the parish in 1831 was 6257, of which it is estimated that 2000 are within the boundaries of the burgh. There are in all thirteen schools, and one of these, called the subscription school, is chiefly supported by the Irish inhabitants. There are also savings banks, and several philanthropic institutions. A house, called St. Charles's, is shown the room where Knox, and Kennedy, the abbot of Crossraguel, accompanied by eighty of the nobility and gentry of the country assembled, the former to impugn the mass, the latter to defend it; and the inhabitants have since that time held triennial festivals, at which men of all parties meet to testify their gratitude for their deliverance from the domination of Rome, and their secure enjoyment of Protestant principles, achieved for them by Knox and his associates. (New Statistical Account of Scotland; Parliamentary Report on Scotch Burghs, &c.)

VOL. XV.—E

When the land is in good heart, and the vegetable husbandry is destroyed, while the land is in grass, and mows. It is a sure sign of a slovenly husbandry when the land is covered with May-weed. It often infests farms which have been neglected, and it is indispensable to get rid of it before any attempt at improvement was made.

A good clean fallow is the surest means of destroying this weed as well as all other annuals: by repeated harrowings the seeds are first brought to the surface, where they vegetate, and the roots are afterwards cut off. It is not in dry weather, interspersed with occasional showers, as in the months of April, May, and June.
MAYENCE. [Maine.
MAYENNE. [River and Town.] [Mayenne.]
MAYENNE, a department in the western part of France, bounded on the north by the departments of Manche and Orne, on the east by that of Sarthe, on the south by that of Loir-et-Cher, and on the west by that of Ille-et-Vilaine. Its form approximates to that of a parallelogram, having an average length of 50 or 52 miles from north to south, and an average breadth of 38 miles from east to west. The department is divided into 18 arrondissements, having more than 1,829,741 inhabitants. In density of population it is above the average of France, but rather below the English county with which it has been compared. Laval, the capital, is on the Mayenne, 70 miles by the south, west, Paris, by the Loire, and 165 miles by the road through Dreuzy, Alençon, and Mayenne, in 4° 4' lat., and 0° 45' W. long.

The northern part of the department is the most elevated. The principal range of the Armorican chain of mountains, silt through the valley which separates the basin of the Loire from that of the Vilaine, skirts the western border, the hills gradually subsiding as they proceed southward. Another branch of the Armorican chain skirts the eastern border, subsiding into the plain sooner than the western borders. The valley is watered by the Mayenne and its tributaries. The department is almost entirely occupied by the rocks of earlier formation, being included in the great primitive district of Brotagne. There was in 1834 one coal-mine in the department, and employment is given to more than 3,000 men, and yielding about 9,000 tons annually. There were also five mines of anthracite (besides two others not worked), giving employment to more than 300 men, and yielding annually 18,000 tons. Some iron-ore is prepared, and in July 1834, there was a number of iron-works in the department, having eight furnaces for smelting pig-iron and fifteen forges for making bar-iron. Charcoal was the fuel almost exclusively employed. Freestone, slates, and marble are quarried.

The Mayenne enters the Mayenne at the Mayenne, which rises just beyond the boundary of the department, near the north-eastern corner, and flows westward (sometimes in this department, sometimes in that of Orne), 22 miles, to the neighbourhood of Lassay; from thence it flows southward 52 miles, the boundary of the department, 26 miles beyond which it falls into the Loire below Angers. Its whole course is about 103 miles, of which it is navigable for 56 miles, viz. from Laval; 24 miles of the navigation are in this department. The official returns make the total navigation of the Mayenne, 79 or 60 miles, of which nearly half is in this department. The feeders of the Mayenne are none of them navigable in this department; the principal is the Varenne, the Colmont, the Érêts, and the Oudon, which join the Mayenne on the right bank, and the Zouane, which joins on the left. The Erre, which waters the east side of the department, falls into the Sarthe, which just touches the south-east corner. There are many large pools (the chief are in the upper part of the Oudon and the Véron, a small feeder of the Mayenne), and many brooks.

The number of Routes Royales, or government roads, in 1837, was five, having an aggregate length of 157 miles, viz. 107 in repair, 44 out of repair, and 6 unfinished. The principal route from Paris to Tours, when it enters the department on the north-east, runs south-west by Préménil to Mayenne, and from thence south by west by the valley of the Mayenne to Laval, where it turns off to the west and quits the department. Roads from Lhomme to Laval, and from Umbresnil to the valley of the Érêts, have also several departmental roads, having an aggregate length of 178 miles, viz. 109 miles in repair, 17 out of repair, and 55 unfinished. The by-roads and pathways have an aggregate length of 2,800.

About two-thirds of the soil of the department are under the plough. Wheat is not much cultivated; rye, barley, oats, and especially buck-wheat, are more commonly raised. The northern part of the department is sterile, the centre of moderate fertility, but the southern part produces abundant harvests. Much hemp and flax are grown, and there are extensive orchards, especially of apple and pear, derived from the fruit of which a great quantity of cider and perry is made. There are few vineyards, and the wine which they produce is of ordinary quality; the department lies almost entirely beyond the line within which vines are permitted to grow, and the whole soil of the valley is a gigantic variety of the cabbage, which grows above the height of a man. The pools produce a plant, the water chestnut, the fruit of which, enveloped in a husk, floats on the surface of the water, which is, if not the best, one of a cheastnut. Meadows and grass lands, including the heaths and other open pastures, are extensive, occupying, from one-fifth to one-sixth of the soil; the number of cattle reared is considerable, especially cows, from whose milk the chesnut, and especially the cobnut, are excellent. Other products are: The wool of which is in good repute; the horses are of small size; swine and poultry are numerous, and a vast number of bees is kept all over the department. The woodlands of the department are not extensive.

This department is divided into three arrondissements, as follows:

<table>
<thead>
<tr>
<th>Arrondissement</th>
<th>Population in 1861</th>
<th>Population in 1866</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laval, central</td>
<td>703</td>
<td>117,533</td>
</tr>
<tr>
<td>Mayenne, north</td>
<td>820</td>
<td>162,154</td>
</tr>
<tr>
<td>Château-Gontier, south</td>
<td>471</td>
<td>72,988</td>
</tr>
</tbody>
</table>

1894 | 382,386 | 361,765 |

There are 27 cantons, or districts, each under a justice of the peace.

In the arrondissement of Laval, the population is in 1831, 15,826 town, 16,401 whole commune; in 1836, 17,810 commune, on the Mayenne [Laval]; Montours, on the Jouanne; Erro, on the Sarthe, a feeder of the Mayenne, and Erre; St. Ouen and Liron, in the country west of the Mayenne; and Meslay, on the road from Laval to La Flèche. Erro is a busy place, with a good weekly market and ten yearly fairs, situated in an excellent wheat district. The town has tolerably handsome churches. In the heart of the department is now occupied by the Succurs de la Charité, and a conventual church, with a fine choir. Sainte Suzanne is a small town of about 1,000 inhabitants, on a high hill. It was once a place of strength. It has the ruins of an old castle, and some old ramparts yet more in a state of nature than in one of the vitis fortified in one part like the vites fortified of Scotland. The French writer who describes this remarkable phenomenon (Vaysee de Villiers) contends for its being the effect of lightning; but as the place was supposed to be more or less a hermitage of the name of Danes, the vites fortified of Scotland are ascribed, the walls of Sainte-Suzanne may probably be ascribed to them. Meslay is a small place of about 1,000 inhabitants, consisting chiefly of one street, well paved and lined with neat well-built houses. The neighbourhood produces abundance of corn.

In the arrondissement of Mayenne are Mayenne, Ambrières, Lassay (population 1767 town, 2807 whole commune), Cooopain, and Précé-en-Pail (pop. 3,244 whole commune), or nearer to the Mayenne; La Pollet (pop. 3,030 whole commune), Villaines or Villaines-la-Juillée (pop. 1,800), and Baye, in the country east of that river, Gour, on the Colmont; Erre, on the Sarthe (pop. 3,642 town, 4,477 whole commune) on the Erre; and Fougerolles, Landry, Martris, and St. Bré, in the north-west corner of the department. Mayenne is situated on the slope of two hills which face each other...
other, and are separated by the river Mayenne. The town, properly so called, is on the right bank, where the hill is highest; the part on the left bank is a suburb which contains about one-third of the whole population of the place, the two are connected by a bridge. The principal line of street is that which descends one hill, crosses the bridge, and ascends the other; this constitutes the road from Paris to Rennes by Fougeres; the more frequented road by Laval passes through this town. The town is comprehended in the parishes of Saint-Maur and Saint-Pierre, the two being joined by a bridge. This principal street is neither wide nor straight, and the slope on the side of the town is so steep that in summer it requires a team of twelve, and in winter sometimes of thirty horses and oxen to draw up heavily laden carriages. Near the country in the field is a calico mill, and opening a modern town-hall into two parts, one of which is adorned by a fountain. At the summit of the hill on a slate rock is the ancient castle of the dukes of Mayenne, at present occupied as the town prison. The linen-hall or market-house, of which was presented a calico manufactory the supplying of linen, was immediately erected, and at the summit of the hill is a handsome house, with gardens, which was occupied by the commune, the town hall, and the government of the commune. The principal manufactures are of linens, calicoes, and handkerchiefs. The three weekly markets: one for linen, cattle, and general commodities; another for wools and361 handkerchiefs; and a third for woolen and worsted cloth, are held every Saturday. The linen manufacture, which is the greatest in the town, is carried on not only in the town but in the surrounding districts, and employs 8000 persons; the raw material is chiefly foreign flax. These are, or two or three miles West of the town, on the road to Wurtzbourg, there is a weekly market, affording 3000 persons; and about the same distance south, the wrought-iron forges of Aron. The town has a subordinate court of justice, an hospital, and a high school. Lassay has handsome market-houses and an ancient château. Much beans, wheat, and barley, is grown; the country bears good crops of flax. There is good society at Cranon; Volney was a native of this place. Cosse-le-Vivien with 1000 to 1200 inhabitants, is situated in a fertile district, and is the seat of a considerable trade in linen.

The chief manufactures of the department is that of linen, including sail-cloth and table-linen. Flax spinning and weaving form the occupation of a large portion of the working class in the arrondissement of Mayenne. The sterile soil of which affords little encouragement to agriculture; but the rate of wages is low, and there are many emigrants, on which manufactures are liable occasionally to throw the workpeople into great distress. Laval and Mayenne are the chief seats of this manufacture; but the population of the arrondissement is not proportionate to that of these towns. The decline of the linen manufacture, induced by the extended use of cotton fabrics, has led to the introduction of the manufacture of calicoes and cotton handkerchiefs into both these towns. Some woollen stuffs and paper are also manufactured. Among the manufactures, which contribute to building ships, iron, marble, slate, and various articles of agricultural produce, constitute the chief articles of export.

The department is comprehended, with that of Sarthe, in the diocese of Le Mans; the bishop of which is a suffragan of the archbishop of Tours. It is in the jurisdiction of the Cour Royale and the circuit of the Académie Universitaires of Angers; and is comprehended in the fourth military division, of which the head-quarters are at Tours. It sends five members to the Chamber of Deputies.

The department was comprehended in the most ancient historic period, in the territory of the Diablintes, the Avrilli, and the Andes or Andeavl, three Celtic nations, which under the Roman domination were comprehended in the province of Lugudunum Tertia. The antient name of the department was Mayenna, and the usual maniured form was Meduauni. Nosoolum (afterwards Diablintes) and Vagoritum, the respective chief towns of the Diablintes and the Arvilli, were within the limits of the department. Of the first, now the village of Jublains, there are important remains. The site of the second is supposed to be near a square of 600 or 700 feet each way, with walls on the sides and at the corners. The walls are scarcely more than seven or eight feet high, and about nine feet thick; composed of layers of square stone, alternating with three courses of masonry. It was on this site that the fortress of the Devil's chair. There are some remains of a town supposed to be Vagoritum, now called Arve, or Erve, on the river Erve. From this name it has been inferred with great probability that the town, like the other chief towns of the Diablintes, was called after some place to which it belonged. The first syllable of the name Vagoritum appears to be preserved in that of the Vaige, a small stream flowing parallel to the Erve, about a mile or two from it. In the 17th century the department was comprehended chiefly in the province of Mayenne, but a small part of it in that of Anjou. [ANJOU; MAINE.] This part of France suffered much in the Vendée war.

MAYER, TOBIAS, was born at Marbach, a town of Wurtzbourg, on the 25th of October, 1723. He was a civil engineer, and held the appointment of inspector of the water-works (inspecteur des eaux) at Esslingen. From him young Mayer received some elementary instruction in the mathematics, but it could not have been much, since we know that he was not occupied with mathematics till a very early age. To gain a livelihood he began teaching the mathematics, and at the age of twenty he studied the principles of gunnery, probably with a view of entering the army. In the year 1746 he took an active part in the establishment of a mathematical institute, to which Transactions he afterwards contributed several interesting memoirs. Among these is one, published in 1750, 'On the Libration of the Moon,' in which, besides treating the subject in a very able manner, he then for the first time passed to the subject of the equation of the libration, and its consequences. [CONDITION.] In 1751 he became director of the observatory at Göttingen, and at the same time or subsequently was appointed professor of economy in that university, which appointment he probably held. In 1747 he left his wife and family, and for some years travelled abroad. He never taught any subject but the mathematics and their application. At Göttingen, during the remainder of a very short life, he laboured with the most praiseworthy zeal to promote the sciences of geography, navigation, and astronomy. His 'Zodiacal Catalogue' was 'deserving of all confidence' (Delambre), and comprised 998 stars, including those whose correct positions are of most importance to the astronomer. In 1755 he published his 'Lunar Tables' in Latin, at Göttingen, and in 1757 his 'Tables astronomiche' was forwarded to the London Board of Longitude. By order of the board the accuracy of the tables was rigorously tested by Dr. Bradley, who was able in no instance to detect an error greater than 1 second (the error of the other tables was 1.5 seconds). He was very happy in this; for this he was of opinion might be fairly attributed to his own observations. (See Dr. Bradley's Letter to the Secretary of the Admiralty, dated 10th February, 1756.) These tables were printed by the Board of Longitude in the year 1767, and likewise the 'Solar Tables' by the same body in the year 1770. After the death of Mayer the British parliament, at the recommendation of the Board, paid his widow the sum of 3000l. The original resolution of the Board, dated 9th of February, 1763, recommends that a sum not exceeding 5000l. should be awarded; and it is stated that a further sum of 2000l. was subsequently paid; but this
as a mistake. The act of parliament awarding the 3000l. is that of Geo. III. c. 26; and the later acts relating to the Board of Trade take no further mention of Mayer's widow. To Mayer is also due the discovery of the principle of the repeating circle, which was afterwards so fully developed by Borda, and employed by him in the measurement of the arc of the meridian. (Borda's REPEATING CIRCLE.) Mayer died the 15th of October on the 26th of February, 1762. His eloge was spoken by Kaestner (Gott., 4to., 1762). In 1801 a simple monument was erected to his memory at Göttingen, the place of his internment.

The following published works is given by M. Delambre from the 'Eloge' of Mayer by Kaestner:—

1. Description of a new Globe of the Moon (Nürnberg, 1750).
2. Terrestrial Refractions; Geographical Maps; Description of a new Micrometer; Observations of the Solar Eclipse of 1748. Conjunctions of the Moon and Stars observed in 1747-8; Proofs that the Moon has no Atmosphere; Motion of the Earth explained by a Change in the Direction of Gravity; Determination of the Latitude of Nürnberg, with Observations on Astronomical Observations; Memoir on the Parallax of the Moon, and upon the Distance of that Satellite from the Earth, as deduced from the Length of the second Pendulum; On the Transformation of Rectilinear Figures into Triangles; Inclination and Declination of the Magnetic North Pole; and the Magnetic Theory; On the Inequalities of Jupiter. In addition to the above there appeared at Göttingen, in 1775, in folio, edited by George Lichtenberg, his successor at the observatory of Göttingen, the first volume of what was intended to be a continuation of Mayer's works. This, which is the only volume that has been published, consists of six memoirs entitled, 1. A Method of determining more correctly the Variations of the Thermometer; a Formula for determining the mean Temperature of different Latitudes, and the Mean temperature of the Moon; 2. A letter to the above on the Influence of the Moon's heat; 3. A Method of calculating the Eclipses of the Sun; 4. A Memoir on the Affinity of Colours, by means of which he recognised the different colours; 5. his 'New Catalogue of Stars'; 6. 'A List of Eighty Stars,' in which he believed he had detected a motion, in addition to that resulting from the precession of the equinoxes.


MAYNOOTH. [KILDARE.]

MAYO, a maritime county of the province of Connacht, in Ireland, bounded on the east by the counties of Sligo (from which it is separated by the river Moy) and Roscommon, on the south by the county of Galway, and on the west and north by the Atlantic Ocean. According to the ordnance map of Ireland, constructed for the Irish railway companies, it is 530 miles and a quarter long, and 50 miles broad. It lies between 50° 11' and 54° 13' N; lat., and between 8° 31' and 9° 26' W. long, and extends from Achill Head on the west to the junction of the Sligo and Roscommon boundaries at Ballaghaderreen on the east, 72 statute miles, and from the centre of Loch Corrib on the south to Downpatrick Head on the north, 48 miles. The length of the coast-line from the mouth of the river Moy on the north-east to the head of the Killery Harbour on the south-west, exclusive of the minor indentations of the shore, is about 364 statute miles. The area, ascertained by the 1827 ordnance survey, has not yet been made public. According to the map constructed under the superintendence of the Society for the Diffusion of Useful Knowledge, it contains 1,023,273 English acres, or 1,198 square statute miles. According to South's estimate, the area of the county consists of about 12,098 statute acres.

Cultivated land 871,584 statute acres.
Unprofitable bog and mountain 425,124
Water 57,940

Total 1,355,048 statute acres, or 2117 square statute miles, being next to Cork and Galway, the third largest county in Ireland. In 1831 the population was 367,726.

Mayo has a very diversified surface, embracing a part of the great inland plain which extends across the centre of the island, together with a large extent of wild and mountainous country interposed between the western verge of that plain and the sea. The mountain region consists of two principal districts, separated from one another by Clerw Bay, a spacious inlet of the Atlantic, which, running inland to a distance of fifteen miles, by from seven to eight miles in width, meets the western extremity of the plain at Westport. The mountain groups lying south of Clew Bay cover the entire barony of Murrisk, and stretch beyond the bounds of the county into the highlands of Joyce Country and Connemara. (Galgorm, 4to., 1831.) The highest peaks of these groups, which they seem, within the limits of Mayo is about fifteen miles by twenty, and is bounded on the north by the level land about Westport and by Clew Bay, on the west by the Atlantic Ocean, on the south by the long narrow inlet of the great Killary Harbour, and on the east by the flat country constituting the basin of lochs Mask and Carr. The most easterly of the various mountain groups comprised within these limits is constituted by the Farrary range, which, rising in a north-easterly direction from the head of Bilberry, form a continuous range of fifteen miles in length, rising abruptly over the western shores of the above-mentioned lakes. The elevation of Furnummore, rising about sixty feet, is the highest peak of this range. The other chief summits of the range are Bengorriff, near its southern extremity, 2033 feet, and Slieve Bolaun, terminating it on the north, 1294 feet.

On both sides of the chain are bold ravines, traversed by streams with the rapidity denoted in the word 'gale,' and on the other into the valley of the Owen Errive river, which runs southward into the head of Killery Harbour, and also into the valley of the Ayle. The Ayle, running northward through the first part of its course, dips underground into a narrow and deep valley, (Galgorm,) and this, passing eastward round the terminus of the range for two miles under the limestone-rock of the plain, rises again and flows southward, along the opposite side of the mountain, into the head of Loch Mask. One of the sources of the Owen Errive is a long lake, the south end of which is locally termed a prison, being a bowl-shaped hollow in the northern side of Furnummore, surrounded by perpendicular precipices 1500 feet high. West of the valley of the Owen Errive, and beyond its north-eastern termination, he recognized the pasture, which he then described as e.n shore of the Killery, and extending inland in a direction generally parallel to that of the range of Slieve Partry. Mulroney Mountain, which rises immediately over the northern entrance to the harbour, is the highest ground in the country, being 2682 feet in altitude. Next in the range, eastward, is Benberry, 2610 feet; between which and Bengorriff, 2294 feet, lie the romantic lakes of Doolough and Delphi, with the shooting-lodge of the Marquis of Sligo. These heights, as they trend eastward, are broken into numerous lateral valleys, and the plain, which is called Glen Lawn, watered by the main branch of the Owen Errive. Above Glen Lawn the highest point of the range is 2429 feet. Northward from the immediate group of Mulroons and the range of Slieve Partry, the flat highlands of the country being towards the north-west, in which direction most of the streams rising in the interior make their way through openings in the hilly country to the sea. The northern verge of Murrisk, bordering on Clew Bay, is occupied throughout a length of ten miles by the range of Croagh Patrick, running parallel to the shore. Crowh Patrick, locally called the Rock, rises immediately from the water's edge in the centre of the range to an altitude of 2610 feet, presenting a very perfect conical outline, and having on its top that most conspicuous feature in the surrounding scenery. The general character of this district is severe, though among the undulating hills of the central part there are extensive tracts of coarse pasture. The only large town on the coast is Louisburg, which is the chief place of residence of the county. Throughout the entire tract is the little village of Louisburg, near the coast on the north-west.

The mountainous district lying north of Clew Bay is of considerably greater area, extending upwards of forty miles in length, and as much as thirty miles in breadth. Separated from the range of the Ox mountains in Sligo by the valley of the Moy and the low basin of Loch Conn, thus standing insular in the north-western part of the county, it nevertheless corresponds, in the direction of its principal groups, both with the range above mentioned on the east, and with that of the Slieve Partry mountains on the south. The Croagh Moyle mountains, forming the most advanced group towards the plain, appear as a continuation of the Sligo highlands, running in a direction from north-east to
south-west, from the valley of the Moy, to the head of Clew Bay at Newport. The highest point of this range is 1653 feet. Corresponding in direction with the Crough Moyle range is the stunted peninsula of Bally, which extends from Lack- Fough, near the northern shore of Clew Bay, at a distance of about five miles from the exterior range, to the western shore of Loch Conn. The chief summits of this range, commencing from the west, are, Buckorh, 1922 feet, Benavack, 1722 feet, and the principal pass southwards from Newport, lies Loch Beltra, the waters of which run south-westward to Clew Bay at Newport, and Loch Lavalla, which discharges itself north-eastward into Loch Conn, the latter lying within the mountain-pass of Burna- na-Faugh, the eastern end of which is 1397 feet, but the immense tract of comparatively level but extremely desolate moor- lands, bounded towards the east by the fertile valley of the Moy, and westward by the nearly semicircular amphitheatre of the Tyrawley and Nephin Beg mountains. A subordinate and at the same time more level range of mountains, which appears to have been cut into two portions, the waters of one of which flow eastward by the Deel river to Loch Conn, and those of the other, passing through a gap in the centre of the range, run west- ward by the Owenmore river to the head of Blackwood Bay. The latter range forms the more prominent part of the range, from 900 to 1200 feet; south of the valley of the Owenmore the heights are loftier and of a more striking outline, being broken into lateral valleys and defiles, and containing many small lakes surrounded by striking precipices. The chief peak of this range is the peak of Mullagh, 2369 feet, and Cusheamcurragh, 2289 feet; the last rises imme- diately above the shore of Clew Bay, from which point the range takes a westerly direction, occupying the entire pro- montory of Corraun Achiil, and beyond it, rising again into a series of hills, is the chief peak of the range which is separated from the mainland by a very narrow sound running up between Clew Bay and Blackwood Har- bour. The surface of Achiil Island is extremely mountain- ous, and its shores are bound by the limits of the equal extent of coast of the British islands. At Minaun, on the south side of the island, the cliffs, which are slightly overhanging, have an altitude of 1000 feet and upwards; and at Keen Head, which terminates the island westward, the whole side of the mountain, which appears to have been rent asunder by some convulsion of nature, constitutes one shelving precipice of 2222 feet, springing immediately from the water’s edge. The island is of a triangular shape, the northern and eastern sides being fourteen and twelve miles in length respectively, and the south-western side, the shore of Clew Bay towards the south-west, being fifteen miles in length. The northern side of the island constitutes the southern boundary of Blackwood Bay, a great arm of the Atlantic included between the wild district of Erris, which strikes southward from the peninsula of Croagh Mogue, to the high mountains on one side, and the low peninsula of the Mullet on the other. The Mullet, extending fifteen miles in length, is connected with the mainland of Erris by an isthmus five miles long by one mile on an average in breadth, which separates the head of Blackwood Bay from the head of the Bay of Broadhaven, included between the Mullet and the mainland in a similar manner on the north. The thriving little town of Belmullet is situated on the narrowest part of the isthmus, where it is only 400 yards wide. The peninsula is not only heart-shaped but consists of a semi-circle open upland, and though the mountain-tops within are not equally rising, there is a considerable village on it, called Binghamtown, near the head of Blackwood Bay; and Major Bingham, the chief proprietor, has a permanent residence farther south. The southern part of the peninsula, is low and sandy; but the surface is varied on the northern side by the eminences, of which Sliave More, 423 feet in height, rising over the western entrance to Broadhaven, is the chief. From its comparatively level surface and the facilities for preparing both soil and sand for culture, this remote district possesses great capabilities of improvement; but the immense tract of bog and mountain interposed between it and the market-towns of the interior has hitherto been a great obstacle to traffic. Nevertheless the town of Belmullet, which has grown up since 1625, now consists of two rows of slated houses and a neat square, and has a yearly increasing export of grain. During the period of railway speculation in Ireland, a few years ago, Belmullet was much spoken of as the terminus of a great western railway, by which it was proposed to open the vast desolate tract lying between it and the valley of the Moy, but the design has not been encouraged. Nothing can exceed the bleak- ness and sterility of the entire tract lying between the shores of Blackwood and Broadhaven bays and the valley of the Moy. On the western side of the Tyrawley and Nephin Beg mountains is the peninsula of Croagh Mogue, which is, with Loch Carrowmore, five miles in length, which discharges its waters by the Owenmore river, famous for its salmon, into Tullaghay Bay, an arm of Blackwood Harbour. Between the eastern and western parts of this peninsula lies the district of Ballycorv, where some herds of the red deer survive. This part of Mayo has recently become pretty well known, as the scene of an interesting work entitled "Wild Sports of the West." The remaining part of the county, consisting almost wholly of open undulating plains, is divided by a low range of emi- nences running south of Castlebar into two principal dis- tricts, the waters of one of which run northward by the Moy to the sea at Killalla, and those of the other southward by the narrow strip of land called the Shannon, and into the Sea of Galway. The district immediately surrounding Westport, the waters of which run westward to Clew Bay, is compara- tively of inconsiderable extent. The valley of the Moy from the sea to Foxford, which is situated fifteen miles above Westport, is a level and stony district, largely cultivated in improved and improbable land, especially in the neighbour- hood of Killalla [KILLALLA] and Ballina. Ballina, the third town in the county, about six miles above the estuary of the Moy, is situated partly in the county of Mayo and partly in the county of Sligo. It is on the right bank of the river, which is within the latter county, being called Ardaree. Ballina is of recent origin, having been no town here prior to 1729, when Lord Tyrawley gave the first impulse to industry in this district by the establish- ment of a cotton-mill on a part of a chain of Lake Moy, which has however been mainly owing to the enterprise of various traders who have been induced to settle here since the begin- ning of the present century in consequence of the local facilities for opening up the extensive navigation of the river. In the vicinity of the town are the granite quarries of Ballina. Between Ballina and the range of Nephin is Loch Conn, a fine sheet of water eight miles in length by from one to four in breadth, communicating on the south, by a very narrow strip of land called the Shannon, with Loch Cullin, a sheet of smaller dimensions, through which it discharges its waters into the river Moy close to Foxford. The little town of Crossesna, on the high road from Ballina to Belmullet, and at the head of Loch Conn, is surrounded by a tolerably fertile tract of country. The valley at Foxford is contracted by the approaching ranges of the Crough Moyle and Slivee Gamph mountains, the latter constituting the western extremity of the Sligo group. The soil is of a loamy composition; the district is fit for arable, and is a part of that extensive tract of land which is lost in the wide extended plain which opens inland. The hill of Sliave Carnon, rising to a height of 855 feet, is the only considerable eminence in this district. Running nearly north and south, it separates the vale of Castlebar on the west from the one tract spreading eastward into Ros- common, the former being watered by streams terminating in Loch Cullin, and the latter by the numerous and widely extended feeders of the Moy. The main stream of the Moy, rising in the county of Sligo, runs westward through the districts of Scalpay, Erris, and the Ox mountains, and on the south by low undulating hills of from 600 to 700 feet in height, skirting the northern verge of the great plain. This vale is thinly inhabited, and much traversed by Irish mountain cattle and sheep; but the extreme extremity however, near the point where the Moy, after receiving its tributaries from the southern plain, turns northwards, there is a good deal of cultivation round the small town of Swinford. Southward from the low range mentioned as bounding the valley of the upper Moy, the county is more thickly inhabited and more productive. Under these eminences on the eastern verge of the county is the small town of Ballaghaderen. The immediately sur- rounding district is bleak and swampy, but the bogs dis- cernible on the eastern verge of the county are the nat- oral tract extending from the Roscommon border on the east, to the vicinity of Castlebar on the west, and from the
Slieve Carnon on the north to the borders of Galway on the south. This tract, embracing a very large extent of country, is named generally the Plains of Mayo, though the locality to which the name strictly applies is confined to the rich grazing lands immediately south of Slieve Carnon. The small town of Ballyhaunis is situated on the eastern side of the tract, Claremorris, on the southern, and Ballyglass and Balla on the west. In the neighbourhood of the four last towns are numerous seats of resident nobility and gentry, among which Castlemaccarat, the residence of Lord Drum, and Claremorris, in the modern times, are the most conspicuous. The tracts of bog are also more numerous here than in the northern and central portion of the plain, occupying most of the valleys, and in several instances insulating the domeness of the gentry. The country neverthless affords a great deal of richness and beauty to the quantity of timber, particularly about Hollymount and Ballyglass, has a rich appearance, which is considerably heightened by the vicinity of lochs Mask and Carra on the west, and by the extended mountain background on the west and north-west of the river. An open fertile district extends along the eastern shore of Loch Mask, stretching inland without any incumbrance of unprofitable land as far as the barrier of Galway. This tract contains numerous private seats, and the small towns of Ballyhaunis and Claremorris. The river Ballyglass, as it enters Loch Mask; Cong, situated on the narrow neck of land dividing Loch Mask from Loch Corrib; and Shrule, a poor village on the Galway border near Headford. The structure of the isthmus on which Cong is situated is very remarkable, the water of the river Ballyglass and that of the lake of Loch Corrib passing by a subterraneous channel, which can in some places be approached by natural caves in the limestone rock at a depth of forty feet from the surface, to the lower basin of Loch Corrib. The scenery in this neighbourhood is very striking. The waters of the river Ballyglass, and the grand mountain boundaries rising immediately over the western shores of both lakes.

The district surrounding the head of Clew Bay contains the towns of Westport and Newport, and affords the interesting facts of a small street, leading into the north-eastern angle of the bay, and the latter on the river which discharges the waters of Loch Beltra into its north-eastern angle. Westport is a well built and handsome town; two of the principal streets run parallel to the river, which are laid out as a public walk, with rows of trees. Westport House, the residence of the marquis of Sligo, by much the finest mansion in the county, stands in the immediate vicinity of the town, between it and the sea. From Westport to Newport the road to Clew Bay is studded with green islets, varying in size from a few acres to half a mile in length, and in number amounting to 170. The shore along the head of the bay is also good arable and pasturage land, and is worn into numerous peninsulas and low promontories, which are wonderfully increased in size by the picturesque effect. On one of these promontories is the residence of Sir Samuel O'Malley, Bart., a considerable proprietor; and at Newport also, close to the shore, is the seat of Sir Richard O'Donel, another owner of large tracts in the neighbourhood. The whole scenery of this district is remarkably striking; the beauty of the head of Clew Bay, with its labyrinth of islands, in particular, would appear to have been generally known from an early period, as they are distinguished as ‘the Fortunate Islands,’ in an Italian manuscript of the fourteenth century.

The only harbour generally frequented on the northern coast is that of Killyalla, formed by the embouchure of the river Moy. The bay is a square of about five miles each way, with a range of sandhills extending across the bottom. In the bay there are two openings, one forming the bar of the Moy, and the other that of Killyalla harbour. Formerly vessels for Ballina entered by the Killyalla bar, and sailed by the lagoon at the back of the sandhills to the pool of Moyne, where they were charged by lighter boats. This important navigation of the Moy a few years since, the navigation has been direct; and vessels of 200 tons now sail up to within a mile of Ballina. From Killyalla bay westward the coast for a distance of twenty miles rises in lofty cliffs, affording very little shelter for craft of any kind. There are coves at Balderig, Port Terlin, and Port-a-cloy, where yaws can be kept, but these places, being open to the north and in immediate connection with the main sea, are always exposed to a heavy ground-swell. The last, which is a narrow inlet bounded by steep cliffs of several hundred feet in height on both sides, has a depth of twenty-four fathoms at its mouth, and four fathoms close in-shore. This iron-bound coast continues to Scally Head, between which and the north-eastern extremity of the Mullet is the entrance to Broadhaven. This bay consists of an outer and an inner harbour, the latter being somewhat less than half a mile in width, in four fathoms water. The land-locked basin within runs up seven miles to Belmullet, and affords good anchorage throughout. The only use to which this port has been made is for the protection of a few row-boats employed in the fishery. The western shore of the Mullet has no shelter for vessels of burtle further than that afforded in western gales by an open anchorage under the lee of the Inisheer islands in the offing. The shores of the western gulf afford good anchorage and sheltered harbours for a considerable length of coast, and the most convenient roadsteads and several sheltered spots well adapted for landing cargoes. Of these the principal are Tarmon harbour, Elyy harbour, and Salleen harbour, on the shore of the peninsula; Belmullet and Cleggan, at the head of the bay; and Inisheer, known by the name of Galway.\n\

The only navigable river in the county is the Moy. An extended system of inland navigation has been proposed (emanuage), but, as yet, there are no canals within the county.

In no part of Ireland has the want of good roads been more felt, or have their advantages been more fully exhibited than in Mayo. In 1802 there was no road whatever leading from the county town to the principal city of the country, viz., the town and city of Tuam, on the river Corrib. It was ill supplied with means of communication. Roads have now been constructed, partly by government and partly by private individuals. The main exhibits of this, the chief lines being from Castlebar to Belmullet through the centre of Tyrabo, and from Killala and Ballina eastward by Swinford towards the terminus of the Royal Canal. Other good roads, from Castlebar to Ballina by the Punton, from Ballina to the north-west coast by Crossmolina, have been recently constructed. The district of Murrisk has also been opened by a new and excellent road from Westport to the head of the Killery harbour, where it joins the line of government road through Connemara. The western parts of Murrisk the latter being somewhat less than half the country, though permanently in the hands of the state, have an extensive and magnificent system of roads, with a network of cross-roads, which is a complete system of communication, and part of the district lying along the base of the Slieve Partry mountains next to Loch Mask is altogether impassable for carriages. The champagne part of the country in general is well fenced, and the principal line of road leading from the north-west coast affords the protection of so great a barrier of mountain in the direction of the prevailing winds, and lying open towards the east and south, enjoys a climate as mild as most of the midland counties. From the remains of submersion forests on the
coast and the quantities of bog-timber found on the sides of the most exposed mountains in Murrisk and Erris, it would appear that trees formerly flourished throughout the western district, where it is found very difficult at present to rear plantations even in the most sheltered spots.

**Geology.**—The geological structure of Mayo resembles, in its general features, that of Galway, exhibiting an ar- rangement of layers and strata in the district, the chief among which is the limestone rock, the bases of which are the bed or bottom of the bay of Murrisk, while the projecting promontories situated to the north and south of each are composed of per- vious granite and quartz, bordered along the northwestern coast towards Clew Bay by a tract of old red sandstone, which rises again on the southern and eastern side of the opposite island of Clare, overlying the granite of which the base is the upper stratum. The quartzite tracts throughout the limestone plain near Westport exhibit traces of a current setting towards Clew Bay. Near Loch Conn and Killaloe they indicate a current running northward in the line of the Moy. The verges of the plain are, as usual, of inferior quality, and are interspersed with numerous subterraneous channels, remarkable instances of which occur at Cong, and in the courses of the rivers Ayle and Owenduff, the latter of which has a subterraneous course of two miles near Shrule, where it forms the county boundary. The Mullamore also, a stream descending from Nepin, runs underground for about three miles.

The **southern half of Murrisk,** embracing the Furnamore, Partry, and Mullar groups, belongs to the grav- ucles series:—to the north of these, a tract of yellow sandstone lies between the clay-slate of this formation and the flint limestone. Patches of limestone also occur in some places in this valley. The northern division of Murrisk consists mainly of mica-slate with intrusions of granite and quartz, bordered along the northwestern coast towards Clew Bay by a tract of old red sandstone, which rises again on the southern and eastern side of the opposite island of Clare, overlying the granite of which the base is the upper stratum. The quartzite tracts in the mica-slate field of northern Murrisk, the chief is the peak of Croagh Patrick. The exterior ranges of the northern mountain district consist chiefly of yellow sandstone interposed between the mica-slate of the primary field of the district and the clay-slate of the coastal tract of the county. This tract evidently belongs to the same formation which shows itself in the north-west of Murrisk and in Clare Island. It constitutes the southern portion of Corrum Achill, a portion of the range of Nepin Bay, and the entire group of Carrow, and the deposits of mica-slate occur near Westport between the base of Great Nepin and Loch Conn, it forms the boundary between the mica-slate field and the limestone of the valley of the Moy throughout the whole extent of Tyrawley. The mica-slate field, as it stretches northward, merges near the coast consisting but a small portion of the district about Broadhaven. The limestone tract has a corresponding extension in that direction, occupying the greater part of north-eastern Tyrawley, but nowhere reaching the coast, from which it is separated by an extensive field of igneous rock, the boundary of which is the north-east of Erris to Killaloe. Throughout the great mica-slate field, comprising all Erris, the Mullar, the island of Achill, and southern Tyrawley as far eastward as great Nepin, the mica-slate with their quartz protuberances are of frequent occurrence, generally consisting of the foliated mica and striking elevations of the different mountain-chains. Granite again rises on the opposite side of the valley of the Moy in the Slieve Gamp mountains over Foxford, supporting the flanks of mica-slate as in the opposite range of Nepin. Throughout the primary district iron-ore is abundant, and bloomeries have been worked near Tallaghan bay and in the valley of the Deel, but are now given up from want of fuel. Indications of coal are said to have been observed in Slieve Gamp mountains, and on the side of Ball, but at present there are no mining operations carried on in the county beyond the quarrying of slate.

**Silver.**—The soils of the champagne tract are in general similar to those of other lime districts, and resemble those described about Balla, Claremorris, and Hollymount on the south, and round Ballina on the north. Towards the Sligo and Roscommon borders the soil is light and moory; it is light also throughout the greater part of the tract bordering on Clew Bay, but of a better quality near Cong and along the eastern shore of Loch Mask.

The tillage lands in the immediate neighbourhood of Westport have been for the most part reclaimed from a comparatively moory state; but more northward towards Newport the soils are just natural, but produces large crops of the best oats. Throughout both mountain districts, north and south of Clew Bay, cultivation only occurs in detached patches. In Murrisk however and Tyrawley there are good tracts of meadow land on which answer well for the breeding of young cattle, though not equal to the fattening of stock. The common fence throughout the north and west of the county is the dry stone-wall, or in the moory parts sod-ditches. In the central district and towards the north-west of Mayo, the quartzite and mica-slate lands are, generally, but wherever stones can be easily had, dry walls are preferred by the country farmers. The following table exhibits the sales of grain in the principal market-towns in the under-mentioned years. The oats grown in Mayo are of a superior quality, but the wheat is in general inferior to that of Galway:

<table>
<thead>
<tr>
<th></th>
<th>Wheat (tons)</th>
<th>Oats (tons)</th>
<th>Barley (tons)</th>
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<tbody>
<tr>
<td>1836</td>
<td>1,800</td>
<td>7,609</td>
<td>4,970</td>
</tr>
<tr>
<td>1837</td>
<td>2,000</td>
<td>6,609</td>
<td>4,700</td>
</tr>
<tr>
<td>1838</td>
<td>2,500</td>
<td>10,000</td>
<td>6,200</td>
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The coast fishery, which might be rendered very productive, gave occasional occupation, in 1836, to 3768 fishermen. The craft employed consisted of 4 half-decked vessels, 12 open sail-boats, and 46 row-boats and gaff-banks on the north lies between Downpatrick Head and Broadhaven, at about 3 miles from the shore, in 30 to 45 fathoms water, where turbot, sole, codling, haddock, and hake are taken. Between the Sigs of Broadhaven (insular rocks in the bay) and the island of Achill there is another bank, in 15 to 30 fathoms water, on which the same fish abound. From 40 to 50 miles due west of Achill Head some fish are taken (Galway); but this fishery, requiring vessels of a better sort than are here in use, has been almost wholly abandoned. Broadhaven Bay also contain extensive fishing-banks for turbot, sole, plaice, &c., and vast quantities of oysters and lobsters may be taken on the shores of both. The herring-fishery is chiefly prosecuted, in the season, near the mouth of the great Killary harbour.

The principal river fisheries in the county are those of the Moy, Ballycroy, and Newport rivers. The salmon-fishery on the first lets for 1846 per annum; the others are preserved by the proprietors. In the Newport river salmon are in plenty in all the years and seasons.

The condition of the labouring classes is somewhat better in the remote and thinly-inhabited tracts than in the plains. From 6d. to 8d. a day for 100 working days in the year is the average rate of wages in most parts of the county, but in some districts the working days do not average more than 36 in the year. There is much wretchedness among the peasantry of the north-eastern parts of the county; and although the people of the mountainous western districts, in years of ordinary productivity, are rather better provided with the necessaries of life than the residents on the plains, they have occasionally, especially in Erris and Achill, been reduced to an extremity of distress scarcely ever experienced in any other part of Ireland, by failures in their crops.

There is a large number of resident gentry; of the nobility, the marquis of Sligo and Lord O'Conor are the only residents.
The manufacture of linens is carried on to a considerable extent by the country people: the cloth is generally sold green by the small manufacturers, and bleached in other counties. At Belclare near Westport are factories on a large scale for linen and cotton fabrics. There is also throughout the county the usual home manufacture of friezes and coarse woollens. In 1831 there were in Mayo 16 bleachers, 10 reed-makers, 1730 weavers, 5 brewers, 11 corn-dealers, 8 tobacconists, 3 maltsters, 58 millers, and 154 cooperers.

Mayo is divided into the baronies of Erris (half barony) on the north-west, containing only hamlets and villages: Tynacley on the north, containing the town of Ballina; population (independent of the portion in Sligo) 3510; Killala, pop. 1125; and Knocknamera, pop. 1481: Castlebar on the north-east, containing the towns of Foxford, pop. 1065, and Swinford, pop. 813: Castello on the east, containing the town of Ballaghaderreen, pop. 1147: Clanmorris on the south-east, containing the town of Clarinbridge, pop. 2604, and the village of Shrule, pop. 507: Carra in the centre, containing the town of Castlebar [CASTLEBAR], pop. 6373, and village of Minola, pop. 450: Murtha on the south-west, containing the town of Westport, pop. 4446: and Tuam on the west, containing the town of Newport, pop. 1235.

Castlebar is the only corporate town in the county: its charter bears the date of the 11th of James I. The corporation is now extinct.

Westport was a place of considerable commercial activity. The exports of corn, meal, provisions, and other agricultural produce, in 1836, amounted to 11,600 tons, of the value of £7,805: the imports in the same year, consisting principally of coals, iron, sugar, flax-seed, tallow, and salt, amounted to the value of £29,517.

Ballina has also a large and increasing trade in agricultural produce. The exports in 1836 amounted to nearly 9000 tons of corn and meal and 300 tons of provisions, of a value, including a small export of kelp, hides, and feathers, of £70,565. The imports in the same year were to the value of 13,525.

The exports from Newport in the same year amounted to the value of 2269L, and consisted wholly of corn. There do not appear to have been any imports. In the same year the exports from Belmullet amounted to the value of £246L.

Prior to the Union Mayo was represented by four members, two for the county and two for the borough of Castlebar. The representation is now limited to the two county members. In 1837 the constituency consisted of 1350 voters. The surnames are divided into 6 classes. The returns were for Castlebar, Ballinasloe, Ballina, and Clonmorris, and the county of Castlebar. On January 1, 1836, the police force of the county consisted of 7 chief constables of the first class, 2 second-class constables, 46 constables, 263 subconstables, and 15 horse, the cost of maintaining which establishment amounted, for the year 1835, to 10,142. 13s. 1d., of which 4532L 18s. 6d. was chargeable against the county. The total number of prisoners charged with criminal offences who were committed to the county gaol in the year 1836 was 1115, of whom 1002 were males and 113 females. Of these 220 males and 11 females could read and write at the time of their commitment, 306 males and 42 females could read only, 437 males and 45 females could neither read nor write, and of the remainder the instruction could not be ascertained. The district lunatic asylum is at Ballinasloe.

The county infirmary is at Castlebar, and there are dispensaries in all the towns and large villages. In 1836 there were four newspapers published in this county, to which 1892 copies were issued during that year. There are seven barracks in the county, affording accommodation for 1200 men, but they are only partially occupied at present.

### Population

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</thead>
<tbody>
<tr>
<td>1792</td>
<td>Estimated by Dr. Bensfert</td>
<td>27,970</td>
<td>2,456</td>
<td>258</td>
<td>68</td>
<td>3,898</td>
<td>140,008</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1813</td>
<td>Under Act of 1812</td>
<td>43,792</td>
<td>3,400</td>
<td>392</td>
<td>102</td>
<td>4,924</td>
<td>237,241</td>
<td></td>
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<tr>
<td>1821</td>
<td>Under Act 5 Geo. III. c. 129</td>
<td>53,051</td>
<td>4,076</td>
<td>452</td>
<td>124</td>
<td>6,782</td>
<td>330,932</td>
<td></td>
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</tr>
<tr>
<td>1831</td>
<td>Under Act 1 Will. IV. c. 15</td>
<td>62,367</td>
<td>6,207</td>
<td>767</td>
<td>218</td>
<td>10,084</td>
<td>366,728</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**History, &c.**—This county formed part of the grant made by King Henry II. to William Fitz-Adelom de Burgho about the year 1210. It would appear that the lord-justice of Ireland on that occasion commanded to root out that unjust plantation, which Hubert, earl of Kent, had, in the time of his greatness, planted in those parts; but the command was never acted on, Richard de Burgho having obtained a new grant of all Connacht after the death of O'Connor, the then king. There is very little known of the subsequent proceedings of the settlers until the period of the great rebellion succeeding the assassination of William de Burgho, earl of Ulster, in a.d. 1313. [Belfast.] About this time Mayo was a county, as appears by a roll of the 49th Edward III., preserved in the chancery of Ireland. It fell away however from all subjection to the English law immediately after the murder of the earl; for some of the younger branches of the Burke family, seeing that the former possession of Connacht would be inherited by his infant daughter (who afterwards married Lionel, duke of Clarence, and so gave the crown its title to the inheritance in the person of Henry VII.), seized upon the counties of Galway and Mayo, and, to avoid the consequences of their usurpation, not only cast off all allegiance to the English law, but renounced their English names and habits, identifying themselves and their followers in all respects with the native Irish. The name chosen by Edmund de Burgho, who seized on Mayo, was MacWilliam Oughter, or MacWilliam ' the farther,' to distinguish his family from that of MacWilliam Eighter, or ' the hither,' who bore in like manner usurped titles.

All the surnames of the families in the county followed his example. The D'Exesters, or D'Exona, took the name of MacJordan; the Nangles, or family of De Angulo, took that of MacCostello; and of the inferior families of the De and the Burke, the MacPhilben, &c. From this time till the reign of Queen Elizabeth the MacWilliam of the day continued to exercise the authority of an independent potentate. Many families from Galway and Ulster put themselves under the protection of the successive chiefs, and it is probably to this period that the first introduction of many of the most prevalent names at present in the county—Blake, Brown, Kirwan, Macdonnell, &c.—is to be referred. The first step towards a return to English law and manners was made in 1577, when the first MacWilliam, accompanied by the O'Maille and a number of the clan Donnell, came to Galway and made his submission, consenting to pay 250 marks per annum for his country, and to allow his followers to hold their English tenure. This chiefman is described as Henry Burke, who received this submission, was unable to speak English, though conversing fluently in Latin. The county was shortly after again declared shire ground. The Burkes however soon began to reign under the new government, and, after many complaints, broke into rebellion, in which they were joined by the clan Donnell, Joyce, and other families in the south of the county. To appease these tumults Sir Richard Bingham marched to Ballinrobe on the 12th July, 1586, and having razed several castles of the Burkes and Macdonnels, and given the rebels, who had been joined by a body of 2000 Scottish taillemen, a
signal defeat at Ardara, on the Moy, succeeded in restoring the county to tranquillity. The old families of Mayo, in general, took part in the rebellion of 1641 and the succeeding wars, and very extensive forfeitures were the consequence. The forfeitures consequent on the war of the Revolution extended to 19,994 acres, or an estimated total value, at that time, of 37,598£. 3s. The families of Burke, Browne, and Dillon were those chiefly affected. During these troubles however Mayo was not the scene of any military operations of importance; the only memorable event of that kind, since the battle of Ardraunie, being the invasion, by the French, under General Humbert, in 1798. The invading force consisted of 1100 rank and file only; but such was the alarm caused by their unexpected descent, that they made their escape with hardly a shot fired. Ballinrobe and, being joined by a large body of the peasantry, defeated General Lake, at the head of 6000 men, before the town of Castlebar. [CASTLEBAR.] The surrender of the invading force at Ballinamuck however soon restored tranquillity. [LEITRIM.]

The antiquities of the county are chiefly ecclesiastical. There are round towers at Killalla, Turlogh, Meeleck, and Balla. At Cong are the remains of a splendid abbey, originally founded in the seventh century, and re-edified by O'Connor the Younger, by example of the magnificent workmanship, made by command of Turlogh O'Connor, the father of Roderick, the last native king of Ireland, and preserved at Cong until very recently, is now in the hands of private owners. The ruins of Ballin- tane or Nangle, which are the ruins of a large abbey founded by the family of Nangle. Very fine remains of a Franciscan friary at Moyne, founded by William de Burgo, are still standing. Koosek abbey, in the same neighbourhood, but now entirely walled up, and in the same general parts, is another very striking ruin. Rathbran, also near the Moy, but of which all traces have now disappeared, was a foundation of the Jordans, the remains of whose castles are very numerous throughout the barony of Cullen. The remains of Ballintane, which is in the parish of Ballinrobe, are among the most elegant specimens of early architecture in Ireland. It was founded by Cathal O'Connor about the latter end of the twelfth century. Numerous other remains of religious houses founded by the families of De Burgo, O'Malley, and Nangle, throughout the county, are enumerated.

The military antiquities are not in general of much extent or interest. Carrig-a-Nile, near Newport, is said to have been a stronghold of Grace O'Malley, a daughter of that same man who was the chief of the Tanagh, and is still marked by a signal hill, which forms the principal object of interest in the county. The town of Newport is situated on the south bank of the river Moy, and had, at one time, a considerable importance as a seaport, being where the river Moy debouches into the sea.

The county expenses are grand jury presents. The amount levied in 1835 was 27,051£. 14s. 2d., of which 6003£. 14s. 1d. was for repayment of government loans, 4565£. 7s. 9d. for police, 8457£. 9s. 6d. for public inspections, and 602£. 10s. 5d. for the construction and repair of roads and bridges. [Statistical Survey of Mayo, Dublin, 1802; Frazer's Guide through Ireland, Dublin, 1835; Second Report of Railway Commissioners for Ireland; O'Donovan's History of Ireland; Parliamentary Reports and Papers.]

MAYOR. [BOURGS OF ENGLAND AND WALES.]

MAYOW. [CHEMISTRY.]

MAYPU. [CHILKAT.] [PERSIA.]

MAZARIN, Cardinal. [Anne of Austria; Louis XIV.]

MAZAPPA, Hetman (that is, commander-in-chief) of the Cossacks of the Ukraine, has become celebrated by a poem of Lord Byron, which has for its subject his extraordinary career. He was the son of a Polish gentleman in Podolia, and served for some time as a page at the court of King John Casimir (who reigned 1648-1668), where he acquired some education. On his return to his native province he carried on an intrigue with the wife of one of his neighbours. Being surprised by the offended husband, he was bound by his orders, according to the current story, to one of those wild horses which roam in a half savage state about the frontiers of Poland, and the animal was turned loose. The frightened horse ran away with his unfortun-ate burden, till it reached the country of the Cossacks, where Mazepa, who was in a senseless state, was released from his dangerous state. Being restored to health by the kind treatment of the Cossacks, he was engaged in service, and rose by degrees to the rank of their supreme commander. This romantic story of the horse seems scarcely credible, and one might reasonably doubt if a man could escape with him in such circumstances. The point has at last been settled in a satisfactory manner in a contemporary memoir of Passek, which were lately published in Polish. According to that author, Mazepa was bound by the offended husband to the same horse on which he had come to pay his addresses to the wife. To nurse, being let loose, carried its master back to his own house, and the shame which Mazepa felt at having been exposed in such a manner induced him to leave his native land and settle himself among the Cossacks. Whatever may have been the reasons which caused Mazepa to take that step, he soon distinguished himself by his bodily strength, great courage, natural abilities, and some acquirements, so that he became general-adjutant and secretary of Hetman Samoilowich, and at the age of 17 was not only allowed to fill his place.

The Cossacks of the Ukraine, who were organized by King Stephen Batory (who died in 1586), rebelled against Poland in 1648, and being unable to maintain themselves as an independent nation, they submitted to the crown of the empire. Mazepa, who was much in favour with Peter the Great, who to whom he had rendered many eminent services, was strongly attached to the liberties of his adopted country, and is said to have made strong but useless representations against their violation. The victories of Charles XII. of Sweden induced Mazepa, notwithstanding his great age, for he was then about seventy, to enter into a negotiation with him for the independence of the Ukraine, which Charles promised to establish if Mazepa would join him with his forces. The negotiation was dissolved without effect by the death of Peter, and of Kozubow, who reported it to the Peter the Great. Peter was however so confident in Mazepa's fidelity, that he gave up both the colonies as columnists to Mazepa, who ordered them to be beleaguered. According to the agreement with Mazepa, Charles turned from the high road to Moscow, which he was pursuing, to the south, in order to join Mazepa and spend the winter in the rich Ukraine, but the disasters which befell his army on a march during the severe winter of 1709-10 reduced it to a wretched condition; whilst the designs of Mazepa being discovered, his capital, Baturin, was taken, after a desperate resistance, by the troops of Peter, and Mazepa, being deserted by his army, joined Charles with an insignificant force. After the battle of Pultawa he retired with Charles to the Turkish territory, where he died soon after.

MAZZUOLI, [Parmigiano.] MEAGO, or MEAD, Richard, M.D., was born near Louden in 1675, and after studying in some of the most celebrated of the continental schools, took the degree of Doctor of Medicine at Padua in 1655. On his return to England, obtaining considerable reputation in his practice, he was appointed in 1703 physician to St. Thomas's Hospital, and in 1711 anatomical lecturer at Surgeons' Hall. He was also elected a Fellow of the Royal College of Physicians, and was physician to George II. On the death of his chief patron, the Government celebrated Dr. Mead at Westminster Hall, and appointed him physician of the day, and was obliged to relinquish all his public offices. He employed the greater part of the wealth which he obtained from his practice, in the patronage of science and literature; and left behind him a very valuable library, of which he bequeathed the greater part to the College of Physicians. He died in 1754. Mead's principal works are, 'A Mechanical Account of
Poisons," London, 1702; 'De imperio sola et lunae in corpora humani, et morbis interdum, '1704; 'A short Dis- course concerning Pestilential Contagion,' 1720, which was written at the request of the secretary of state, in reference to the contagious nature of the plague then raging at Mar- selle, for the prevention of which various measures were taken in the manner of the modern practice of quarantine and disinfestation. These papers on Grecian coins struck in honour of physi- cians, from which he inferred many interesting facts in the history of medicine, and on which he had a long discussion with Dr. Moschopulos. On the Scourge," 1749; the latter was published as an appendix to the account of the method of ventilating the holds of ships then lately invented by Sutton. 'On Small-pox and Measles,' 1746; containing a full account of inoculation, of which he had witnessed the effect in his own country, and which was performed among the admittance prisoners. 'Medicina Sacra, seu de Morbis insignioribus qui in Biblis memorantur,' 1748; 'Monita et Praecepta Medicis,' 1751, containing a general summary of his medical experience. All these works, both individually and collect- ively, passed through several editions in this country, as well as in Germany, France, and Italy. (Authentic Memoirs of the Life of Richard Mead, by Matthew Mitty, M.D., svo, London, 1755.)

MEADOWS. (Colloquial.)

MEADOWS are properly low grounds on the banks of rivers, which, being kept moist by their situation, and also occasionally flooded by the rise of the waters, are best adapted for the growth of grass, and are generally mown for hay. The meadows of great towns belonging to a town or city are often called communal or private meadows, and are often by inclosure and statute protected from being used as arable land, and the hay is sold for the support of the poor. The following statute of 1829, which is still in force, is chiefly intended to prevent the waste of meadow land, which is generally improved by this change of cul- tivation. [Grass Land.]

When a natural meadow has been neglected, and the grass is of an inferior quality, and mixed with rank weeds and moss, it requires much care to restore it to its or- iginal state. The best time to do this is in the fall, and the best is to plough it up, clean and manure it during a course of tillage, without taking very exhausting crops from it, and then to lay it down again in a clean and enriched state, by sowing the best sort of grass seeds, or, if there is a large extent of meadow land, to transplant in small tufts of grass from some rich meadow, which will soon increase, and produce a new and improved sward. But where the soil is a very stiff clay, with only a small depth of gravel or sand, it is much better and probably more productive to make a thin meadow the 1st of August, then to till it, and after the old sand, for it will take a long time and much manure to reproduce a proper covering of grass. In this case it is a preferable practice to scythe the meadow, by means of instruments which do not go deep, but only tear up the surface. If it is done early in spring, when the ground is moist, and the whole surface is brought to resemble a fallow field, good grass seeds may be immediately sown. If rich manure, mixed with lime or chalk, is then spread over the land, and the whole well harrowed and rolled, the old grass will be destroyed, and a new and much more pro- ducive growth will be produced in a few months. It is prudent to mow this renovated meadow before the seeds of the grasses are formed, contrary to a common notion that in a thin meadow the seed should be allowed to form, as the number of plants of a good grass is proportionally much greater. It is well to remember that the seed is soon dispersed, and the whole surface of the meadow is soon prepared for a new and improved sward.

It must be observed that it is not indifferent which cattle are turned into the meadow after hay-making. Horses invariably produce coarse weeds by their dung and urine; cows may be permitted in autumn, as long as the surface is dry; but sheep are far more advantageous, and may be kept in the meadows at all times, if they are not too wet for the health of the sheep, and if there is no danger of their having the rot. As soon as the surface becomes soft by the autumn rains, all heavy cattle should be excluded: eyecatchers are therefore generally kept at the side of the meadow, and in the spring, when the grass is greener, and makes a hollow, in which the water remains, killing the finer grasses, and producing rushes and aquatic plants.

The meadow which is to be mown should be shut up early in spring, and those which are soft and wet should have nothing larger than a sheep in them from November till after hay-making time the next year.

MEAN. By the mean of two or more quantities is meant an intermediate which is equidistant from all those quantities. There are more ways than one of finding a mean, but the two principal results of this kind are called the arithmetical and the geometrical means. The names are not properly expressive of the distinction between them, but they are collateral.
adding the quantities together, and dividing by the number of quantities. A geometrical mean is the square root of the product of the quantities. Generally, let there be a number of quantities, \( x_1, x_2, x_3, \ldots, x_n \), and let \( \varphi(x_1, x_2, x_3, \ldots, x_n) \) be a function of them which is symmetrical, that is, which is unchanged when any two of the quantities are interchanged; then if \( y \) be found from the equation

\[
\varphi(y, y, y, \ldots) = \varphi(x_1, x_2, x_3, \ldots, x_n),
\]

\( y \) may be called a species of mean.

The arithmetical mean, or average (which is always to be understood when the word mean is mentioned, unless the contrary be specified), is taken to be the most probable result of a large number of independent and constant quantities, that have not been the same but for errors of observation or experiment. Thus if three measures of the same length give 122, 123, and 124, the mean of which is 122.8, it is presumed that 122.8 is more likely to be the length which was attempted to be measured than any other. We confine ourselves in the present article to pointing out how it may be ascertained what degree of probability belongs to such results.

In assuming the average as the most probable result, it is presupposed that any one measurement is as likely to err one way as the other; that is, as likely to be too small as too great. If nothing but results be known, this presumption is justifiable; but if it be known that there is more danger of error on one side than the other, the most probable result cannot be ascertained until it is found out by how much the average of a very large number of observations would be affected by this tendency. Say it is known that in the long run the average will be increased 3 above the truth by a great tendency to measure too much, that is, too little; then 122.8 - 3, or 122.5, is the most probable result of the preceding three observations.

It is obvious that when observations nearly agree with each other, the average must be near the truth, and the nearer the agreement the more nearly the observations, the more nearly. If the observations do not agree well, the average is still more likely to increase than anything else, but not so likely as before.

We now show how, having a number of observations, to determine the probability that the truth really lies within a given degree of the average. A table must be used, which we here give to a greater extent than we should otherwise do, on account of succeeding articles. Let \( M \) be the average of a number of observations, and let \( M + m \) and \( M - m \) be the limits of which it is required to know what is the chance of the truth being between them. Let the difference between \( M \) and each of the results of observation, and add the squares of these differences. Multiply 100 times the number of observations by \( m \), and add the square root of twice the sum thus found; take the number nearest to the result in the column marked \( A \), and opposite to it, in the column marked \( B \), will be found the number of chances out of 10,000 for the degree of nearness required.

Suppose, for example, that seven observations give 10.03, 10.71, 10.98, 10.26, 10.20, 10.72, 10.81, the average of which is 10.54, differing from the respective observations by +.51, -1.74, -.28, +.24, -1.18, and -2.77, the sum of the squares of which is 72.39, twice which is 144.78, the square root of which (it being required to be reduced to the nearest integer) is 12.03. If the truth lying between 10.54 - .06 and 10.54 + .06, we have then to multiply 700 by .06, which gives 42, and to divide by 1203, which gives 34.9. Opposite to 33 in the column \( A \) is found 2794, so that outside of 10,000, or 1787 to 2794, there is a chance of the result lying between the limits given: that is, nearly to 19 against it. If the limits proposed had been 10.54 + 1.105 and 10.54 - 1.105, multiplied by .1, and divided by 1203 would have given 0.28. Opposite 0.28 in the table is 5979, so that it is 5879 to 4121, or about 59 to 41, in favour of the result lying between 10.64 and 10.44.

In the preceding rule it is supposed that all the observations are equally trustworthy, or that there is no circumstance which would beforehand lead us to suppose that any one is more likely to be true than another. If this be not the case, no rule can be applied except one which depends on the observer's judgment. He must make the different observations reckon as different probable events, according to any o decreases against one, or shows he believes it to be better than the rest. Thus suppose three observations to give 25, 28, and 29, and it is thought there is reason to prefer 29 to the others, and 29 to 25, so that it is supposed that the probability of 29 is nearly as good as a mean of eight observations, 29 of six, and 29 of four. It must then be considered that there have been 8 + 6 + 4, or 18 observations, of which 8 have given 28, 6 have given 29, and 4 have given 26. These numbers, 8, 6, and 4, are to the number of equal weights, 25, 28, 29, and 26, and the alteration in the preceding rule is as follows: In forming the average, multiply each observation by its weight; add the result, and divide by the sum of the weights.

100 times the sum of the weights by \( m \), and divide by the square root of twice the sum just found; take the number nearest to the result in the column marked \( A \), and opposite to it in the column marked \( B \) will be found the number of chances out of 10,000 for the degree of nearness required. Thus if in the preceding instance we multiply 122.8 by 8 + 6 + 4, or 18, we have 2799 to 19 against it. If the limits supposed had been 10.54 + 1.12 and 10.54 - 1.12, multiplied by .1, and divided by 1203 would have given 0.28. Opposite 0.28 in the table is 5979, so that it is 5879 to 4121, or about 59 to 41, in favour of the result lying between 10.64 and 10.44.

A | B | C | D | E | F | G
---|---|---|---|---|---|---|
1 | 113 | 35 | 3593 | 27 | 6947 | 106 | 9861 | 140 | 9683 | 174 | 9681 |
2 | 236 | 37 | 3090 | 107 | 6914 | 107 | 9861 | 141 | 9683 | 177 | 9679 |
3 | 451 | 41 | 4390 | 107 | 6974 | 109 | 9861 | 141 | 9489 | 177 | 9489 |
4 | 676 | 41 | 4390 | 111 | 7256 | 111 | 9861 | 143 | 9683 | 183 | 9681 |
5 | 797 | 41 | 4390 | 111 | 7256 | 111 | 9861 | 143 | 9683 | 183 | 9681 |
6 | 913 | 44 | 4630 | 113 | 7256 | 113 | 9861 | 143 | 9683 | 183 | 9681 |
7 | 1014 | 46 | 4630 | 113 | 7256 | 113 | 9861 | 143 | 9683 | 183 | 9681 |
8 | 1091 | 46 | 4630 | 113 | 7256 | 113 | 9861 | 143 | 9683 | 183 | 9681 |
9 | 1091 | 46 | 4630 | 113 | 7256 | 113 | 9861 | 143 | 9683 | 183 | 9681 |
10 | 1091 | 46 | 4630 | 113 | 7256 | 113 | 9861 | 143 | 9683 | 183 | 9681 |

Look for the numerator in column \( B \), find the number nearest to it, and take out the number corresponding in column \( A \). Multiply this by the square root of twice the sum just found, and divide by 100 times the number of observations, or, if they are not equally good, by 100 times the sum of the weights. The quotient is the answer required. But when, as most frequently happens, an even chance is the given chance, use 4717 instead of the number found in column \( A \).

In the first of the given instances it is required to know within what limits it is 99 to 1 that the truth is contained. Here \( 99 \times 9900 = 9800 \), and looking for 9800 we find 9804 to 182 in column \( A \). Multiply 182 by 1203, which gives 218946, which divided by 700 gives 313, so that it is 99 to 1 that the truth lies between 10.54 + .06 and 10.54 - .06.
In the second instance, required the limits within which it is possible that the truth is contained. Multiply 47-7 by 6-6, and divide by 1800, which gives '175; and it is an even chance that the truth lies between 27-89 + '175 and 27-89 - '175.

The amount of departure from the average within which, on one side or the other, it is an even chance that the truth shall lie, is called the probable error of the observation or average of observations to which it refers. When the probable error of any one observation is given, that of the average is found by dividing it by the number of observations. Thus if there be 100 observations, of each of which it is an even chance that it is within '1 of the truth; then the square root of 100 being 10, and 1+10 being '01, it is an even chance that the average is within '01 of the truth.

For further account of the matters contained in this article, see Probabilities, Theory of Observation; Risk. For description of methods without demonstration, see Larimer’s Cabinet Cyclopaedia. An Essay on Probabilities. For demonstration, see the works of Laplace or Poisson on Probabilities. The article ‘Probabilities’ in the Encyclopaedia Metropolitana, or Mr. Galloway’s article on the same subject (published separately), in the Encyclopaedia Britannica. The table may be found to greater extent in the first of these works cited, and also in the Berlin ‘Astromonisches Jahrbuch’ for 1834.

MEANDRINA, a genus of Lamelliferous corals. (MADREPHORUS.)

Morbilli (Morbili, Rubro) is the popular name of a contagious disease, characterised by an eruption on the skin, and affecting chiefly children.

The etymology of the word measles is uncertain, but its application to the disease we are treating of was probably borrowed from an appearance of red or pink dots resembling a morula, on which the eruption bears resemblance. Measles is ushered in by more or less fever, a running from the nostrils and eyes, with some inflammation of the latter, sneezing, hoarseness, a dry cough, difficulty of respiration, and occasionally slight pain in the head. From seven to nine days after the commencement of these symptoms a rash begins to appear, which first shows itself in distinct, red, and nearly circular spots, having some resemblance to flea-bites: these spots gradually coalesce and form small slightly elevated patches of an irregular figure, but approaching nearest to that of semicircles or crescents. The patches first show themselves on the forehead and face, and gradually extend downwards to the trunk and extremities. At the commencement of these symptoms the throat is swollen, and feverish; the bowels are sometimes somewhat augmented, and during its height the whole face is often swollen and the eyelids thereby closed; on its decline, which begins on the fourth or fifth day, the fever ceases, and from those parts of the body previously covered by eruption the skin begins to detach itself. A discharge, now commonly supervenes, and affords relief to the other symptoms. This however is the period when the danger, which is a consequence rather than a concomitant of measles, commences. The cough, which has continued throughout the active period of the disease, now assumes a more serious character; the expectoration, which hitherto has been simply mucus, indicative of the inflammation being confined to the mucous membrane of the bronchial tubes, becomes bloody, or mixed with pus, showing either that inflammation has attacked the proper substance of the lungs, or that tuberculous deposits have taken place in those organs, constituting pulmonary consumption. If the patient happen to have been less favourably circumstanced, or the least part of the blood of the bank of the Boyne about Slane and Newtown Fortescue. Various other parts of the county are hilly, but not so much as the districts just mentioned. (Maps subjoined to the Railway Commissioners’ Second Report; Population Returns.)

The coast has a tolerably straight outline running south by east from the mouth of the Boyne to the boundary of the county of Dublin near Gormanstown. The shore is low, and strewn with sand, broken by one or two small streams which flow into the sea. The county of Meath is for the most part included in the

We take this from the Parliamentary Returns. The table given with Mr. Larrieu’s Map published by the Grand Jury of the county, a.d. 1817, makes the area 558,570 statute acres; and that inserted in the Map of Ireland published by the Society for the Diffusion of Useful Knowledge, 1840, 42 acres.
great central carboniferous limestone district of Ireland; the whole of the southern part of the county, and considerable portions of the north and west, are occupied by this formation. The limed Louth, into which they enter at Motivejoy, and that they usually are in Ireland, while in England they have, from their ruggedness and elevation, given to their component rocks the distinctive designation of mountain limestone. A part of the Meath limestone-beds belongs to the same geological series; the banks of the numerous branches of impure black argillaceous limestone with black shale containing balls of grey ironstone. From beneath the beds of the calp series, those of the lower limestone crop out. It is probable that from beneath these the lowest series of the limestone formation has been made, but no coal worth working has been found. (Irish Railway Commissioners' Second Report, Appendix; and Geological Map.) Limestone and marl are abundant.

The county belongs almost entirely to the basin of the Boyne; but the coast of the county belongs to that of the Dee; the heights about Slane separating the two. The southern and south-eastern borders are watered by the affluents of the Liffey, or by some smaller streams which flow into the sea between the Liffey and the Boyne.

The Boyne touches the border of the county at its south-western extremity, and after dividing it for a few miles from the county of Kildare, passes within the boundary and flows in a winding channel north-east by Trim to Navan, which separates the counties of Meath and West Meath from the county of Armagh. The Menagh (which skirts the south-western border of the county till its junction with the Boyne at the spot where the latter first touches the border), the Blind, the Blackwater (which divides Meath on the south side from the county of Cavan), and the Boyne before it receives the greater Blackwater. From the junction of the last, the Boyne flows east-north-east by Slane to the border of the county, and thence along the border (south of which from Dublin to Longford are inscribed), and below Drogheda. The length of that part of the Boyne which is in the county of Meath or upon the border is about 56 miles. It is navigable in the natural bed of the stream to above Drogheda (where it is crossed by a bridge), and after, and some in its lower lakes, are on the western border of the county. The Blackwater south of Trim soon quiets the border and flows east-south-east, 18 miles, into the Boyne at Navan. It passes near the town of Kells. It receives a considerable stream, to which the maps give no name, from the border of the county near Meath. There are a few waterfalls from Dublin to Longford, and the making of the Blackwater navigable to Kells would be of the greatest advantage to the county. The Nobeir rises from some bogs and small lakes on the north-eastern parts of the county, and flows in a winding course, first south-east, then north-east until it quits the county to enter that of Louth, where it unites with the Dee. Its length in this county is about 18 miles.

Lakes.—There are several small lakes. Lough Sheelin, which is joined with both Lough Derravaragh and Lough Cavan, is of an oval form, 5 miles long from north-east to south-west, and about 23 miles bread. It contains a small inlet, called Church Island, with the ruins of an old church in it. Lough Bawn, 1 mile long, but very narrow, and some small lakes, are on the western border of the county. The lake of Kilmainham, formed by an expansion of the river Nenbro, is about one mile long and above a quarter of a mile broad. Bogs are numerous, but the aggregate of their extent is small; the largest bog is on the border of the county south-west of Athboy; it is partly in Meath and partly in West Meath. (Railway Commissioners' Report.)

Canals, Railroads, and other Communications.—The Royal Canal enters the county near Kilcoo (Kildare county), and runs for some miles just within the border, and then enters the county of Meath. It is carried by an aqueduct over the Boyne and by another aqueduct over the Boyne, soon after crossing which it enters West Meath. About 14 or 15 miles of this canal are within the county. It opens a communication between Dublin and the Shannon, near the town of Longford, at the other.

A railroad from Dublin to Drogheda, for which an act has been obtained, is to cross the county from south to north along the coast. The lines laid down by the government commissioners for the railroads from Dublin to Enniskillen and Armagh respectively also cross this county. They coincide in the first part of their course, entering the county on the south side near Dunboyne, about 8 miles from Dublin, and running from thence north-west to about 20 miles to Navan. Here two branches separate that to Armagh running north about 17 miles, till it enters the county of Louth; and that to Enniskillen continuing to pursue a north-western direction about 16 miles, till it enters the county of Cavan. Surveys have been laid before the commissioners for the construction of the railroads.

The principal road is that from Dublin to Drogheda, Dundalk, Newry, and Belfast, with a branch to Armagh. From Dublin to Drogheda this road has two branches, one near the coast through Gormanstown, the other more inland. There are very few roads commencing from Dublin to Virginia, Cavan, and Enniskillen, through Dunshaughlin, Navan, and Kells; from Dublin to Granard by Trim and Athboy, with a branch by Old Castle to Killystantra, and from Dublin to Longford, Carrick on Shannon, and Sligo by Constantine. A branch from the Enniskillen line near Kells runs westward into the county of West Meath, joining the Sligo line at Longford. A line collateral to the Armagh line and to the east of it passes near Ratoath and Slane, and another line runs from Navan to Trim.

The principal coach-road is that from Dublin to Drogheda, Dundalk, Newry, and Belfast, with a branch to Armagh. From Dublin to Drogheda this road has two branches, one near the coast through Gormanstown, the other more inland. There are very few roads commencing from Dublin to Virginia, Cavan, and Enniskillen, through Dunshaughlin, Navan, and Kells; from Dublin to Granard by Trim and Athboy, with a branch by Old Castle to Killystantra, and from Dublin to Longford, Carrick on Shannon, and Sligo by Constantine. A branch from the Enniskillen line near Kells runs westward into the county of West Meath, joining the Sligo line at Longford. A line collateral to the Armagh line and to the east of it passes near Ratoath and Slane, and another line runs from Navan to Trim. The county appears to be on the whole tolerably well provided with roads.

Soil: Agriculture; Condition of the People.—This county has very few mountain-wastes, and the proportion of bog is small. The land is for the most part covered with pasturage, and the pasture-land, with the exception of those of the marquis of Conyngham and of the Lambert family, near Slane, and that of the marquis of Headfort, near Kells; and there are many gentlemen's houses scattered through other parts of the county. The soil is for the most part a loam of the richest character, and in many places of such depth that the turning up of a fresh portion of the soil by ploughing deeper than usual is considered as an efficient substitute for manuring. In some baronies an ingredient of butter or tar, or both, is chiefly used; in others 'marl-sand,' a valuable mixture of calcareous matter and alluvial deposit, is used; and also lime. The farms vary in size from 2 acres to 3000 acres, but are on the average larger than in most counties of Ireland; the average area of holdings is about 130 acres; and tillage farms 20 to 30. The mode of farming, though very slovenly and defective, bears some resemblance to that of England. Summer falls,
There are some every year, and is followed by the sheaf of flax, which is baled in the first week of August, and merely stored in the barn. The practice of growing potatoes as a preparation for wheat, instead of leaving the land fallow, is increasing. Flax is seldom grown in large quantities for sale, but small patches for domestic use are general. There are many barrows and sales of potatoes held in the town and country.

Pigs are of a good breed, and are nearly or quite as common as cows. The rotation of crops is, usually, fallow or potatoes with manure; second year, wheat; third year, oats; and, frequently, fourth year, oats. Larger farmers sow clover the fourth year, which remains one year or more, and is followed by the sheaf of flax, which is baled in the first week of August. The practice of growing potatoes as a preparation for wheat, instead of leaving the land fallow, is increasing. Flax is seldom grown in large quantities for sale, but small patches for domestic use are general. There are many barrows and sales of potatoes held in the town and country.

Wood is not abundant, ground being too valuable to be occupied by plantations, except about noblemen's and gentlemen's demesnes for the purpose of ornament. Plantations for this purpose are however numerous, and timber is raised for exportation.

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with the day clothes of the family, form the night covering.

The most miserable habitations are in the suburbs of towns
and around bogs. Cases of bastardy are very rare, and incur
general opprobrium; but this opprobrium falls too heavily
and exclusively on the weaker party. Drunkenness is rare
among the labourers, both men, and more frequently among
the small farmers and tradesmen. (Report of the Commis-
sioners for inquiring into the Condition of the Irish Poor.)

There is no return of the quantity of corn sold in the
principal markets for the ten years last before 1836.

Dunboyne—Central
8,631

Lune—Central
12,121

Morgallion—N. and Central
4,857

Ratoath—8,685

Skreen or Skryne—Central
8,683

Slane, Lower—N.
9,647

Slane, Upper—N. E.
7,265

Total
176,826

The towns are—the assize, market, and post town of
Trim, the market and post towns of Athboy, Duleek, Kells,
Navan, Oldcastle, and Slane; the post towns of Ashbourne,
Clonard, Clonee, Crossakeel, Dunshaughlin, Enfield, and
Nobber; and the ex-parliamentary borough of Ratoath.

Trim is partly in the barony of Upper Navan, but chiefly
in that of Lower Moyfenragh, 32 English miles from
Dublin. It is a very ancient town: on the conquest of this
part of Ireland by the English, it was conformer, with the
rest of the county, on Hugh de Lacy, who made it a free
borough. His son Walter gave it a charter of incorpora-
tion: and as the head of the lordship of the De Lacy's, it ac-
quired importance, and several of the early Irish parliaments
were hold here. In the civil war of 1642, the Catholics
who held it were expelled, and the Parliamentarians gar-
sioned it under Sir Charles Coote; but he being killed, the
place appears to have been lost, for in 1649 it was held by a
royalist garrison, which quitted it on the approach of
Cromwell, and was afterwards extinguished by the massacre
of the garrison of Drogheda.

The town is pleasantly situated on the river Boyne:
many of the houses are neatly built, and the environs are
pleasant. Trim is an old borough, and an ancient castle of venerable appearance; the keep, a massy
pile strengthened by four round towers at the corners, is yet
standing, as well as several of the outworks. The church is
modern, except the tower, which is of great antiquity.

There are some remains of an ancient abbey; and a hand-
some Corinthian column erected in honour of the Duke of
Wellington.

The population of the town in 1831 was 3282; 400 of them
Protestants, the rest Catholics; that of the outskirts, 344; in
which place has been declining for years, and presents on the whole
a very impoverished appearance. It has no extensive trade
or manufacture; the principal traffic is with Dublin and
Navan. The market, which is on Saturday, has increased;
the weekly fairs are held here, and the quarter-sessions for the division twice in the year. The
county court-house and gaol are here. The town returned
members to the Irish parliament, but was disfranchised at the
Union, and has since lost one of the two seats which
are held in the county. The town is in the diocese of
Drogheda, and is a suffragan to the see of Armagh.

Athboy is in the barony of Lune, 7 miles north-west of
Trim, and 36 from Dublin. It is an antient borough: the
municipality received a charter from Henry IV.; and El-
izabeth conferred on the place the elective franchise, which it
lost at the Union. The corporation then fell into disuse, and
is now extinct. The town has a population of 1599; the
outparts of the parish (which is extensive) of 3328: to-
gether, 5317.

There are four fairs in the year. The town is the chief
station of the constabulary force for the district: petty
sessions are held weekly. There are extensive flour-mills,
but the town is poor, and does not seem to be improving.
The living is a vicarage attached to the union of Athboy;
the parish is also the head of a Roman Catholic union.
There are a dispensary, almshouses for twelve poor widows,
and several schools.

Duleek is partly in the barony of Upper Duleek, but chiefly
in that of Lower Duleek, on the Nanny or Nanny-
water. There were antiently three religious houses, of two
of which the ruins yet remain; and the town was the seat
of a bishopric, ultimately merged in that of Meath. There
were, in 1831, 233 houses and 1217 inhabitants in the town;
and 733 houses and 416 inhabitants in the whole parish.
There was formerly an extensive manufacture of flax,
but it is now much diminished. There is a market on
Thursday, and there are four yearly fairs. Races are held
in the neighbourhood. Petty sessions are held here, and the
quarter-sessions of the two divisions twice in the year. The
population of the town, in 1841, was 3618; in 1831 it had increased to 4326: the population
of the whole parish was 6839. The market, which is held on
Saturday, has so increased as to have rendered an enlarge-
ment of the market-place necessary. The quarter-sessions

<table>
<thead>
<tr>
<th>Date</th>
<th>How ascertained</th>
<th>Houses</th>
<th>Families</th>
<th>Families chiefly employed in agriculture</th>
<th>Families chiefly employed in manufactures, &amp;c.</th>
<th>Families not included in preceding classes</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>1792</td>
<td>Estimated by Dr. Beaufort</td>
<td>22,468</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>112,4</td>
<td>9,0</td>
<td>119,4</td>
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<tr>
<td>1813</td>
<td>Under Act of 1812</td>
<td>25,921</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>142,5</td>
<td>11,3</td>
<td>153,8</td>
</tr>
<tr>
<td>1821</td>
<td>Under Act 55 Geo. III. c. 120</td>
<td>37,942</td>
<td>30,125</td>
<td></td>
<td></td>
<td></td>
<td>78,779</td>
<td>7,405</td>
<td>86,184</td>
</tr>
<tr>
<td>1831</td>
<td>Under Act 1 Will. IV. c. 19</td>
<td>29,796</td>
<td>31,632</td>
<td>22,396</td>
<td>4,575</td>
<td>6,461</td>
<td>88,993</td>
<td>87,889</td>
<td>176,882</td>
</tr>
</tbody>
</table>
for the division are held twice in the year at Kelly, twice at Navan. There is a bridewell and a fever hospital. It is the station of a chief constable and fifteen others of the county constabulary police.

The town consists of a southeast, two provosts, and twenty-four burgesses; with a recorder and other officers. The sovereign, the provosts, and a few of the burgesses constitute the common-council or managing body: they have no juries. Kelly, the present rector, remembers to the Irish Parliament from the time of Elizabeth to the Union. The parish is at the head of a parochial union, both in the Established Church and among the Catholics. The parish church is an ancient building; near it is an ancient round tower. The churchyard crosses, one in the church-yard and one in the street near the market-place; also an ancient stone roofed chapel or chapel.

Navan is in the barony of Lower Navan, 28 miles from Dublin, and at the junction of the Blackwater with the Boyne. The principal streets are kept in repair by the county. There are two bridges, one over the Blackwater and the other over the Boyne. There are a court-house, containing rooms for holding the sessions and a solace, a cattle-market, a church-treav, a county infirmary, and a fever hospital. The parish church is a neat modern building; the Roman Catholic chapel is an extensive building of Grecian architecture. The population of Navan, in 1831, was 2,256; and the whole parish, 3,292. The town is in the centre of a great corn district, and has an excellent corn-market on Wednesday; there is a market also on Saturday; there are four yearly fairs. There are several corn-mills, a linen yarn-mill, and a woolen manufactory near the town. Navan, and part of the county of Meath are parished. The corporation consists of a portreeve and twelve burgesses, with a town- clerk and other officers. The portreeve acts as a justice of the peace for the borough conjointly with the county magistrates. Navan returned members to the Irish parliament from the time of Elizabeth to the Union. Petty sessions are held here every fortnight, and the quarter-sessions for the division twice in the year. The parish is at the head of a union, both in the Established and Catholic churches. There are several schools, one of them a Catholic seminary for youths designed for the priesthood or either of the learned professions.

Oldcastle is in the barony of Demerfo or Half Powre, 58 miles from Dublin. The town comprehends 237 houses, and a population of 1,531; the whole parish has 778 houses, and a population of 4,718. There are a church, a plain modern building; a large but plain Catholic chapel; and a Primitive Methodist chapel. There is a large school-house for a Lancasterian school, capable of containing 1,000 children, and which contains an endowment of 800l. a year. Petty sessions are held here every fortnight; and the market, which is on Monday, is one of the largest yarn-markets in the county. There are extensive corn-mills near the town. There are several valuable yearly rentals, and nine desirable limestone quarries and large flour-mills in the parish. The living is a rectory not united; the parish is included in a Catholic union.

Slane is in the barony of Upper Slane, 28 miles from Dublin. In the early ages of Christianity it was the seat of a bishopric. The town is pleasantly situated on the north bank of the Boyne, over which there is a bridge. The surrounding country is rich; and the houses are chiefly modern and of neat appearance. Slane Castle, the seat of the marquess, is one of the finest houses in the kingdom, and is situated on a hill 500 yards from the town. The population of the town, in 1831, was 896; of the whole parish, 2,516. The parish is the head of a Catholic union: the living in the Established Church is a rectory, in the gift of the crown. There are several schools. The largest of the mills in the neighbourhood is the Lough, and is one of the stations of the county constabulary force.

Ashbourne is a small place in the barony of Ratoath, 13 or 14 miles from Dublin on the road to Loddonderry. It is a small place containing 66 houses and a population of 473. It has an ancient church, erected by the monks of Donegal, who are supposed to have built an ancient church here. It had an abbey which became the seat of a bishop, whose diocese was augmented, previous to a.d. 1156, by the addition of the bishopric of Trim, Ardbraccan, Dunshaughlin, and Slane. This diocese was afterwards designated the diocese of Meath, and the cathedral continued to be at Clonard till a.d. 1266. The abbey had previously been successively possessed by the Dukes of the Normans; and about a.d. 1175 Hugh de Lacy erected an Augustinian monastery, probably on its ruins. Clonard was the scene of conflict in the war of 1641 and the early part of the rebellion of 1642. It is a station of the county constabulary, though a mere village or hamlet of 10 houses and 66 inhabitants. There is a large Catholic chapel in the village, the parish church is half a mile distant.

Clonoe is in the parish and barony of Dunboyne, just within the county, about 2 miles from Dublin, on the road to Navan. Clonoe is a station for the county constabulary force. The population in 1831 was 217.

Cromacool is about 46 miles from Dublin. It is in the parish of Kilkiskey, or Kilakee, and in the barony of Upper Kells. Petty sessions are held here once a fortnight and it is a station of the county constabulary force: there are three yearly fairs. The parish church is in the village, and there is a dispensary. The population of the village in 1831 was 290; of the whole parish, 4,537.

Dunshaughlin, in the barony of Ratoath, 17 miles from Dublin, was formerly a corporate town. It is now a post town or village of 157 houses and 913 inhabitants for the county of Meath, and 1,722 for the whole parish. It has a parish church of modern erection, and a Catholic chapel. The petty sessions are held every fortnight, and the quarter-sessions for the division, twice in the year: it is a station for the county constabulary force. It has a parochial station: there is a dispensary in the town, and there are two public schools.

Enfield is in the parish of Rathoore and in the barony of Lower Meathfinagh, 26 miles from Dublin, near the Royal Canal. It is a station of the county constabulary. It had in 1831, 45 houses and 392 inhabitants. It is in the barony of Meagh. It is a post town or village of 586 houses and 2,817 inhabitants. Nobber is in the barony of Morgallion, 40 miles from Dublin. It was antiently a fortified town, and was regarded as of importance. It now contains 58 houses and 371 inhabitants; the whole parish has 671 houses and 3,955 inhabitants. The church is a plain neat building; the Catholic chapel is also a neat building of modern erection; and there is a school-house. Near Nobber is a large Danish camp, and in the churchyard are the remains of a structure, supposed to have belonged to the Knights of St. John of Jerusalem. There is a well attended cattle and pig fair. Nobber is a constabulary police station. Carolan, the celebrated Irish harper, was born here.

Ratoath is in the barony of Ratoath, 15 miles from Dublin. It is a station of the county constabulary, as previous to the Union, by which it was disfranchised. There were in 1831, 96 houses and 532 inhabitants in the town, or 283 houses and 1,779 inhabitants in the whole parish. There are three yearly fairs; a corn-market; a tripling manufacture of sack- and of linen is carried on. It is one of the stations of the county constabulary force.

Ecclesiastical and Legal Divisions. — The county is for the most part included in the diocese of Meath; but small portions are comprehended in those of Armagh and Kilmore; all these dioceses are in the ecclesiastical province of Armagh. The county is included in the home circuit. The assizes are held at Trim. The Easter and Michaelmas sessions for the two divisions of the county are held at 3r. 15l. and 3r. 19l. for just and appeals from the county. Summer sessions, at Trim and Navan. Before the Union Meath sent 14 members to the Irish parliament, two for the county, and two each for Trim, Kells, Navan, Athboy, Duleek, and Ratoath; at present it sends only two county representatives, and two for Trim. The policy force of the county on 1st January, 1836, was 1, magistracy, 7 chief constables, including subinspectors (of whom 5 were of the first and 2 of the second class), 5 police constables, and 18 police; and the cost of maintaining the constabulary for 1835 was 11,952l. 13s. 4d., of which amount 6197l. 3s. 4d. was charged against the county.

The county-court at Trim has been much modified, as respects the meted side of the session, but is otherwise arranged, in order to be done to bring the discipline of the prison to what it should be. It is clean; the prisoners generally are classified, and considerable advance has been made in the system.
of instruction in trades. There are two schools in the pri-
on, and a treadmill. The bridewells at Navan and Kells are
tolerably extensive prisons, containing sixteen cells,
two-day-rooms, and two yards; they have every means of
classification provided by the Prisons Act. (Appendix to
Fourteenth and Fifteenth Reports of Inspectors-General,
1836.) The number of persons committed for criminal
offences in 1836 was—for offences against the person 85 (44
committed in the county of Meath), for larceny or theft 50
(28 convicted, 9 acquitted or discharged 19); for offences
against property without violence 107 (convicted 54, acquitted
or discharged 53); for malicious offences against property,
such as arson, killing or maiming livestock, 27 (11 convicted,
8 acquitted or discharged); for forgery and offences against
the currency 4 (2 convicted, 2 acquitted or discharged); for
other offences 105 (45 convicted, 60 acquitted or discharged):
making a total of 333 persons committed, of whom 135
were convicted, and 178 were discharged. There was no
person executed. Of the persons committed, 277
were males (1 of them under 16 years) and 56 females (1
under 16): 71 could read and write, 54 could read only,
and 116 were entirely ignorant; of 98 the degree of instruc-
tion was unknown.

The lunatic asylum for the counties of Meath, Leitrim,
Dublin, and Wicklow, is the Richmond Lunatic Asylum at
Dublin. Of 384 patients in that institution on 1st January,
1837, 56 belonged to this county. The county infirmary is
at Navan, in the town of Meath, and contains 150 beds
and Navan, and nineteen dispensaries at different places
in the county, supported in nearly equal proportions by private
subscriptions and grand jury presentments.

Meath has been confused with the two counties that have
been included by Prolemy in the territory of the Belarvs
(Blanii), or 6Barvs (Ebliani), a nation whose sway extended over
the neighbouring counties of Dublin and Wicklow, and
whose name may be traced in the first syllable of the pro-
vinces of Leinster and Munster. At the division of the
states of Ireland, the territory which was called Meath
was divided, and comprehended, it is likely, not only the present counties
of East Meath and West Meath, but also the whole or part of
some of Longford, Cavan, and King's County. TEAMOR,
which was acknowledged as the ancient capital, is 15 miles from
Navan and Navan, was the residence of the sovereign of Ireland
and the seat of the supreme government, and the place where
St. Patrick made his first efforts for the conversion of the
Irish to Christianity. It is probable that the kingdom of
Meath was erected in this province as the immediate
sovereign of the Irish monarchs; or if not then first erected into a kingdom, was placed under
the immediate government of the Irish monarchs, while the rest
of the island owed them only feudal obedience. At a sub-
sequent period, the county was divided into Meath, or
Thomond, the residence of the monarchy, which was so far weakened by the separation
as to become little more than a nominal supremacy; the
kings of Meath ranked as subordinate princes, but they con-
stituted one of the two lines of the great family of the
Hy-Neilas, by which the supreme government was alienated
and possessed. TEAMOR ceased to be the seat of national
power.

In the invasions of the Northmen, or Danes, the kingdom
of Meath suffered severely. Tyrges, a Danish leader, in
the early part of the ninth century, established himself at
Lochg River (Roe?), and after cruelly ravaging the kingdoms
of Connaught and Meath, was seized and put to death, proba-
ably at Lough Uar, near Mullingar in the present county of
Westmeath. The town of Edenderry, which fell to the
Northmen, is now called Edenderry. It afterwards acquired the supreme power. The Northmen how-
ever soon renewed their attacks, and civil dissensions diverted
the Irish from resisting the common foe. For several cen-
turies Meath was exposed to their ravages, or those of other
Irish princes with whom the kings of Meath were at
war.

Traces of this period of confusion exist in the numerous
ramps and earthworks that overspread the district; and
the frequent destruction of monasteries and towns recorded
in the annals of the religious houses is another attestation
of the prevalent ruin. The last king of Ireland of the
Hy-Neill family was Melaghlin II., who, though reduced to
obedience the supreme authority for a time in favour of
Brian Boru, king of Munster, resumed it upon the death
of his brother, Melaghlin, in 1014; and was killed in battle against the Normans at Clontarf near Dublin, A.D. 1014, and reigned till his own
death, A.D. 1022, about 150 years before the invasion of
Ireland by Henry II.

Before the invasion of the English, Desmond, or Desmond
MacMurched, king of Leinster, had reduced O'Melaghlin,
or Meaghlin, king of Meath, and other princes, into a state
of subject; but having roused indignation by the abduc-
tion of the daughter of Melaghlin, who had married, O'Rourke,
or O'Rourke, king of Breffine, or Brehy (now the county
of Offaly), he was expelled by Melaghlin and others, aided
by his own subjects, and compelled to flee to England, where
he engaged the Anglo-Normans in the conquest of his
native island. Richard, earl of Striguil or Chepstow,
commonly called Strongbow, the leader of these auxiliaries,
(A.D. 1172), was invested by Henry II., as a county palatine (or feudal lizard), the
holder of which had several regal rights, on Hugh de Lacy,
who was appointed governor of the English pale or district.
Hugh de Lacy built a strong fortress at Trim, which was
begun, A.D. 1173, in an attempt which the Irish made, under
their king Roderick, to reconquer the country. The Irish
were however repelled, and the ruined castle of Trim was
restored. De Lacy parcell out his territories among
his followers, whom he created barons, whence is derived
the subdivision of Ireland into baronies. De Lacy
meath however appears to have passed again into the
power of the natives; for in 1178 De Lacy, who had been
reapointed governor of Ireland, and held that office for
a short time, restored the English power there. (Gordon's
Hist. of Ireland, t. ii. p. 300.) In 1179, Henry II., his
father Henry II. sent over as governor, Meath was
preserved to the English by the valour of William Petit,
who was slain at his death, near Limerick. In 1180,
the king invaded Ireland, and Henry II. restored
the lost counties, and overthrew the Irish power. (Dur. and Leam., p. 108.)
About the same time Hugh de Lacy was assassinated,
by some of his soldiers employed on a castle he was then erecting at Durrugh,
in what is now King's County. His son, Hugh de Lacy
the Second, who appears to have succeeded him in his
power, was counterfeited by the Irish at the county of Meath in 1187, and afterwards was appointed governor of
Ireland, in which office however he was soon superseded,
agreeable to the policy, at least the practice, of that
day, which seldom allowed a governor to retain office any
length of time. De Lacy, in his character of earl of Meath, was
engaged in the civil commotions of 1189 and 1190, and
in the north of Ireland, in which he visited the
Irish princes for the sovereignty of Connaught; and having
been reappointed by King John lord-justice or governor of
Ireland, he was defeated by John De Courcy, the Anglo-
Norman earl of Ulster, whom he was commissioned to
reconquer Ireland. He was captured by De Courcy in
his return from the expedition, and while De Courcy
was getting De Courcy into his hands by treachery and
sending him over to England. He afterwards received the
eardom of Ulster as his reward.

The ambition and power of Hugh de Lacy, now earl of
Ulster, and his brother Walter, who appears to have suc-
cceeded him in the earldom of Meath, having excited
the jealousy of John, that king visited Ireland in person (A.D.
1210), and spent some months in reducing the fortresses in
Meath and Ulster, and committing acts of oppression on
his return. The king's army was composed of
Irishmen, who, in the heat of battle, turned against the
Irish, and submitted to the sovereignty of France, and did not obtain restoration to their estates and
honours without the payment of a heavy fine. Meath
seems at this time to have lost its privilege as a palatine
county, and to have been made subject to the jurisdiction
of the king's officers. The De Lacys acted a conspicuous part in the
feuds of the Anglo-Norman lords of the Pale,
and Meath suffered from these intestine commotions.
Upon the decease of Earl Walter, Meath came to his two
daughters, who divided his inheritance between them. West Meath,
which fell to the eldest, was mortgaged to John de Verdon, appears to have been so neglected, and fell into
such a state of anarchy, that it did not obey the English
laws for about a hundred years. (Baron Finglas's Brevetat,
temp. Henry VIII.) East Meath, the portion to Sir Geo. Gevvenne
Gevvenne, was wrested from its owners, either by native chieftains or
Anglo-Norman rivals. The English dominion, never fully established, appears rather to have decayed during the reign of the Lancastrian princes, and the civil war of the
Wars. The native Irish renewed their inquisitions; and in
A.D. 1329, the English under Lord Thomas Butler sustained
a severe defeat from them near Mullingar in West Meath.
Richard, duke of York, lord-deputy in the reign of Henry
VI., erected castles along the border of Meath and other
counties in order to repress them. The Irish chieftains

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appears to have levied a tribute upon the English settlers, in consideration of leaving them in quiet, similar to the black mail levied by the Scotch Highland chieftains upon the neighbouring Lowland lairds and tenantry. The county of Meath paid at one time a yearly pension to the O'Connors of 60l.

In the reign of Henry VIII., when the power of the English began to revive, Meath was invaded by an Irish chieftain, Conn O'Rourke (N. 1520); but he quickly withdrew on the approach of the Earl of Surrey, lord-deputy. In a rising in favour of the Papacy, which took place at the Reformation, the Irish broke into Meath, destroyed Navan, and, after mustering their forces at Tara Hill, entered Meath, and burned and pillaged the country. A very large force marched into Meath, and entered on the 12th of March (a.d. 1540) the nattes assembled in West Meath, with a view to break into the English pale; but dispersed on learning that preparations had been made to resist them. Just at the close of the reign of Henry VIII., the ancient county of Meath was divided; and West Meath, including the present counties of West Meath and Longford, and part of King's County, was erected into a separate county. Cavan, which was partly formed out of Meath, was erected into a separate county, and named after Julian, lord-deputy in the reign of Elizabeth. In the great rebellion of 1641, Meath was again the scene of hostilities. Trim was entered by the English troops, who designed to make it a military post; and an attempt of the Irish to surprise the garrison was defeated by a bold and successful sally (a.d. 1642). Sir Charles Coote, one of the best officers of the English, and commander of the garrison, fell in the action. The negotiations for peace between the English and the insurgents were carried on at Trim. In 1647 Trim was besieged by the insurgents under their general Preston, who, having learned that Col. Jones, the parliamentary governor of Dublin, was on his march to relieve the place, set out in order to surprise the capital, but was met on the road and entirely defeated. Trim served as a place of retreat to some of the insurgents after their defeat at Lough Ree, in 1649: but after the storming of Drogheda, and the massacre of the garrison by Cromwell in the same year, Trim was surrendered by the Royalists without resistance.

In the war of the English revolution the battle of the Boyne was fought (a.d. 1690) close upon the border of this county, between Drogheda and Slane. The two armies subsequently crossed the county from north to south, that of James in retreat, the other following in pursuit. In the rebellion of 1798 some outrages were committed at Dunboyne by a party of insurgents, who were very shortly defeated at Ratoath; but the victors having separated, the vanquished party rallied and cut off part of them at Gneeve Bridge. Subsequently other outrages were committed at Dunshaughlin, and immediately a considerable part of the population of the county rose in rebellion: a body of men, 4000 according to some accounts, took post on Tara Hill, where they were defeated and cut to pieces by the troops and cavalry of the government. Part of the fugitives took refuge in the bogs, from which they continued for three weeks to make excursions for plunder and devastation.

There are several remains of antiquity in the county. At Tara, or Taragh, once the seat of the Irish monarchs, are considerable earthworks. Two splendid tombs, or cairns of pure gold, were dug up here in 1813. There are considerable ruins of the castles of Seaclogstown, Dunmore, Athlumley, and Ashig. Slane Castle and one or two others have a group of round-towers at Kells and at Donoughmore near Navan. There are numerous ruins of ancient monastic edifices: those of the monastery at Dukeek, supposed to be the most ancient monastic edifice built of stone and mortar in Ireland, present some remarkable traces of rude architecture. The front of the ancient cathedral at Clonard yet exists, and there are several stone crosses. The ruins of Beech Abbey are extensive and picturesque.

**MEEA**

**MEATH, WEST, or as it is sometimes written in one word, WESTMEATH, is an inland county of the province of Leinster in Ireland, bounded on the north by the county of Longford, on the north west by the county of Roscommon, which is connected by Lough Sheelin or Shillin; on the north-east, east, and south-east by the county of Meath; on the south by King's County; on the west by the county of Roscommon in Connaught, from which it is separated by Lough Ree and the river Shannon; and on the north-west by the county of Longford. The greatest length is, from east-north-east to west-south-west, from the summit of Meath to the confluence of the Shannon with the opposite Athlone, 45 miles; the greatest breadth, at right angles to the length, is from the neighbourhood of Kinnegad to that of Rathowen, both on the mail-road from Dublin to Sligo. 25 miles. The area is 323 English statute acres, or 578 square miles. The population in 1831 was 136,872, giving nearly 237 inhabitants to a square mile. In area it can scarcely be compared with any English county; it is larger than Monmouthshire, and less than half the size of Hertfordshire; yet it is far more thinly inhabited than either Hertfordshire, but in density rather exceeds it.

**Surface, Geological Character, and Hydrography.** The county is for the most part a gently undulating surface, not rising in any part to a very great height. Knock Brough, or Bone, on the border of Lough Derg, is about 880 feet high; Benbrack, or Ben of Powre, near the village of Powre, not far from Lough Lane or Lene, is 760 feet high. These, with the other principal elevations, are in the northern part of the county. The whole of the central and central limestone district of Ireland. There are two small districts, one round Meath-a-Grenoge, and the other in the same neighbourhood, but rather more to the south-west, which are occupied by the yellow sandstone, a formation consisting of extremely pure sand and quartz, which passes into sandstone. These beds are considered to belong to the same period as the carboniferous limestone, of which series of formations they constitute the lowest members.

The western side of the county belongs immediately to the basin of the river Shannon, which separates it from the county of Roscommon. Lough Ree, the largest of the series of lakes into which that river expands, is also on the western border. This noble sheet of water is 15 miles long from north to south, and of a varying breadth, the shorter branches carrying more of the water than the larger; it is exceedingly broken and irregular, and its surface studded with a number of small islands finely wooded. Those adjacent to Westmeath are, Innismore, or Incheenagh, containing 104 acres, on the site of a monastery, with the ruins of an abbey; Innisturk, or Incheenk, 24 acres; and Innisbofin, or Inchebofin, 27 acres, formerly the site of an abbey; besides a number of smaller islands. An inlet at the southern extremity of Lough Ree, connected with it by a straight and narrow road, is a fine sheet of water; a small lake, almost entirely enclosed within the county. This subordinate lake, which is about two miles long from east to west, and in one part above a mile and a half wide, contains a large island called Frar's Island, well wooded at its western extremity. A channel, which flows into the Shannon or into Lough Ree are all small. Two of the principal rise about 3 miles west of Moate-a-Grenoge; one of them flows in a circuitous channel north-west into the Shannon, or into Lough Ree, the other flows west of the Shannon near Long Island, below Athlone. Another stream, which rises three miles north of Moate, and several other streams in the north-west, flow into the Inny, which joins Lough Ree on the border of the county of Longford.

There are several small lakes on this side of the county; some of these communicate by small streams with Lough Ree; others have no visible outlet. Bogs also are numerous, though none of them are of any great extent.

The central part of the county is drained by streams that empty into Lough Ree and into the Shannon, or into Lough Sheelin, connected by small streams with each other, and ultimately with the river Shannon. The northernmost of these is Lough Sheelin, or Shillin, on the north border of the county, from which lough a small stream communicates with Lough Len. The lakes of Longford into which Len is Keinael the connecting stream flows southward, first along the border, separating West Meath from Longford, and then through the county into Lough Deveragh. This fine sheet of water is 3 or 4 miles long, and 10 miles broad, and has a breadth varying from 24 or 3 miles near the north-west end, to little more than a quarter of a mile near the south-east extremity. The banks are hilly, and some of the loftiest elevations in the county are in the surrounding heights of Knock Brough, Aghalough, and some parts of the shore. The district north of the Lough, extending as far as Lough Keinal and Lough Shillin, is almost entirely bog, especially the tract through which the
connecting stream flows. Lough Deveragh receives some small streams; and others, including the Glore, which is the outlet of a small lake (the Lough Garah), north-east of Lough Deveragh, fall into the connecting stream.

From the north-western extremity of Lough Deveragh another stream flows south-west into Lough Iron, a shallow lake of about 3 miles long from north-west to south-east, and about 6 miles broad. The banks range gently from the lake, and are fertile and well watered. On a small island in the lake rests a chapel with a burial-ground, once much resorted to by pilgrims. A supply of water is drawn from Lough Hoyle for the Royal Canal. From Lough Hoyle a small stream flows in a winding channel southward past Mullingar into Lough Ennell, 15 or 4 miles long from north-west to south-east, and about 2 miles broad at the widest point. This lake, sometimes called Belvidere, is studded with small islands. A number of streams flow into this lough.

A small brook forms the communication between Lough Iron and Lough Owel, or Hoyle, 24 miles long from north-west to south-east, and about 4 miles broad. The banks range gently from the lake, and are fertile and well watered. On a small island in the lake rests a chapel with a burial-ground, once much resorted to by pilgrims. A supply of water is drawn from Lough Hoyle for the Royal Canal. From Lough Hoyle a small stream flows in a winding channel southward past Mullingar into Lough Ennell, 15 or 4 miles long from north-west to south-east, and about 2 miles broad at the widest point. This lake, sometimes called Belvidere, is studded with small islands. A number of streams flow into this lough.

The eastern side of the county which we have described is included in the basin of the Shannon, though for convenience the central lake-district has been described separately. The eastern side of the county belongs to the basin of the Boyne. A number of small streams rise on that side of the county and flow east and north-east into the river: the most noticeable of these is the Deal, one branch of which rises near Mullingar, and another is the outlet of a small system of lakes near the north-east border of the county. The lakes of this system are Lough Doun, the White Lake, and some very small ones on the borders; and Loughs Fionn, Looney, and Lough-a-Deal within the border: Lough Lene, the largest of the group, is about 24 miles long from west-north-west to east-south-east, and nearly a mile broad. Its waters are peculiarly clear, and it contains several islets.

The eastern and northern sides of the county abound with bogs, and some of them are of very considerable extent. The lakes of West Meath abound in pike and trout: the latter are very fine, and form an important article of food.

Agriculture.—The landed estates in the county are not very large, but there are a number of gentlemen of moderate fortune. In the eastern parts the soil is a heavy loam from 7 to 12 inches deep; the northern parts, which are hilly and adapted for sheep-walks, are chiefly devoted to grazing black cattle. In the western parts the soil is generally light; there is a great deal of bog. The farms do not come much in hereditaments, but the smaller holdings are as small as 15, 10, 7, or even 3 acres. The resident gentry usually farm a considerable portion of their own estates. The average rent of arable land is from 16 to 14. 10s.; land of good quality will sometimes let for 20s., and on the large tracts for many acres. The system of 'son acres,' or lands let to the cottiers for the purpose of growing a single crop of potatoes, is prevalent in almost all parts of the county. (Appendix to the Report of Commissioners for Inquiring into the State of the Irish Poor.)

The chief crops raised by the farmer are oats and potatoes; a very little wheat, some barley, flax, rape, and sugar are grown. Fences, except in the neighbourhood of demesnes, are generally neglected; in some parts they consist simply of earthworks, without banks upon them. Dairy farming is practised to some extent in this county, but not to such an extent as the nature of the soil would warrant. A considerable quantity of good butter is made, which is sent to Dublin by an English ferry. The long-horned cattle are much valued; some of the best specimens are grazed in this county, and all the stock participate in the blood. Sheep are not a prominent breed, but there are some excellent ones of the long-wooled breed. Pigs, as usual, are generally kept. The breed of horses is superior; many are brought from Connacht and reared for sale in Dublin. Wood is not plentiful; there are some small copses and underwoods. The remains of old rail roads are in bad condition; and some thriving young plantations. The following table shows the average of produce in the years 1826 and 1836:

<table>
<thead>
<tr>
<th>Market</th>
<th>Barrels of Wheat</th>
<th>Barrels of Oats</th>
<th>Barrels of Barley</th>
</tr>
</thead>
<tbody>
<tr>
<td>1826</td>
<td>11,020</td>
<td>19,000</td>
<td>3,300</td>
</tr>
<tr>
<td>1835</td>
<td>11,064</td>
<td>19,064</td>
<td>3,344</td>
</tr>
</tbody>
</table>

No return was received from the markets of Castle Pollard and Kilbeggan. No wheat appears to have been sold at Moate either in the years 1826 and 1835 or in the interval between them. Collinstown is not noticed. The name Coolnagee in the tables is, we suspect, an error. We know not with what place to identify it.

The manufactures of the county are not important; they consist chiefly of the most necessary articles. The returns of 1831 give 285 adult males as engaged in manufacture, 92 in that of linen (chiefly coarse), 22 in that of cotton, 20 in that of frizes and other woollens, chiefly coarse, and 2 in the silk manufacture. The remainder were not specified. To these must be added 820 weavers, returned among the retail tradesmen and handicraftmen; but what fabric they produced is not stated.

Communications.—The Shannon is navigable for steamboats conveying passengers and passengers, or acting as steamerugs to other vessels, throughout that part which borders on this county. The Royal Canal, which connects Dublin and the east coast with the upper part of the Shannon at Tarmoor, crosses this county from east to north-west, passing near Killunan and Mullingar. A branch from the Grand Canal between Philipstown and Tallamore in King's County, to Kilbeggan, is partly in this county.

The principal roads are those from Dublin to Longford and Athlone respectively. The Longford road enters this county from the east-coast of Connaught, generally north-west by Mullingar and Rathoath in the county of Longford. A branch from this at Mullingar takes a rather more westerly direction to Ballincarthy to Ballymahon. The Athlone road branches from that to Longford just after it leaves the county of Connaught; it is approached by Rochford Bridge, Tyrell's Pass, Kilbeggan and Moate, to Athlone. The road from Dublin to Grannad runs through the northern part of the county by Castle Pollard. The principal traffic is carried on by the canals and by the Athlone road; but the number of passengers is rather the greatest by the Longford and Athlone roads. Many however travel by the Royal Canal to Mullingar, and by the branch of the Grand Canal to Kilbeggan.

Description.—The county of West Meath is divided into 12 baronies, whose relative situation and amount of population are as follows:—

<table>
<thead>
<tr>
<th>Population in 1831.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bruinie. W.</td>
</tr>
<tr>
<td>Clonmel. S.W.</td>
</tr>
<tr>
<td>Corkree. Central.</td>
</tr>
<tr>
<td>Delvin. E.</td>
</tr>
<tr>
<td>Demore, or Half Fowre. N.</td>
</tr>
<tr>
<td>Farhill. E.</td>
</tr>
<tr>
<td>Fartum. O.</td>
</tr>
<tr>
<td>Kilkenny. W.</td>
</tr>
<tr>
<td>Moyurnael and Magheraderran, or Magheraderran. Central.</td>
</tr>
<tr>
<td>Moysheal. S. W.</td>
</tr>
<tr>
<td>Moysheal. N. W.</td>
</tr>
<tr>
<td>Rathoath. N.</td>
</tr>
</tbody>
</table>

G 8
The county town is Mullingar: the parliamentary borough and market-town of Athlone is partly in this county, partly in that of Roscommon; and there are the market and post towns of Kilbeggan, Moate, Rathowen, Castletown-Delvin, Ballincarbery, Clermonton, and Castle Pollard (of these Kilbeggan, with the town of Moate, is a market-town; and the post towns of Kinnebog, Ballymore, Tyrrel's Pass, Kiltuan, Rochfort Bridge, and Drumcreeve Athlone is described elsewhere. [Athenlone.]

Mullingar is in the barony of Moyashel and Magheradernan, but the parish extends into that of Partickagh, it is nearly 30 miles from Dublin by Maynooth, Clonard, and Kinnebog. It was one of the towns founded by the English settlers of Meath. In the war of the Revolution the town was fortified by General Ginkel, and became the rendezvous of William's army preparatory to the siege of Athlone. The town is surrounded on three sides by the Royal Canal, and consists of a principal street, about half a mile long, and some smaller ones. The number of houses in 1831 was 727 for the town, or 1539 for the whole parish. There is a large church, the chancel of which contains an exceptionally spacious building, erected in the present century, with a handsome tower and spire. There are a handsome Catholic chapel and one or two Dissenting meeting-houses. The town contains 11,331 inhabitants. There are a considerable number of market-farms within the parish, and a considerable business is done at the market (which is held on Thursday) in corn, butter, and freize coating. There are four yearly fairs for cattle; one of them is a considerable horse-fair. The town is not incorporated; but a charter of King Charles II. granted to the lord of the manor several privileges, amongst which is the privilege of sending two members to parliament; this last was abolished at the Union. The living is a vicarage in the diocese of Meath, and in the patronage of the crown. The parish is at the head of a Catholic union.

Kilbeggan is in the barony of Moyashel, 56 miles from Dublin, on the road to Athlone. It was the scene of a conflict in the rebellion of 1798 between a party of insurgents and the regiment of Northumberland militia. The town contains 350 houses; the whole parish 732; half of those in the town are well built, and have slate roofs. The church was originally part of an ancient monastic institution, dissolved at the Reformation. There are a handsome Catholic chapel and a Methodist meeting-house. The market-house is a neat building. The population in 1831 was 1955 for the town, or 4039 for the whole parish. The trade of the town is considerable: distilling, brewing, milling, and snuff-making are carried on; much butter is sold at the market, which is held on Saturday, and there are for sale in the town books, and the River Shannon. The market is reformed and the trade increased by the opening of the Royal Canal, and the market is now on a large scale. The post town is in the centre of the county, and is a considerable commercial centre. The town is well situated for the recovery of debts; petty sessions are held here. The living is a vicarage in the diocese of Meath, and in the patronage of the crown. The parish is at the head of a Catholic union. There is a dispensary.

Moate a Grenogue is in the barony of Clonlonan, 46 miles from Dublin, on the road to Athlone. In the war of the English Revolution a party of the Jacobites were defeated here by William's army under General De Ginkel, and compelled to flee to Athlone. The town consists almost entirely of one street, and comprehended, in 1831, 304 houses, the greater part slated, the rest thatched. The population of the town in 1831 was 1785. The trade of the place appears to be diminishing; the manufacture of cottons and linens has much declined, and several breweries have been established. There is a market on Thursday, one of the most important for oats in the county; and there are several yearly fairs. The quarter sessions for one division of the county are held here, and also petty sessions for the district. There is a convent of nuns of the order of Holy Cross. A great part of this parish is a market town, and a considerable number of market-farms are in the town. Many of the inhabitants are employed in the manufacture of cottons and linens. There is a considerable corn-market on Tuesday, lately established, and two yearly fairs. Petty sessions are held here, and the town is one of the stations of the county constabulary. There is a dispensary and a free school.

Clonmore is in the barony of Delvin, close upon the border of the county. It is a neat little town, comprehendingsome slate and brick buildings, but angood repair, and a Catholic chapel. The market is held on Tuesday and Thursday, and three fairs in the year. Petty sessions are held here, and the town is one of the stations of the county constabulary. There is a dispensary and a free school.

Clonmore is in the barony of Delvin, close upon the border of the county. It is a neat little town, comprehendingsome slate and brick buildings, but angood repair, and a Catholic chapel. The market is held on Tuesday and Thursday, and three fairs in the year. Petty sessions are held here, and the town is one of the stations of the county constabulary. There is a dispensary and a free school. Castle Pollard is in the barony of Dunsford, 44 miles from Dublin, and 10 from Athlone, on the road to Athlone, and is a market town. It was formerly a considerable place, but was disfranchised at the Union. The living is a perpetual curacy; the parish is in the Catholic arrangements, united with an adjoining one.
M E A

from Dublin, about 2 miles north-east of Lough Deveragh, and about the same distance west of Lough Lane. It
consists of five streets meeting in an open space or square, in which stands the market-house. It contained, in 1831, 291
houses, and a population of about 1,079. The parish church is called Rathgarr, or Rathgarth, or Rathgaffr (in which parish the
town stands), a modern building, is not far from the town. The
tower and part of the old church, with the churchyard, in
which is the school-house, are also near the town. There are
a Catholic chapel, a dispensary, a savings bank, and a parochial school. There are a market on
Wednesday and four yearly fairs. Petty-sessions are held, and a
party of the county constabulary have their station in the
town. Kinturk, the seat of the Follard family, Paken-
ham, and ultimately of the members of a family of
Dunnes, are near the town. The old castle of Kinturk,
which gave name to the town, is entirely demolished.
Collinstown is a little place on the road from Dublin to
Grannan. It is at the junction of four roads forming a
cross, and has only twenty or thirty houses, chiefly thatched,
with a market-house in the centre of the town, and a
Roman Catholic chapel near it. It is in a pleasant district
of diversified scenery, near the southern extremity of
Lough Lane. There are a market on Saturday and two
weekly fairs, but the place is small. There is the
constabulary station of the county constabulary posted in the
town. It is in the parish of St. Feighan of Fowre.
Kinnegad is in the barony of Farhill, about 11 miles
from Mullingar, near the town of Ballymore, received
roughfare, just at the separation of the roads from Dublin
to Longford and Athlone, and consists of one principal
street. It has 123 houses, with a population of 670.
The church is a neat Gothic building of modern date; there are
a Catholic chapel, a dispensary, a savings bank. No
market is held, though there is a charter for one, and there
is only one yearly fair. The living is a perpetual curacy
detached from the parish of Killucan.
Ballymore is in the barony of Rathconrath, 15 miles
from Mullingar, near, and about 6 miles from Dublin. There formerly ex-
isted here a monastery for Premonstratensian canons and
Benedictine nuns, who occupied different portions of the
same building. The church of this monastery was for a
short time the cathedral church of the diocese of Meath. In
1606 it was taken from the monks and given to the
province of Aragon. It is now a convent of the Society of
Jesus. In 1380 it was the residence of Milesius, archbishop of
Dublin. It has a neat green in the heart of the town. The
building is in the Romanesque style, and is in a good
condition. There is a market on Wednesday and a fair on
the 19th of May. There are a parish church and a
Catholic chapel. The town was the seat of the county
constabulary for some years. There are two yearly fairs. Petty-sessions are held, and the
constabulary station has a station in the town. Not
far from the town is a round tower, the only remains of a
castle, said to have belonged to the De Lacy.
Tyrell’s Pass is in the barony of Fartullagh, about 51
miles from Dublin, on the road to Athlone. The town takes
its name from having been for many years the seat of the
Tyrell family. There are some remains, near the town, of
their castle. The town contains about 80 houses, chiefly
well built, with slated roofs, forming one principal street. There is an area in the centre of the town, formerly used
as a market-place, but the market is now discontinued. The
parish church of Clonfadd (in which parish the town is
mostly situated) is about half a mile from the town. There
are savings’ bank, a charitable loan fund, and a
dispensary. There are two cattle fairs, which are
well attended.
Kilcummin is in the barony of Farhill, 42 miles from Dub-
lin, and about 10 miles from an abbey founded by St. Lucian,
the church of which subsequently became parochial. The
De Lacy family had a castle here, of which the foundations and
some of the outworks are still discernible. Four yearly
fairs are held in the town; petty sessions are also held, and
there is a station of the county constabulary. The town
had, in 1831, 29 houses and 206 inhabitants; the whole
parish 1491 houses. The parish church is a modern struc-
ture. There are in the parish two Catholic chapels, four
public schools, and a ‘flesh society,’ which gives employment
to about 100 poor women.

Rockfort Bridge, or, as it is sometimes called, Foghill’s
Bridge, is in Fartullagh barony, and about 47 miles from
Dublin, on the road to Athlone. It contained, in 1831, only
27 houses and 171 inhabitants. The parish church of Cas-
low, which is used as a school, the place stands, as a national
school, in the town. The county constabulary have a station
here.

Drumcree is in Delvin hundred. It contains the parish
church of Kilcummin (in which parish the town is), a parish
school, and a savings’ bank. It had, in 1831, 37 houses
and 197 inhabitants.

The village of Foro or Fowre, or, more accurately, of St.
Feighan of Fowre, is in the barony of Demnifore, not far from
Lough Lane. Though now only a small village, it was
originally an important monastic foundation. St. Feighan’s
monastery was founded here in the seventh century, and is said
to have contained, a few years after its foundation, 3000
monks. This monastery, after having been repeatedly
destroyed by fire, was re-founded in the beginning of the
thirteenth century by Walter de Lucy, for Benedictine
monks. There are still some remains of the abbey, and
there is an antient and massive building, supposed to have
been a hermitage. In the fifteenth century considerable
pains were taken to fortify the town, which had acquired
a considerable extent of greatness. Besides fortifications
of several square towers, two of the gates, and traces of the
town wall, the extent of which shows its former size. Fowre
was a borough by prescription, and returned two members
for the Irish parliament, until it was disfranchised by the
Union. The village had, in 1831, 19 houses and 119
inhabitants.

Ecclesiastical and Civil Divisions.—The county is
almost entirely in the diocese of Meath; a small portion on
the north-west of the county is in the diocese of Meath,
and is called the parishes of Kilmilly and Rathboy, till lately held by the archbishop of Tuam, but is now to
be permanently united to the diocese of Kilmore. Both Kil-
more and Meath are in the ecclesiastical province of
Armagh.

West Meath is included in the home circuit: the
assists are held at Mullingar, where are the county court-house
gad. Quarter-sessions for the county are held at Mul-
ingar and Monta-Grenouge, where are a court-house and
a bridewell.

West Meath returned ten members to the Irish parlia-
ment, two for the county, and two each for Mullingar,
Athlone, Kilbeggan, and Fowre. At present it returns
to the Imperial parliament, viz. two for the county, who are elected at Mullingar, and one for the borough of
Athlone.

The police force of the county, on the 1st of January,
1836, consisted of 1 magistrate, 7 chief constables, including
sub-inspectors (viz. 4 of the first and 3 of the second class),
50 constables, and 222 subconstables, with 9 horses. The
cost of maintaining the police constabulary for 1835 amounted
to 10,051l. 4s. 9d., of which 5480l. 15s. was chargeable
against the county.

The county gaol at Mullingar has lately experienced a
very extensive change for thebetter, under (nineteen); 342
been made of the system of instruction in trades. But the
discipline of the female side still requires very much atten-
tion: the accommodation is very insufficient, and there is
no classification. There are two schools in the prison, and
a‘tread-mill’ for those sentenced to hard labour. The
Monte bridewell is on a tolerably large scale, with every accommo-
dation requisite for classifying the prisoners, and is clean
and well kept. (Appendix to Fourteenth and Fifteenth Re-
ports of Inspectors of General, 1836.)

The number of criminal offences in 1836 was,
for offences against the person, 282 (of whom 184 were
convicted, 98 acquitted or discharges); for offences against
property committed with violence, 43 (29 convicted, 23
acquitted or discharged); for offences against property
committed without violence, 142 (124 convicted, 17 acqui-
 ted or discharged); for malicious offences against property,
arson, &c., 22 (8 convicted, 14 acquitted or discharged);
for forgery and offences against the currency, 7 (2 convic-
ted, 5 acquitted or discharged); for false certificates of
value, 17 (2 convicted, 15 acquitted or discharged): making a total of
761 persons committed, of whom 592 were convicted and
309 acquitted or discharged. Only one person was executed.
Of the persons committed, 635 were males (of them under
sixteen years) and 148 females (of them, 66). 432
could be read and write, 418 could read only, and 296 were
entirely ignominious. Of the degree of instruction they had received could not be ascertained.

The Lunatic Asylum for the counties of West Meath, King's, Queen's, and Longford, is at Maryborough, in Queen's County: of 131 patients in this institution on the 1st of January, 1837, 117 were from these counties. The county hospitals are at Mullingar. There were, in the year 1833, a fever hospital at Castle Pollard, and fourteen dispensatories in different parts of the county, supported in equal proportions by grand jury presentations and private contributions.

Ireland and Antiquities,—This county was included in the kingdom of Meath, of which it formed the western division. In common with the rest of that kingdom it suffered severely both from the ravages of the Danes and from the northern invasions. In 1315 the county was included in the county of Meath, granted by Henry II. of England to Hugh de Lacy, one of the Anglo-Norman barons who assisted in the reduction of the county. [Meath.] It was the scene of frequent hostilities for several centuries between the native Irish, who were not entirely expelled or subdued, and the English, and was, for above a century before its formation into a separate county, in a state of anarchy, in which the English laws ceased to be observed. West Meath was separated from Meath or East Meath in the 3d of Henry II., and was attached to the county palatine of Meath, granted by Henry II. of England to Hugh de Lacy, one of the Anglo-Norman barons who assisted in the reduction of the county. [King's, Queen's, and Mary's.

The great insurrection of 1641 is said to have been planned and agreed upon at the abbey of Mullifarnham in this county, which being much resorted to for religious purposes, and therefore less liable to suspicion, was chosen by the conspirators as their place of meeting.

In 1648 Athlone, in which the partisans of Renunciates, the papal nuncio and head of the extreme Catholic party, had endeavoured to maintain themselves, was taken by the confederate royalists under Lord Clanricarde and General Parnell.

In the war of the English revolution West Meath was the scene of some important operations. [Athlone.] An extensive change of the landed property of the county resulted from the confiscations which followed the war. The old families have disappeared almost entirely from the grand-jury list.

In the Rebellion of 1798 the county was but little disturbed, though many of the peasantry had furnished themselves with arms. In September of that year, during the invasion of Ireland by the French detachment under General Humbert, the insurgents assembled and joined those of the neighbouring counties in an attempt to seize Granard, in which they were repulsed. They were put down by a sudden attack on the 12th of July by Lord Clanricarde and Sir Henry St Macartney.

There are many vestiges of antiquity scattered through the county. There are numerous ruins of ancient castles, including some erected by the De Lacy's. Bonnaugh Castle, one of these, stands on the verge of a small but picturesque lake. Of monastic buildings there are several ruins; and some churches, formerly conventual, are still used for divine worship by Catholics or Presbyterians.

MEECH, DIOCESE OF. Several small bishoprics (of which the principal were Duleek, Clannaw, Killis, Ardbraccan, Dunshaughlin, Slane, and Fowere) gradually coalesced into one see, which, at the end of the twelfth century, received the name of Meath, which is further augmented, A.D. 1368, by the addition of the bishopric of Clonmacnois. The diocese comprehends nearly the whole of the counties of Meath; West Meath; a considerable part of King's County; small portions of Cavan, Longford, and Leitrim; and contains the county of West Meath. It extends in length from east to west from the sea to the Shannon, 80 English miles; and has a medium breadth from north to south of 25 English miles. There is no canal near it; nor are there a drain or a water mill. The only navigable stream is the river Barrow, which has a very shallow bed. Meath, in the province of Meath: it is not affected by the Act 3 and 4 William IV. c. 37. The bishop has precedence of all the other Irish bishops. His residence is at Athbraccan near Navan. The number of parishes is given by Dr. Beaufort (1792) at two hundred and twenty-four, and part of another; the number of benefices at ninety-nine; and of churches at seventy-seven. In 1834 the number of parishes was two hundred and twenty; of benefices, one hundred and five, of which forty-seven were unions of two or more parishes; of churches, one hundred; of other episcopal places of worship six; of Presbyterian meeting-houses, three; of other Protestant places of worship, two; two Catholic chapels, one hundred and fifty-six; giving a total of two hundred and eighty-three places of worship of all denominations. The population of the diocese in 1834 was 185,259. There were 333 Catholic, 526 Presbyterian, and 199 other Protestant dissenters.

There were at the same time 576 daily schools, in which were 28,885 children under instruction, being in the proportion of 194 to every 1000 inhabitants.

There is a Roman Catholic bishopric of Meath. The bishop is a suffragan of the Roman Catholic archbishop of Armagh. There were in this diocese, in 1834, 66 parish priests, including the bishop, who officiates at Mullingar, and 28 others, who officiate at other places; 16 houses of priests, 17 conventual, and 5 separate places of worship. The Bishop's See House was built at the cost of the Commissioners of Public Instruction in Ireland.

The lands belonging to the see comprise 29,269 statute acres, of which 20,266 are of profitable land. The average yearly revenue of the bishopric, for the three years preceding 1834, was £10, 19s. 6d.

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The town is divided by the Maen into two unequal parts, and the canal of the Ourcq passes by the foot of its ancient walls, which have been planted with trees and converted into promenades. The streets are not well laid out, but the houses are tolerably good. The principal building of the cathedral, commenced in the eleventh century. The architecture is Gothic; the magnificent choir contains a marble statue of Bossuet, who was bishop of this see. There are two parish churches and a Protestant church. The Palais de Justice, or courthouse, was built in 1746, for the counts of Champagne. There are good barracks for the garrison. According to the population of 1831 was 48,481 for the town, and 8537 for the whole commune; in 1836, 7969 for the commune, and 5089 for the department. Of Droits of Dues, in 1839, 1022, or 5.04 centimes, of the value of the water which the bridge causes, impedes the navigation, which is carried on here by a very ancient navigable canal, the Carnon Canal. There is a well-attended weekly market, and there are four yearly fairs. There are a subordinate court of justice, with one justice of peace; several government offices, two hospitals, two seminaries for the priesthood, a high school, and a Protestant Bible Society, a public library of 11,000 volumes, another library at the bishop's palace, a museum, and a society of agriculture, science, and art.
Meaux is the seat of a bishopric, established in the fourth century, and now having for its diocese the department of Seine et Marne. The bishop is a suffragan of the archbishop of Paris.

The city of Meaux, and the commissariat of Meaux, is in the department of Seine-et-Marne, and in the arrondissement of Meaux. It is divided into seven cantons or districts, each under a justice of the peace, and comprehends 161 communes.

Meaux is one of the principal cities of France, and is situated on the river Marne, which is navigable for vessels of from 27 to 39 fathoms in depth, and is the terminus of a railway line from Paris to Meaux. The population of Meaux in 1831 was 93,417, and in 1846 it was 90,965. It is served by a road from Paris, and is connected with the rest of France by railroads. The town is well supplied with water, and has a number of public buildings, including a large market, a town hall, and a hospital. Meaux is the seat of a bishopric, established in the fourth century, and now having for its diocese the department of Seine et Marne. The bishop is a suffragan of the archbishop of Paris.

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used for raising water by becks, or otherwise. Vitruvius generally mentions the names given by the Greeks to the
mechanical; and it might, without great risk of error, be
presumed that most of that which he describes was in u
among the latter people at, or even before, the time w.n.
the Parthenon was raised. There are no distinct intim-
ations of this in the works of Aristotle. The expansive
force of steam can only be said to have be
come a moving power at the end of the seventeenth
century, and then it was employed merely to raise water. Its
general application to machinery must be dated from the
year 1765.

In tracing the progress of discovery concerning the ma-
thematical theory of mechanical action, we shall have little
to notice till we come to the sixteenth century; for the
ancient Greeks and Romans themselves did not much enter
into the researches of pure science, almost entirely neglected
the application of the latter to subjects which appeared to them
to terminate in mere practical utility. It must be observed
however that Aristotle, who left no department of nature
untouched, has noticed, in his mechanical questions, the
equilibrium of unequal weights on the unequal arms of a
balanced lever, though he gives a very unphilosophical
reason for the fact. But in his 'Physics' he states correctly
that if two forces move with velocities reciprocally propor-
tional to the distances that they move, they will always
be found proportional, if this proportion is to a well-known
property of the lever, but it may have been meant to refer only to the effect of two
unequal bodies moving with unequal velocities, and striking each
other.

Sicyl enjoys the honour of having given birth to the first
philosopher who can properly be said to have been a
theoretical mechanician: we allude to Archimedes, who
lived about 212 B.C., and in whose works there is direct
evidence of an idea that does not appear in Aristotle.
Commencing, in the treatise whose Latin title is 'De Equi-
ponderantibus,' with the axioms that
two equal weights balance each other on a lever (of uniform
dimensions), when at equal distances from the fulcrum, he
subsequent in the evolution of the lever, he has
and that the axioms of equilibrium between equals, that the parts are removed to equal
distances from the point of support; observing that the
equilibrium still subsists, he proceeds, by the method of
exhaustions, to show that it always will take place provided
the bodies are inversely proportional to their distances
from the fulcrum. Archimedes thence concludes that there
must exist in every body, considered as an assembly of
smaller bodies, a centre of force (that is, a centre of gra-
Vitruvius also mentions theTopic as 'De
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the bodies are inversely proportional to their distances
from the fulcrum. Archimedes thence concludes that there
must exist in every body, considered as an assembly of
smaller bodies, a centre of force (that is, a centre of gra-
knowledge, It is an open question whether the first
to make a machine to be divided into an equal number of
equal parts, and that the parts are removed to equal
distances from the point of support; observing that the
equilibrium still subsists, he proceeds, by the method of
exhaustions, to show that it always will take place provided
the bodies are inversely proportional to their distances
from the fulcrum. Archimedes thence concludes that there
must exist in every body, considered as an assembly of
smaller bodies, a centre of force (that is, a centre of gra-
tvity), that is, a point of support. This was true in the
example of a lever, and it is con-
convincing that, by hooks at the ends of the arms which were
suspended from levers on the ramparts, the rigging, or some
parts of the turrets erected as usual on the decks, in order to
enable the assailants to pass over the parapets, might be
captured; then, the levers being raised by the force of
these, or otherwise, the vessels or their turrets would be easy
overturned.

During about 1800 years, which elapsed between the
time of Archimedes and that of Cardan, we have no other
mention of the subject than the discussion of the theory of
motion (beyond the statical, which occur in the writings of the former mathematician),
but such as are contained in the 'Mathematical Collections'
of Pappus, which amount merely to a statement that the
Archimedes had reduced the theory of every machine to
that of the lever, and that he explained its motions by the
laws of pulleys, and reduced their theory to that of the
lever), should also have given erroneous solutions of the
problem concerning that equilibrium. The discovery of the
divine immutability. God
having created a certain quantity of motion to serve as the
cause of all the operations of nature, that quantity, he con-
vinced, could never be increased or diminished. Yet there
is some reason to think that Descartes had better views con-
dimensional to be placed on a doubly inclined plane, having
a common summit and base, the chain being perfectly free
to slide on two planes, and its ends hanging vertically to
equal distances below the base; then, in order to prove that
the chain would remain at rest, he shows that if any motion
should take place, it might continue for every size
be considered to be a plane, and, in the design of a double inclined plane, when
one of the two planes is in a vertical position, Stevinus
infers that, when a body is in equilibrio upon a plane, the
retaining power is to the weight as the height of the plane
is to the length of the plane. But if this be true, he further
were to act on any point, they hold the latter in equilibrio when they
are proportioned to the three sides of a triangle formed
by lines drawn parallel to the directions of the forces.

Stevinus states that Galileo demonstrates
in opposition to the arguments of one of his contemporaries
concerning the law of the descent of bodies by gra-
Vitruvius also mentions the
theory of the motions of fluids, water, and air, which is

Both of these writers were pupils of Galileo; and, after
the time of this philosopher, the French mathematicians
Descartes, Pascal, Format, and Roberval, prosecuted with
ardour the new science, as that of mechanics was called.

Among the fruits of their researches may be named the
determination of the centres of oscillation and percussion
in a body or system of bodies vibrating about a fixed axis.

The impulse given by Galileo, being thus continued by
the experimenters of the eighteenth century (beyond the
now a new science, as that of mechanics was called.

Yet there is some reason to think that Descartes had better views con-
cerning the phenomena of collision, for he states correctly, in one of his letters, that the motion of a body when it strikes another which is at rest becomes divided between the two masses, and that the resulting velocity is diminished as the mass is augmented. It is a peculiar feature in the physics of Descartes is his supposition that the planets revolve about the sun in vortices of ether, the particles of which, having acquired a certain degree of centrifugal force, act on the planet and prevent them from falling together in the centre. It is very easy that the particles should come round each planet; but the particles of ether, having less specific gravity than the bodies on the surface of the planet, the tendency of these bodies to that surface prevails over the force by which the ether causes them to recede from the planet.

The laws of the collision of bodies, which had been in vain attempted by Descartes, were at length, and nearly at the same time, discovered by the English mathematicians Wollis and Sir Christopher Wren, and by Huyghens. The first of the two, in his treatise 'De Motu' (1670), divides bodies into such as are hard and such as are elastic, and he explains the phenomena attending the shock of bodies of both kinds. In that of hard bodies he adopts as an hypothesis that the body struck destroys as much motion as is contained in the striking body and thief constituents to it; and in elastic bodies he considers the forces of compression and restitution to be proportional, in each, to the velocity before the shock. The name of Huyghens is become celebtrated from the publication of the phenomena of pendulum curves, and the attempt to make the lower extremity of a clock-pendulum vibrate in an arc of that kind, in order that the time of vibration might be equal, whatever were the extent of the arc described. This attempt did not succeed; but the invention of his pendulum watches, on the position of the centre of oscillation in a compound pendulum, Huyghens found that when several pendulous bodies descend by gravity and afterwards re-ascent by the acquired velocities, in whatever way they may act upon each other, the common centre of gravity cannot rise higher than the point from whence it descended. This proposition is considered as proved from the fact that, if it were otherwise, the centre of gravity might by mechanical means be made to rise continually higher, and thus perpetual motion might be obtained.

In 1687 Newton's great work concerning the mathematical principles of natural philosophy was first published, and from that time the mechanical sciences, which had hitherto been confined to the action of bodies on each other at a distance, have gradually extended to the other branches of laws of planetary motion. The 'Principia,' as the work is called, commences with the three well known axioms in philosophy, or laws of motion. Assuming then as an hypothesis, that all the bodies of the universe and all the particles of which they are composed are subject to a pressure from each other. Newton, in his first book of 'Philosophia Naturalis,' assuming also that the planetary bodies were originally put in motion by impulsive forces; the rotations of these bodies on their axes, their revolutions in their orbits, and all the perturbations by which their movements are varied, are explained by means of the elementary theorem for the composition and resolution of motions. The oscillations of pendulums, the theory of projectiles, the movements of fluids, and the resistance opposed by the latter to the motions of bodies immered in them, are also in the same work investigated at length.

Contemporary with Wallis, Wren, and Newton in England, were, on the Continent, the celebrated Leibnitz and the two elder Bernoullis, all of whom contributed greatly to the advancement of mechanical science by their investigations concerning the laws of motion in terrestrial bodies; and to the rivalry as well as the talents of these great men we owe some of the most important discoveries in that branch of learning. At this time the fluxional or differential method was introduced by Leibnitz into the science of mathematics. The doctrine of infinitesimals by Wallis, and Descartes, but John Bernoulli is thought to have been the first who showed its utility in resolving actual problems. [Virtual Velocities.] A general method of solving mechanical propositions was discovered by D'Alembert, it may be thus stated: If there be impressed on bodies motions which they are forced to change in consequence of their mutual actions, those motions may be considered as compounded of the motions which the bodies do really take, and of those which are destroyed. Whence it results that these last must be such that if they alone existed the bodies would be in equilibrio. In order to avoid the decompositions of motions which this principle requires, an equation is frequently made between the general acceleration and the expression for those forces which produce the observed motions. [Forces, Impressed.] The manner of estimating the value of a mechanical force is various; and a difference in the expression of the value gave rise to disputes which continued among the greatest thinkers during nearly all the first half of the eighteenth century. [Force.

Besides the principles above mentioned there occur in mechanical investigations several others, which it will be proper to state briefly in this place. That which is called the preservation of living forces is a consequence of the discovery of Huyghens concerning the movement of the centre of gravity in a compound body. For the space described by that centre is expressed by the quotient arising from the sum of the products of the mass of each body into the distance it passes over, divided by the
sum of the masses; and since the spaces descended by bodies when acted on by gravity are proportional to the square of their velocities, it follows that the product of this square velocity and the mass of each body is a constant, whether the bodies move jointly in any manner, or whether they descend freely through equal vertical spaces.

The preservation of the centre of gravity is a principle which contains the discovery of Newton, that the motion of the common centre of gravity of several bodies is not affected by the mutual attractions of the bodies. It was subsequently extended by D'Alembert, who shows that if the bodies are solved by a constant accelerative force in directions either parallel to each other or tending to a fixed point, the centre of gravity must describe the same line as if the bodies were free.

The preservation of areas seems to have been discovered simultaneously by Euler, Daniel Bernoulli, and the Chevalier D'Arcy, about 1750. According to the latter it is an extension of Newton's theorem that the radii vectors of revolving bodies describe equal areas in equal times, and it consists in this: that the sum of the products of the masses of the bodies subject to central forces, the integral of the velocity multiplied by the element of the orbit is always a maximum or a minimum.

A general outline of that part of mechanics which relates to the equilibrium of solid bodies is given under the word Statics; and the details of the subjects may be seen under Lever, Wheels, &c. The part of mechanics which relates to bodies in motion appears under the words referred to in the article Dynamics.

MECHELEN, called Malines by the French, is a large well-built town in the province of Antwerp, in 51° 2' N. lat. and 4° 29' E. long. It stands in a fertile plain on the river Dyle, by which it is intersected. The streets are wide, well-paved, and kept remarkably clean. The large square, called La Place d'Armes, and the old cathedral, are in particular deserving of mention. The cathedral, dedicated to St. Rombaud, the patron saint of Mechelen, is the most remarkable building in the town. Its tower is 345 feet high, and covered with seven bells; it was built in 1451. The other principal buildings are the arsenal, which contains cannon-foundry; the town-house, the archiepiscopal palace, and the church of the Jesuits. Mechelen contains a college, an academy of painting, a society of fine arts, and a large hospital which serves as an asylum for 800 widows and aged women.

It appears that as early as the fifth century Mechelen was the capital of a lordship, which was afterwards given in 754 by Pepin to one of his relatives. It was subsequently destroyed by the Normans, and rebuilt in the year 960. In 1010 it was ceded by France to the bishop of Liége. At this time it occupied only the left bank of the Dyle, but was extended on the other side of the river in 970. Mechelen was sacked by the Spaniards in 1572, and by the army of the Prince of Orange in 1578. It was taken by the Duke of Marlborough; and by the French in 1746, but was restored at the peace of Aix-la-Chapelle. In 1792 it was again taken by the French, who in 1804 destroyed its fortifications.

The town is the seat of an archbishopric, created in 1559 by pope Paul IV. The archbishop is the head of the Catholic church in Belgium, and has for his suffragans the bishops of Namur, Tournay, Aix-la-Chapelle, Trèves, Ghent, Bruges, Liége, and Mayence.

Mechelen carries on an important trade by means of vessels of considerable burthen, which ascend the Schelde and the Dyle at high-water, the influence of the tide being felt a few miles above this town. The principal articles of commerce are wool, oil, hemp, flax, and hops. The lace manufactured at Mechelen has long been in high repute, and bears a great price. There are manufactories of hats, shaws, coarse woollens, and paper, cotton-mills, dye-houses, breweries, distilleries, and tanneries. It has recently acquired additional importance from the circumstance of its being the central point at which the several railroads of Belgium meet. It is about midway between Brussels and Antwerp, and distant from both about thirteen miles. The population of Mechelen in 1836 was 22,992. (Van der Meir 's Dictionnaire Geographique de la Province d'Anvers.)

MECKLIN. [MECHELEN].

MECHLIOC ACID. This acid was formed in 1835 by Courrier, by passing chloric gas over fused meconium. When purified by solution in potash, and precipitation from nitric acid, it exists in the state of colourless prismatic crystals, soluble in cold water, but more so in hot; alcohol and ether dissolve it sparingly. It melts at about 25°; at 376° it is volatilized; and by a strong heat it is decomposed. It is stated by its discoverer to be composed of

<table>
<thead>
<tr>
<th>Compound</th>
<th>Mass (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlorine</td>
<td>5.43</td>
</tr>
<tr>
<td>Organic matter</td>
<td>94.57</td>
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</tbody>
</table>

The organic matter consists of

<table>
<thead>
<tr>
<th>Compound</th>
<th>Mass (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen</td>
<td>4.070</td>
</tr>
<tr>
<td>Carbon</td>
<td>49.404</td>
</tr>
<tr>
<td>Oxygen</td>
<td>46.526</td>
</tr>
</tbody>
</table>

MECKLENBURG, which consists of the two grand-duchies of Mecklenburg-Schwerin and Mecklenburg-Strelitz, is situated between 13° 14' and 16° 40' W., and is bounded on the north by the Baltic, on the east by the Prussian provinces of Pomerania and Brandenburg, on the south by Brandenburg and the Herzogtum prusian of Prenzlau, and on the west by Liibeck and the territory of Liibeck. The area (according to Hempp) is 5880 square miles, namely, Mecklenburg-Schwerin 4788, and Mecklenburg-Strelitz 1092. The greatest extent of Mecklenburg, from north to south, or east to west, is 130 miles, and the great Western Lake, 94 miles, and the greatest breadth, from east to west, 127 miles.

Divisions. — Mecklenburg-Schwerin is divided into circuses or districts. I. Mecklenburg (251,476 inhabitants): chief town, Schwerin, the capital (11,035 inhabitants); Parchim (3590 inhabitants); Ludwigslust, the residence of the grand-duke (nearly 5000 inhabitants). II. Weden (140,412 inhabitants): chief town Güstrow (8629 inhabitants), one of the hantemost towns, and the fourth in size in the grand-duchey. It is for many centuries the residence of the princes, and has several remarkable public edifices, especially the cathedral, which contains some costly monuments of the princes; the palace, which Hempp says is unquestionably the finest residence of the middle ages in Mecklenburg, was converted in 1717 into a house of worship. III. The Principality of Schwerin: chief town Bitzow (3500 inhabitants). IV. The District of Rostock: chief town Rostock (29,000 inhabitants). V. The Lordship of Wismar (11,450 inhabitants): chief town Wismar (10,000 inhabitants). [SCHWERIN; ROSTOCK; WISMAR.]

Mecklenburg-Strelitz is divided into, I. The Lordship of Circle of Stargard (65,762 inhabitants): chief towns, New Strelitz (5767 inhabitants); New Brandenburg (6000 inhabitants); Friedland (4500 inhabitants); Old Strelitz (3800 inhabitants). The area of the grand-duchy is 4210 square miles, lying quite detached from the grand-duchy, on the frontier of Lauenburg and the lake of Ratzeburg, near Liibeck (14,080 inhabitants). [STRELITZ; RATZEBURG.]

The surface of the country, being a part of the low land of Northern Germany, may be generally as a plain. There is a ridge or chain of hills which, commencing in the Silesian mountains, traverses the country, and extends in a north-west direction into Holstein. On both sides of this ridge there is some heath, moor, and sand, but a great portion of the land is fertile, and in parts covered with considerable forests. The soil is partly loamy and heavy, partly of a middling quality, and partly sand. The first, which is about one-third of the whole, is very fertile; the second is of very different degrees of quality; the last is poor, and frequently covered with heath. In Mecklenburg-Schwerin there are sixty-two lakes at least ½ mile long,
besides many smaller ones. Lake Müritz, which is the largest, is 18 miles long and 8 broad. In Mecklenburg-Strelitz, Stralsund alone, there are 35 lakes at least 11 miles long; the largest is the Tollen Lake, 74 miles long. Some of the rivers fall into the Baltic, and others into the Elbe. Of the former the principal are the Trave, Stepenitz, Recknitz, Peene, and Warnow; the last is so long that it is divided into two reaches, each of 100 miles. At Rostock it suddenly expands to a breadth of 2400 feet, and falls into the sea at Warnemünde. The Elbe only washes the frontier at two places, near Dönitz and Boitzenburg, which lie on its banks. The rivers that fall into the Elbe, which is the boundary of Schleswig, also have 100 miles, and the Havel. The coast of the Baltic, which is but little indented, is generally steep, and high above the sea; and where it is lower, the country is protected from the incursions of the sea by sand-hills. Though Mecklenburg-Schwerin has a large extent of sea, there are some spots of very pleasing appearance about many of the lakes, especially Lake Malchin, and near the sea-coast. The climate is healthy and temperate; but the weather is variable, and the winter often very cold.

The chief occupation of the habitants is the chief employment of the inhabitants. Wheat (most of which is exported), rye, barley, oats, peas, and vetches are very abundant. The forests produce oak, beech, and fir timber of excellent quality. There is a good breed of horses, horned cattle, and sheep, which, with its cattle, is one of the prime resources of the state. Forestry, hay, and pasture are abundant. In some parts there is much game, such as wild boars, stags and deer, bustards, partridges, snipes, wild geese, and ducks. The geese of Mecklenburg are celebrated for their size and good quality. Fish abound both in the lakes and in the sea; the general impression is that the sea is poor in minerals, and no mines of any kind are worked.

Trade and Manufactures.—The manufactures are considerable; but they are improving, and great pains are taken to promote the wooden manufacture. Forestry, however, is the chief occupation of the country between the Baltic and the Elbe. In the eastern part of the state the commerce is far more important than its manufactures, yet by no means so extensive and profitable as might be expected; for the laws allow the importation of goods from abroad, and duties are low. The vicinity of Hamburg and Lübeck, and the heavy duties imposed by the Prussian tariff, are great checks on the trade of Mecklenburg. The Revenue of Mecklenburg-Schwerin is considerable, amounting to 2,517,000 rix-dollars per annum, of which nearly 18 million are produced by the domains. The revenue of Mecklenburg-Strelitz is stated at 400,000 rix-dollars, but is probably higher, for the domains alone yield 300,000 rix-dollars.

Religion and Education.—The great majority of the inhabitants are Protestants, and the state maintains 4000 Jews and 590 Roman Catholics, and in Mecklenburg-Strelitz 800 Jews and 50 Roman Catholics. The Calvinists are only 230 in both states. The sovereigns are the heads of the church. There appears to be a very inadequate religious instruction among the poor, but the state has provided for this want. The Calvinists and Free Church are the most numerous in the Remser Lake, and are the most recent and the best authority. The church is Protestant in name, but in practice a mixture of all the sects, including the Free Church. The provision for religious instruction is largely inadequate. The schools for the people were few and ill conducted. The learned institutions were better, and the university of Rostock had many eminent professors. Considerable improvements were made by duke Frederick, who in 1782 founded a seminary for schoolmasters; but a thorough reform was left to his successor, who devoted his reign devoted his unceasing attention to this object. The improvement in Mecklenburg-Strelitz has been equally great. The university of Rostock has only about 120 students.

The military force of Mecklenburg-Schwerin is 5298 men, and that of Mecklenburg-Strelitz 742 men. Their contingents to the army of the Confederation exceed their ordinary establishment, that of Mecklenburg-Schwerin being 5460, and that of Mecklenburg-Strelitz 718 men. The reserve of 359 men. Both form part of the second division of the 10th corps of the army of the Confederation. Their respective contributions to the treasury are 1333 florins and 666 florins. In the Grand council Schwerin has 10 seats, and Strelitz one. In the select council they have together one vote, viz. the 14th.

Form of Government.—The co-operation of estates in the affairs of the country may be traced to the remotest periods. The constitution, in its present form, is founded on compacts entered into between the princes and the estates in 1528, 1572, 1621, and especially on that of 1755. The grand-dukes have the whole executive power; but share with the estates the legislative power and the right of imposing taxes. The states consist of two equal branches, one of which represents the respective dominions independently of each other, but the entire state consists of two luchies are inseparably united by a compact made in 1523, called the Landes-Union. The clergy, formerly the first estate, having been excluded after the Reformation, the assembly of the nobility was created. It is called the equestrian order, which includes all the owners of noble estates (whether they are noblemen or not). They have great privileges and immunities, and are rich and powerful. There are now 572 landowners who have seats in the assembly. The deputies of the forty-four towns. They meet annually at Sternberg and Malchin alternately. In general above 200 members attend. The grand-duke alone has the right of introducing such measures as he deems necessary, which the estates have the right to accept or reject them, and they may likewise represent what they consider as grievances, and petition for their being remedied.

The history of the country is rather intricate, in consequence of the great changes in the reigning family by the formation of new branches and the extinction of others, which occasioned continual partitions of the territory. Mecklenburg was inhabited by the Heruli and the Vandals. On their emigrating to the south they were succeeded by Scævaman or Scævamannae, a (Vandal) tribe which was afterwards divided into 1572, the first of whom Heinrich Burewin, son of Prudilas (who had embraced the Christian religion), Henry the Lion gave his daughter Mathilda. Prudilas was declared in 1157 a prince of the empire, and the ancestor of the succeeding sovereigns of Mecklenburg. These princes received the ducal title from the emperor Charles IV, in 1340, and assumed that of grand-duke on joining the German Confederation in 1815.

(Sassell; Streiff; Schmorshenmann; and chiefly Hempel, Georg. Statist. Hist. Handbuch des Mecklenburger Landes, Güstrow, 1837.)

MECONIC ACID, a substance which is found only in opium, in which it exists in combination with the alkalii morphia. It was first noticed by Seguin in 1810, and a few years after, more particularly described by Sertuer, who named it mecon (μηκόν), poppy. Meconate of lime is one of the results of a peculiar process for obtaining morphia from opium; this is put into ten times its weight of carbonate of lime, and left to stand for two or three days; the precipitated lime is then taken off, and the meconic acid crystallizes. They are to be freed from colouring matter by subsequent treatment, and meconic acid has then the following properties: it acts on litmus paper, and has a sour taste; it is soluble in four times its weight of water, and also in alcohol. The crystals do not alter by exposure to the air, but when heated to 212° they lose 21.5 per cent. of water, and become opaque. Although when heated even to near 250° the acid is not totally decomposed, yet the boiling solution gives out carbonic acid gas, and forms gum scopolane. The meconate is insoluble. When strongly heated, it is totally vaporised and decomposed. When mixed with a solution of chloride of gold, and heated, it is decomposed, and metallic gold is precipitated; this acid possesses the characteristic property of forming a purple solution with the peracids of iron, and this is regarded as one of the best tests of its presence, and also of that of the opium from which it is derived.

According to Liebig, meconic acid consists very nearly of:

Two equivalents of Hydrogen . . . 2
Seven equivalents of Carbon . . . 42
Seven equivalents of Oxygen . . . 56

Equivalents . . . 100

The salts which contain this acid are called meconates; we shall briefly state the properties of the more important of them:—Meconate of Ammonia crystallizes in quadri-
lateral prisms, dissolves in one and a half times its weight of water, yields water when heated, and afterwards sublimes without decomposing. *Meconate of Potash* crystallizes in tables and leaves, contains water of crystallization, and is soluble in twice its weight of cold water. *Meconate of Sulphur* crystallizes in fine crystals, which contain much water of crystallization, and are soluble in five times their weight of water. *Meconate of Lime* forms acicular crystals, which contain water of crystallization, and are soluble in eight times their weight of water. When the acid is in excess the salt crystallizes in prisms, and is diffusely soluble in water. *Meconate of Magnesia* when neutral is only slightly soluble, but the supersalt dissolves readily; it crystallizes in flattened needles, which are brilliant and transparent, and have an acid and bitter taste. *Meconate of Borates* is slightly soluble in water. *Meconate of Iron* is a colourless and very soluble salt, which becomes red by exposure to the air, and more rapidly by the addition of nitric acid. The *Permeconate of Iron* is also a soluble salt, and is of a fine red colour, which is destroyed, and more particulate, and protected by tin; the remaining metallic meconates are not important.

**Metameconic Acid.**—It has been above mentioned that when a solution of meconic acid is heated to ebullition, that carbonic acid is evolved, and a brownish solution results; this is occasioned by the formation of carbamic acid. When a meconate, as of potash or lime, is boiled with hydrochloric acid, no colouring matter results, and yet metameconic acid is formed.

This acid is soluble in sixteen times its weight of boiling water, and separates on cooling in hard anhydrous grains, which, like the meconic acid, reddens the persists of iron, but they differ from it in every other respect. It is formed by the mere separation of carbonic acid, by subtracting one equivalent of which from meconic acid we obtain the acid in question:—

| Meconic acid | 2 | 7 | 7 |
| Carbonic acid | 1 | 2 | 2 |
| Metameconic acid | 2 | 6 | 5 |

Its saline combinations have been but little examined.

**Pyromeconic Acid** is obtained by heating meconic acid, which yields about one-fifth of its weight. It is purified by pressure between plates of blotting paper, and crystallization from solution in water. It is fusible between 218° and 227°, and then flows like oil; it is entirely soluble at a moderate temperature, and is more soluble in alcohol even than in water. It turns the persists of iron red, and its salt of copper is of a fine red colour. It has been formed in its separation of four equivalents of carbonic acid and one equivalent of water, from two equivalents of meconic acid, thus:

| Two equivalents of Meconic acid | 4 | 14 | 14 |
| Four equivalents of Carbonic acid | 4 | 14 | 14 |
| One equivalent of Water | 1 | 1 | 1 |

**Pyromeconic acid**

| 3 | 10 | 5 |

**MECONIN,** a neutral principle existing in opium, first noticed by Dalziel, and more particularly noticed by Cousin. To obtain it, an infusion of opium, from which the morphin has been precipitated, is to be evaporated, and the crystallized matter, obtained after being pressed, is to be treated with boiling alcohol; the solution contains meconin, which, from which it is to be separated by subsequent operations. The properties of meconin are, that it is colourless, odorous, is at first tasteless, but afterwards acid; it is soluble in water, alcohol, and ether, and crystallizes well in any of them; the crystalline form is a six-sided prism with dihedral summits; it fuses at 194°, and is volatilized at 315°, without undergoing any change of properties. It is soluble in about 453 parts of cold water, and 29 of boiling water. Sulphuric acid gives it a fine yellow colour and nitric acid by its action converts it into a peculiar crystalline matter. Chlorine renders it a blood-red colour, forming meehclo acid. It does not set either as an acid or an alkali.

According to Cousin it consists of—

| Four equivalents of hydrogen | 4 | 4 | 4 |
| Nine equivalents of carbon | 54 | 69 | 90 |
| Four equivalents of oxygen | 32 | 35 | 56 |

**MED**

**MEDAL.** Numismatists have usually given the name of medals to those coins that have been struck or cast for particular purposes and on extraordinary occasions, in commemoration of victories, treaties, coronations, and similar important events. *Medallion* is a term now applied to medals or medallions; in distinction to those which have been issued and generally circulated as money.

The words *medallogia* and *medaglione* first occur in Italian writers, from whom the English and French have eventually taken them into use. The derivations seem to be from the Greek *πρασσειν* (metal); of which medals are always made.

A reference to medals, in connection with numismatics, has been made in the article on coins (Coin), to which a further reference may be made, for the history of medals; it has been noted how the art of the engraver has been rewarded with the care bestowed on productions of the sister arts.

None of the classic writers give any account of collections of medals and coins among the Greeks, and it is not until a somewhat late period that we find any distinct notice of a collection of medals and coins. *Herodian*, in his book *on coins*, mentions the collection of *Suetonius*, the first who showed any interest in the subject; he was in the habit of presenting to his friends medals of foreign countries and princes as valuable marks of his friendship.

Greek medals and medallions are very rare, few being known of earlier date than the establishment of the Imperial power at Rome, and when Greece was under Roman dominion. Some of Sicily are not however so scarce; they are of very fine design and workmanship, and deserve the careful attention of the connoisseur. The sign of the finest of these is a head, usually of *Ceres*, with spoils in the exergue, and on the reverse a *Victory crowning a figure in a car*. Many of great excellence and in high preservation are contained in the collection of Lord Nelson at the British Museum. The Roman medallions differ from the Greek (we mean in this place Greek medals of the Imperial periods) in their greater substance or thickness. Those from the time of Julius Caesar to Hadrian are very thick, and an exact correspondence of thickness and quality, of high value. The larger bronze medallions of the antients are often of exquisite workmanship, and the devices are uncommon. Some are composed of two sorts of metal; the centre being of copper, with a border or ring of brass, or反之. The same combination is formed, the copper being the outside ring. It often happens that the inscriptions on these medals extend over both the metals.

Among the peculiarities which distinguish modern from ancient medals may be mentioned the introduction of portraits of historical or imaginary characters with inscriptions in regal houses. It is remarkable that while busts are found of many celebrated poets, historians, and philosophers of antiquity, their portraits never occur on medals. When, after the long interval of darkness in which literature and arts of this class, were so deep a sleep, began again to appear, and, with the arts, die-engraving revived, it was employed in transmitting to posterity the portraits of eminent individuals. Petrarch seems to have been the first to give the world medals in modern times as a branch of art, and we are indebted to this great patron of poetry for the aid which he gave to the progress of engraving, and of the art of the mezzotint, and the invention of history and biography. The emperor Charles IV. had expressed a wish that he would write the lives of eminent men, and would place him among them. Petrarch boldly told the prince he would do so whenever his life and conduct merited it. It was after this that he presented to Charles a collection of gold and silver coins bearing the representations of distinguished men. Pinkerton says that Angelo Poliziano was the first who transmitted the portraits of eminent men on medals, and that he engraved some of the portraits from the celebrity and customs. He refers in his *Miscellanea*, written about the year 1490, to some coins in the Medicl collec-

The earliest examples of modern medals and medallions seem to be of the sixteenth century, though there is one remarkable exception to this in a medal of David II., king of Scotland. It is of gold, and was probably executed during that prince's captivity in England some time between the years 1330 and 1370. From the fifteenth century there is a succession of medals in most European countries. A
gold medal of the council of Florence, dated 1439, is one of the earliest. A still earlier one, if the date 1415 is correct, is of John Huss; but some doubts have been entertained of its authenticity. The publicized medal of Verona, is celebrated as the restorer of the art at that period; but the medal alluded to of David of Scotland seems to prove it was practised before his time. Pisano's medals are very large and are all cast. They are usually issued in the same style of engraving and are marked with his initials or monograms. It is curious that he should always refer to his being a painter while exercising a totally distinct branch of art.

The Papal medals are among the finest of a continued series. They commence properly with Paul II., who began to revive the art of engraving on medals, an art the practice of which having been added to the collection by successors. Some of the medals of a later period are valuable examples of the art, in which great improvements took place under Alexander VI. In this prince's time, VII., had many of their medals designed by Raffaello and Giulio Romano, while Venenuto Cellini and other distinguished artists were employed to engrave them. A German family, named Ermerani, or Haremani of Germany, were so zealous in the art as to settle in Italy in the latter part of the seventeenth century, and executed many of the Papal medals. This talent was not, it appears, confined to the men of this family. Venenti says each of the daughters also produced a fine medal.

The earliest of the medals commence in 1543, and are very numerous. The Sicilian medals appear as early as 1501. The first modern satirical medal is of that time, and was published by Frederick II. against his adversary Ferdinand King of Spain. It bears on one side the head of Ferdinand, with a quiver full of arrows in his hand, and on the reverse a wolf carrying off a sheep, with JUBIGO MEUM HOCVIV EST ET OMNIS MEUS LEVIS. Many others might be mentioned of this description. The employment of medals for the conveyance of satire is not confined to the moderns. Examples of it occur among the Romans, but they are rare.

The Spanish medals begin in 1503. The earliest of Venice appear in 1509; and those of Denmark in 1516. The first Dutch medals seem to be of 1546, and they are remarkable for the elaborate views of cities, towns, and plans that are engraved on many of them. It has been observed among the distinctions of antique and modern medals, that in the former, when buildings are represented, the simple elevation is given; whereas in the latter perspective views are exhibited. The Dutch indulged very freely in the satirical vein, and for which they eventually paid very dearly, as it contributed, in no small degree, to bring on them the whole hostile power of France under Louis XIV., who had an especial delight in satirical representations. Exhibition of a medal in which Van Heubingen, the Dutch ambassador, was represented as Joshua (his name) arresting the progress of the sun, under which type the flatterers of Louis designated that monarch.

British collectors exhibit any remarkable excellence till this reign. The popularity of Louis XIV. gave an impulse to the art, and we find his entire life illustrated (with more respect however to the national glory and the prince's vanity than to historical truth) by medals; some of them are well designed and finely executed. The medallic history of Napoleon deserves notice in the series of medals of France. It is of great extent, and is, for the most part, honourable to French art.

The series of English coins and medals is one of the most prodigious in the world, and is of 1486. It is of a large size, and is executed in the early Italian manner. On one side is a portrait with KENDAL RODI. TURCUPPELLARIUS; on the reverse the arms of Kendal, with the inscription, TEMPESTAS. It was engraved in Kendal by a man named Halls in Kendal forest, but it is believed to be of foreign, probably Italian, workmanship. The next English medal is of the time of Henry VIII. It is of gold, and bears the king's portrait on one side, with an inscription on the reverse, TESAURUS. It is said to have been engraved in Knaresborough forest, but it is believed to be of foreign, probably Italian, workmanship. The next English medal is of Edward VI. The medals of Queen Mary are numerous, and very interesting from the devices they bear. The Scotch coronation medal of Charles I. is of gold, and was struck at Edinburgh. It is remarkable as being the first struck in Britain with a legend on the edge. Specimens of this medal in gold are very scarce. The medals of the Commonwealth and of Charles II. are by Simon. Those of Queen Anne are interesting from their being charged with the achievements of the great duke of Marlborough. Soon after this a Genoese artist, of the name of Dassier, was employed upon the medals of the kings of England, and executed many portraits of royal and other illustrious characters.

The study of medals is, in its class, of great importance. It is indispensable to the historian and the antiquary, and is remarkably less valuable to the man of taste. To the former, medals often afford information that cannot be obtained by other means, in the inscriptions, legends, and allegories with which they are charged; while to the artist and connoisseur many of them offer not only exceedingly beautiful representations, but a valuable and almost indispensable means of information. The history of medals can be depended on, a series of medals of any nation is one of the best authorities that can be consulted for the state of the arts of design of any particular period.

It would be an almost endless task to enumerate the works that have been written on medals. The earliest treatise on the subject is that of Eneas Vico. It is dated 1548. The publications of Pinkerton in two volumes, of Eckhel, an introduction to the study of medals by Millin, of Barbier, of their authenticity can be depended on, a series of medals of any nation is one of the best authorities that can be consulted for the state of the arts of design of any particular period. It would be an almost endless task to enumerate the works that have been written on medals. The earliest treatise on the subject is that of Eneas Vico. It is dated 1548. The publications of Pinkerton in two volumes, of Eckhel, an introduction to the study of medals by Millin, of Barbier, of their authenticity can be depended on, a series of medals of any nation is one of the best authorities that can be consulted for the state of the arts of design of any particular period.

MEDALLION, a medal of an extraordinary size. Medallions were never used as current coin; whereas it is probable that medals were sometimes allowed to pass in circulation as money.

MEDALLION, in architecture, any circular or oval tablet bearing on it objects represented in relief, as figures, heads, animals, flowers, etc.

MEDE, JOSEPH, was born at Berden in Essex, in the year 1586. While only ten years old he lost his father, but his education was well provided for by his relations. While a boy at school he met accidentally with a copy of Bellarmine's Hebrew grammar, and soon gained a considerable acquaintance with the vulgar tongue. In 1622 he entered Christ's College, Cambridge, and took his degree of master of arts in 1619. At this time his leaning is spoken of as extraordinary. During the earlier part of his residence at college, he is said to have been impressed with a number of opinions, which however he soon shook off. His first work was a treatise, 'De Sanctitate Relativa,' addressed to Dr. Andrews, bishop of Ely, which procured for him the patronage of that prelate, who requested him to become his secretary. This offer Mr. Mede declined, and who soon after made a fellow of his college and reader of the Greek lecture of Sir Walter Mildmay's foundation. He appears to have been remarkably skilful and successful as a tutor.

In 1618 he took his degree of s. He refused the provostship of Trinity College, Dublin, which was twice offered him, in 1627 and 1630, through the influence of archbishop Usher. The extent of his ambition seems to have been to pursue his studies without interruption in the retirement of his college. There he spent the remainder of his life, and died in 1638, in his fifty-second year.

Mr. Mede was distinguished for his meekness, modesty, and prudence, and his liberality was such that he devoted the tenth of his scanty income to charitable uses. His body was buried in the church of the Grafton Place, and during the few years he studied astrology, but afterwards abandoned the pursuit. He was well acquainted with mathematics, medicine, and the various branches of philosophy, and was deeply versed in history, antiquities, and the classical literature and languages of the East, into the abstruse parts of which he searched for illustrations of the prophecies of Scripture.

His chief work is the 'Clavis Apocalyptica,' containing a system for explaining the Apocalypse, which has been followed by more or less by nearly all subsequent writers on the prophecies, and is recommended by bishop Hard in his tenor sermon on the study of the prophecies, as being the first rational attempt to explain the Apocalypse. This work has been translated by Mr. T. Bransby Cooper, ovo, Lond., 1733.

Mede's whole works were collected after his death by Dr. Worthington, in one vol. fol., Lond., 1672, with a life of the
MEDUSA (Med, Medj), a country of ancient Asia. It is difficult to determine its boundaries, as they differed at various times. In the time of Strabo it was divided into two divisions, Great Media and Media Atropatene. Great Media, which is a high table-land, is said by all ancient writers to have had a good climate and a fertile soil; an account which is fully confirmed by modern travellers. It was watered on the west and south-west from the low country, watered by the Tigris and Euphrates, by a range of mountains known to the ancients under the name of Zagros and Paraeboetraus. Xenophon however appears to include Media Atropatene, which is watered by the Tigris and Zagros. (Arab., ii., 4, § 27.) On the east it was bounded by a desert and the Caspian mountains (the modern Elburz mountains); and on the north and north-west by the Cadusii, Atropatene, and the Medes, thus answering for the most part to the country of the old Ajemi, Atropatene, which corresponds to the modern Azerbaijan, extended as far north as the Araxes (Aras); it was much less fertile than Great Media, and does not appear to have been included in the Media of Herodotus (i.). It derived its name from Atropates, who successfully opposed the Macedonians, and established an independent monarchy, which continued till the time of Strabo (p. 522, 523, Casaloum), notwithstanding its proximity to the Armenian and Parthian dominions.

The country of Great Media was divided into Agbatana, or Ebattana (Hamadan), the summer residence of the Persian kings. [ECBATANA.] South-west of Ebattana was Bagatana, or Bagastana (Besstoon), situated on the great commercial road which, beginning at Ctesiphon, passed through the Median gates of the Zagros, and terminated at Ebattana. This commercial road, which is determined by the physical character of the country, has continued in use to the present day. In the north-east of Great Media, near the Caspian gate, was the city of Rhae, afterwards a Mede, the Macedonians, and Arsacid by the Parthians, which was founded, or rather colonized, by the Macedonians under Seleucus Nicator. (Strabo, p. 524.) This town, of which the ruins are still visible at Rae, is frequently mentioned in the apocryphal book of Tobit, as the place where many of the Jews resided, who had been carried away captive by Shalmaneser. There are several passes through the Elburz mountains, to the south-east of Tehran, in the neighbourhood of Rae. Near Rhae was the Susian plain, celebrated for the beauty of its horses, the most fertile and most antient times the best in Asia. Arrian informs us that there were 50,000 horses reared in this plain in the time of Alexander, and that there were formerly as many as 130,000. (Herodot., ii. 106, vii. 40; Arrian, vii. 13; Strabo, p. 525; Arrian, vii. 13.)

The mountainous country in the south-western part of Great Media was inhabited by several warlike tribes, who maintained their independence against the Persian monarchy. Strabo mentions four tribes in particular (p. 522): the Mardi, bordering on the north-west of Persia; the Uzii and Elymae, east of Susiana; and the Cossimi, south-west of Great Media. The king of Persia was obliged to pass through the country of the latter whenever he visited Ebattana, and could only obtain a free passage by the payment of a certain sum of money. The Cossimi were defeated by Alexander, but they never appear to have been completely subdued by the Macedonians.

The chief town of Atropatene was Gaza, or Gaziza, as it is called by Ptolemy, at no great distance from the modern Taurus, or Taurerch. North-west of Gaza was a salt lake, called Spauta, or Marthianus (Shahée, or Curia). In the north-east of Atropatene, near the Caspian Sea, there were many nomad tribes, which appear to have formed no part of the Persian empire. The most powerful of these tribes were the Kadius, or Gelri, whence the modern name of that part of the country (Ghilan) is probably derived.

According to Herodotus the Medes were originally divided into six tribes, the Bussa, Parataxeni, Struchates, Arizanbi, Balluari, and Arians (Herodot., i. 62); they were originally called Arru (Herodot., vii. 62); which word appears to denote the same root as Aru, the antient name of the Persians (Herodot., vi. 61). It is not improbable that this name was originally applied to many of the Indo-Germanic nations, Tacitus speaks of the Arii as one of the most powerful of the German tribes (Germ., 43); and India proper is called, in the most antient Sanskrit works, Arya-varta, 'holy land.' The same name was retained in the province of Ariana, and is employed in the East as the proper name of Persia (Iran).

Media originally formed part of the Assyrian empire, but its history as an independent kingdom is given by Herodotus and Ctesias (whose account is preserved in Strabo, i.), and it appears probable that the narrative of Ctesias must refer to a different country. Media: Asia. Ctesias makes the Median monarchy last 292 years; and as Media was conquered by Cyrus about B.C. 560, it follows that the Median monarchy would commence, according to his account, in B.C. 642. Herodotus, on the contrary, assigns to the Median monarchy its commencement in B.C. 740, years which, including the 28 years during which the Scythians had possession of the country, would place the commencement of the Median monarchy c. 716. The founder of the Median dynasty was Araxes, brother to Ctesias, who reigned eight kings from him to Astyages.

According to the account of Herodotus there were four kings of Media: 1. Deioces, who reigned c. 710-677. 2. Phraortes, B.C. 657-635, greatly extended the Median empire, subdued the Persians, and many other nations, but fell in an expedition against the Assyrians of Ninus (Nineveh). 3. Cyaxares, B.C. 635-595, completely organized the military force of the empire, and extended its boundaries as far west as the Haly. In an expedition against Nineveh, he was killed, c. 625, and was succeeded in the Median kingdom by Astyages, son of Cyrus, and Media reduced to a Persian province.

The history of the rise of the Persian monarchy is related very differently by Xenophon, who also makes a fifth Median king, Cyaxares II., succeed Astyages.

The general Eumenes, descendant of Darius II., the father of the younger Cyrus, about B.C. 406, but were again subdued. (Herodot., i. 130; Xenoph., Hell., i. 2, § 15.) They did not appear after this time to have made any further attempt at recovering their independence. On the downfall of the Persian empire they formed a part of the kingdom of the Seleucidæ, and were subsequently subject to the Parthians.

MEDICI, FAMILY OF. The early history of the family of the Medici is obscure, although some authorities of the earlier times have considered them of Sienese extraction. But it must be remembered that these genealogies were made after the elevation of this family to supreme power in Florence. It appears however, from authentic monuments, that many individuals of this family had signified themselves on the political stage of Italy for several centuries, occasionally as the defenders of the republic, at other times as the champions of the monarchy. In the year 1251, with a body of only one hundred Florentines, forced his way through the Milanese army, then besieging the fortress of Scarparia, and entered the place with the loss of twenty lives. Francesco de' Medici was at the head of the magistracy of Florence in 1415, at the time when the black plague, which had decimated so large a portion of the world, extended its ravages to that city. Salvestro de' Medici acquired great reputation by his temperate but firm resistance to the nobles, who, in order to secure their power, had united themselves to the party of the Guibelines, then in great odium at Florence. The persons so accused were said to be ammutati (dismembered), and that act were excluded from all offices of government. In the year 1379, Salvestro, being chosen chief magistrate, exerted his power to reform this abuse, which was not however effected without a violent commotion, in which several of the nobility lost their lives.

After the death of Salvestro, his son, Verdi de' Medici, continued to hold a high rank in the republic, and was in great favour with the populace.

The founder however of that greatness which his posterity enjoyed for several ages was Giovanni de' Medici, the great-grandfather of Lorenzo the Magnificent. By a strict attention to commerce, he acquired great wealth; by his incomparable moderation, and liberality, he increased the influence and esteem of his fellow-citizens. Without seeking after the honours of the republic, he was honoured with them all. The policy by which the house of Medici attained
his political power is indicated in the charge given by this venerable old man on his death-bed to his two sons, Cosmo and Lorenzo: 'I feel,' said he, 'that I have lived the time prescribed. I die content; leaving you, my sons, in influence and in health, and in such a station, that whilst you do your best to please the nation you in year after year are honoured and respected. Nothing affords me more pleasure than the reflection that my conduct has not given offence to any one; but that, on the contrary, I have endeavoured to serve all persons to the best of my abilities. I advise you to do as the example of Cosmo, with respect to the monarchs of the state, if you would live with security, accept only such as are disposed on you by the laws and the favour of your fellow-citizens; for it is the exercise of that power which is obtained by violence, and not of that which is voluntarily given, that occasions hatred and contention. I died in the year 1428, leaving two sons, Cosmo, born in the year 1389, and Lorenzo in 1394, from the latter of whom is derived the collateral branch of the family, which in the beginning of the sixteenth century obtained the absolute sovereignty of Florence. 

Even in the life-time of his father, Cosmo had engaged not only in the extensive business by which the family had acquired its wealth, but also in the affairs of state. Such was his authority and responsibility, that at Florence, where he had been elected pope, and had assumed the name of John XXIII., was summoned to attend the council of Constance, he chose to be accompanied by Cosmo de' Medici, among other men of eminence, whereafter he had been elected by the council, which continued nearly four years, Balthasar was deprived of his pontifical dignity, and Otto Colonna, who took the name of Martin V., was elected pope. Cosmo did not desert in adversity the man to whom he had attached himself in prosperity. Cosmo's favours were so great that he redeemed him, on the hands of the duke of Bavaria, who had seized upon his person; and afterwards gave him an hospitable shelter at Florence during the remainder of his life. The successful pontiff, instead of resenting the kindness of Cosmo, in the_delegate for his undertaking to visit to Florence, where, on the formal submission of Balthasar, and at the request of the Medici, he created him a cardinal, with the privilege of taking the first place in the sacred college. The new-made cardinal died in 1419, and it was rumoured that the Medici at his death possessed themselves of immense wealth which he had acquired during his pontificate. This rumour was afterwards encouraged by those who well knew its falsehood. The true source of the wealth of the Medici was their superior talents and abilities, and the influence which they held over the state. Cosmo's confidence in his father, was scarcely sufficient to discharge his debts and legacies. The authority which Cosmo and his descendants exerted in Florence, during the fifteenth century, consisted rather in influence than in any definite power. Cosmo exerted his influence through his wealth, and the discontent of the Florentines with the result of the war against Lucca, a party arose, headed by Rinaldo de' Abizzi, which, in 1433, after filling the magistracies with their own adherents, seized Cosmo, and committed him to prison. He was afterwards banished to Padua for ten years, and several other members and friends of the Medici family were treated in the same way. From Florence Cosmo proceeded immediately towards Venice, where he was received with marked respect by the Venetians. Upon the death of the de facto ruler of the state, he went to Padua. Upon an application to the Florentine state by Andrea Donato, the Venetian ambassador, it was consented to that he might reside on any part of the Venetian territories, but not to approach within one hundred and seventy miles from Florence. As far as he appeared to be on his journey, he was met with at Venice induced him to fix his abode there. Within a year of Cosmo's retreat, Rinaldo was obliged to quit Florence; and Cosmo was recalled, and returned amidst the acclamations of the people. The gonfaloniers, or stand-on, immediately established the Medici into the Alicia sentence, with a few others of his party, were put to death on the occasion. Measures were now taken to restrict the choice of magistrates to the partisans of the Medici, and alliances were formed with the neighbouring powers for the purpose of maintaining a state without a government, or administration in Florence. The subsequent life of Cosmo de' Medici was an almost uninterrupted course of prosperity. The tranquillity enjoyed by the republic, and the satisfaction which he experienced in the esteem and confidence of his fellow-citizens, enabled him to indulge his taste for the promotion of science and the encouragement of learned men. Though a private citizen, he surpassed all the princes of Europe in his munificent patronage of literature and the fine arts. He assembled round him some of the greatest men, who laboured hard to cultivate the Greek language and philosophy. He established at Florence an academy expressly for the explanation of the Platonic philosophy, at the head of which he placed the celebrated Marsiliius Faciens. By means of foreign corres-

pondents he communicated the Greek, Latin, and Italian tongues which formed the basis of the Laurentian library; nor was he less liberal in his encouragement of the fine arts. During the retirement of his latter days, his happiest hours were devoted to the study of letters and philosophy, and the conversation of learned men. He also endowed numerous religious houses, and built an hospital at Jerusalem for the relief of distressed pilgrims. The spirit of his administration was moderate, he avoided all appearance of state which might excite the jealousy of the Florentines; and, by way of increasing his, he confined the marriages of his children to Florentine families. By this prudent conduct and his benevolence, he acquired the title of 'father of his country,' which was inscribed on the bust which he set up in the Laurentian library. By real merit, has ever since been attached to the name of Cosmo de' Medici. He died August 1st, 1464. Cosmo de' Medici married Contesina Bardi, of a noble and illustrious family, which had been long distinguished at Florence. Ten sons were born to Giovanni and Piero; and he had a natural son by a mistress.

Giovanni de' Medici was one of the Florentine ambas-
sadors who were sent, in 1455, to take the necessary oaths to Calixtus III., who had succeeded Nicholas V. He was ambassador on whom was committed the task of arranging the marriage of Lorenzo, who, although he was a child, was regarded as the last hope and expectations rest; but he died prematurely in 1463. Giovanni married Cornelia de Alessandri, by whom he had only one son, who died an infant. Piero de' Medici succeeded to Cosimo's fortune and authority at Florence: Cosimo's life, had resisted the temptation to use the power which his events had placed in his hands. He held with a view to employ one Dottisalvi Neroni as his minister, whom he believed to be attached to the Medici interests; but the ambition of Neroni, and the disaffection of some former friends of the Medici, had nearly proved fatal to Piero. He was the immediate cause of the conspiracy which is said to have arisen to surprise Piero at one of his country residences; but one of the conspirators went and communicated the plot to him. Piero, by an expeditious return to the city, at the head of a chosen troop of his friends, surprised the designs of those who were about to put his death by force; and though, with the assistance of the Venetians, they afterwards made a stand, they were finally compelled to evacuate Tuscany. Piero died Dec. 3, 1469, leaving by his wife, Lucretia di Buonaccorsi, two and two daughters, Lorenzo, Giuliano, Bianca, and Giovanna.

At the death of Piero de' Medici, his two sons inherited his property; but Lorenzo succeeded him as head of the republic, and upon him the title of Magnifico was afterwards conferred. From the time of Cos-
mo's death, in 1464, on account of the infirmities of his father, Lorenzo had been introduced to a knowledge of public affairs, although then only in his sixteenth year. With this view he was sent to visit the principal courts in Italy, and it would appear that he visited Spain, and that he, went, with other citizens of Florence, to congratulate the new pope, and was invested with the office of treasurer of the holy see; and while at Rome took every opportunity to add to the remains of antient art which his family had collected. When, however, events of this nature are the administration of affairs was a revolt of the inhabitants of Volterra, on account of a dispute with the Florentine re-

public. By the recommendation of Lorenzo, force was used, and the result was the sack of Volterra, and the submission of Pisa, to which city he removed in order to complete the undertaking: he selected the most eminent professors, and contributed a large sum from his private fortune, in addition to that granted by the state of Florence. Lorenzo, who was, or was supposed to be, an active part in the establishment of an academy for the cultivation of the Platonic philosophy, and instituted an annual festival in honour of Plato. Whilst Lorenzo was thus dividing his time between the administration of the state and the promotion of literature, the Pazzi,
Lorenzo distinguished himself above all his predecessors by the encouragement of literature and the arts. His own productions were sonnets, canzoni, and other lyric pieces; some epic poems, popular stanzas, and various sacred poems. Many of the lighter kind were popular in their day. Although the ancestors of Lorenzo laid the foundation of the immense collection of manuscripts contained in the Medici library, he has the merit of having added most largely to the stock. For the purpose of enriching his collection of books and antiquities, he employed learned men in different parts of Italy, and especially his intimate friend Politian, who made several journeys in order to acquire, and purport the valuable remains of antiquity. Two journeys were undertaken at the request of Lorenzo into the East by John Lascaris, and the result was the acquisition of a great number of manuscripts. On his return from his second expedition, Lascaris brought two hundred manuscripts, many of which he procured for the monastery of Mount Athos; but this treasure did not arrive till after the death of Lorenzo, who in his last moments expressed to Politian and Pico of Miranda his regret that he could not live to complete the collection which he so much desired. On the occasion of printing, Lorenzo quickly saw and appreciated its importance. At his suggestion, several Italian scholars devoted their attention to collating the manuscripts of the ancient authors, for the purpose of having them accurately printed. On the capture of Constantinople by the Turks, many learned Greeks took refuge in Italy; and an academy was established at Florence for the purpose of cultivating the Greek language, partly under the direction of these learned Greeks, and partly under native Italians. The services of these learned men were procured by Lorenzo, and were amply rewarded by his bounty. 'Hence,' as Rose observes, 'succeeding scholars have been profuse of their acknowledgments to their great patron, who, by founding that establishment, from which (to use their own scholastic figure) as from the Trojan horse, so many illustrious champions have sprung, and by means of which the knowledge of the Greek tongue was extended, not only through Italy, but through France, Spain, Germany, and all the countries of northern Europe, the pupils attended at Florence, who diffused the learning they had there acquired throughout the rest of Europe.'

Lorenzo also augmented his father's collection of the remains of antique art. He appropriated his gardens in Florence to the purpose of an undisturbed antiquity, which he furnished with statues, busts, and other works of art, the best in their kind that he could procure. The higher class of his fellow-citizens were invited to these pursuits by the example of Lorenzo; and the lower class by his liberality. To the latter he not only allowed competent stipends while they attended to their studies, but gave considerable premiums as rewards of their proficiency. To this institution, more than to any other circumstance, Roseo ascribes the sudden and astonishing advance which, in the course of the fourteenth century, was made in the arts, and which, commencing at Florence, extended itself to the rest of Europe. In 1448 Lorenzo lost his wife; and on the 8th of April, 1492, he sunk under a slow fever, and expired in the forty-fourth year of his age. Of the Medici, Lorenzo, a person of great eminence in his profession, is said to have hastened his death by mistaking his case.

By his wife, Clarice Orsini, Lorenzo had a numerous family: three sons (Piero, Giovanni, and Giuliano) and four daughters (Caterina, Giulia, Clarice, and Isabella). Caterina was married to Vincenzo Gonzaga, Viscount of Mantua, and having been created a countess, died in Mantua in 1452. Piero was born Feb. 15th, 1471, Giovanni in 1475, and Giuliano in 1478. Giovanni was afterward known under the name of Leo X.; and Giuliano, having allied himself by marriage to the royal house of France, became Duke of Nemours.

Of Giuliano the brother of Lorenzo, there is an interesting anecdote. Shortly after the attempt at assassination, he says, 'Lorenzo received a visit from Antonio da San Gallo, who informed him that the untimely death of Giuliano had created his disappointment a great grief, and of the advancement with which it was now necessary that he should be acquainted: this was the birth of a son, whom a lady of the family of Gorini had borne to Giuliano about twelve months before his death, and whom Antonio had named Lorenzo. To give this child an official foundation, Lorenzo immediately repaired to the place of the infant's residence, and taking him under his protection, delivered him to Antonio, with whom he remained until he had arrived at the seventh year of his age. This concealed son of Lorenzo and Clarice Orsini, who supplied the untimely loss of a father, was destined to act an important part in the affairs of Europe. The final extinction of the liberties of Florence, the alliance of the family of Medici with the royal house of France, the exclusion of the Popes from Italy, and the loss of the Roman Church, and the consequent establishment of the doctrines of the reformers in this island, are principally to be referred to this illegitimate son of Giuliano de' Medici, who through various vicissitudes of fortune at length obtained the name of Clement VII. guided the bark of St. Peter through a succession of the severest storms which it has ever experienced.'

Piero, the eldest son of Lorenzo, succeeded him in the administration of the Medici state. Politian said that his father had a favourable opinion of his capacity, but it soon appeared that he was unequal to the task of government. With the view of obtaining the sovereign power at Florence, he formed a more intimate connection with the Pope. The excommunication of Innocent VIII. on his return to Florence in 1492, and under Charles VIII. he deserted his allies. As soon as the French king reached the confines of the Florentine state, Piero had a secret interview with him, in which he was lavish in his offers to promote the interests of the king, and as a pledge of his fidelity surrendered to him the important fortresses of Sarzana, with the town of Pietsa and Lombari, and the cities of Pisa and Leghorn. Charles undertook to restore these places as soon as he had accomplished the conquest of the king of Naples. On his return from France into Italy under Charles VIII. he deserted his allies. The French troops, which had entered the city without opposition, led the way to this act of barbarism, in which, though divided by the Florentines themselves, who openly carried off or purloined whatever they could discover in their libraries, and of whom many ecclesiastical and civil study manuscripts and books were plundered, the plunderers carried off the inseparable specimens of the arts which the palace of the Medici contained, and which had long made it the admiration of strangers and the chief ornament of the city. Exquisite pieces of ancient
reverential imitation. His sons Thessalus and Draco, and his son-in-law Polybius, were the most renowned of his descendants, and they are generally regarded as the founders of the Hippocratic or Dogmatic school.

The establishment of the Alexandrian school of philosophy forms the next most important epoch. The science of medicine was assiduously cultivated, and the human body was first dissected in Alexandria by Herophilus.* [HEROPHILUS.] The former was the pupil of Chrysippus, a violent opponent of the Hippocratic school, and a bold innovator in medicine, with whom probably the spirit of Hellenism in consequence of which, for some centuries, every branch ranged under two sects, the Dogmatists and the Empirics. The Dogmatists held that disease could not be securely treated, except on the foundation of a knowledge of the healthy structure and functions of the body, or of the symptoms of remedies, and the effects of disease upon it; while the Empirics maintained that such knowledge was not only unnecessary, but unattainable, and that simple experience should be the only guide to practice. The progress of the science was greatly accelerated by their rivalry, and the dispute only seemed to cease with the introduction of a new sect.

During the early periods of the Roman empire medicine seems to have been a little cultivated by Celsus and Pliny (xxvi. 1), Rome was for 600 years without a professor of medicine, though not entirely without medical knowledge. The first individual of any eminence who practised medicine in Rome was Asclepiades of Bithynia (ASCLEPIADES), who resided in the court of the Medici, and was not only revered by the Christian era; but he does not appear to have advanced the knowledge of the science. He was succeeded by his pupil Themison, the founder of a sect called Methodists, who held doctrines nearly intermediate between those of the Dogmatists and the Empirics. A large number of ancient physicians attached themselves to this sect, and among them were Soranus and Aurelius, whose writings are the principal that remain of this period.

About two centuries later the Methodists were divided into numerous sects, as the doctrines of particular physicians became more generally received. The chief of these sects were the Pneumatics and the Ecolics. The former are represented by their most eminent writer, Aretæus [ARETÆUS], who lived in the reign of Vespasian, and wrote considerable works, and, in his treatise of wounds, the chief points of their doctrines are detailed in his life. Of the Ecolics, the most celebrated was Archigenes of Apona, who practised at Rome in the time of Trajan. But the most remarkable writer of this age was Celsus, in whose work, ‘De Medica,’ he proposed a new system of medicine, and in this he was followed by others, but not so far as to make considerable progress; the several sects of its professors differed rather in their pretensions than in any important point of knowledge; the philosophical learning, which some sought and others despised, was almost entirely hypothetical, and had relation only to the doctrines of the mutual actions of imaginary atoms, elements, and spirits, but all had been alike engaged in the study of practical medicine, and their accumulated experience had by this time formed a very considerable amount of useful knowledge.

In the sixth century before the Christian era, medicine, when the traditions of which were so anciently transmitted, and a new chapter in the history of medicine in Galen; but it will be unnecessary to repeat what has already been said of his doctrines and practice. [GALEN.] For a long time after his death his works and imitations were multiplied, and all who would compose a volume of Greek remedies, and make them as widely known as possible. His writings were regarded as ultimate authority, and all things that seemed opposed to them was at once rejected. From the time of Galen to the seventh century the only names of any reputation is that of Rhazes, but the knowledge of his works, and the qualities of the sands, and the death of the last of these, no medical work of the least merit was published in the Greek language.

From the seventh to the twelfth century the only nation in which medicine made any progress, or was even to be traced, was the Arabian. It appears that in
the conquest of Alexandria some books were saved from the burning of its magnificent library, and that among them were the writings of Hippocrates and Galen. The latter were soon translated into Arabic and diligently studied; and all the earliest Arabic works on medicine, those of Avicenna and Serapion in the ninth century, are little more than transcripts of those of Galen. One of the most illustrious of the Arabian school was Rhazes, who was born in the ninth century, and whose works contain many original observations, of which the most remarkable are related from the chemical processes which he used to destroy unknown to, or at least not described by former writers, as smallpox and measles. In those parts of his writings which relate to pharmacy Rhazes describes some of the earliest of what are called chemical remedies, which were probably the first study of the systematic practice of chemistry among his countrymen. After Rhazes was Ali-Abbas, and after him Avicenna, who attained the highest repute of all. He was born in 980, and has left voluminous writings, which however appear to show that his fame is deserved only when he is placed in comparison with his contemporaries. Neither Avicenna nor the later writers, Moshe and Abulcasis, contributed anything of importance to the progress of medicine. Avenzoar and Averroes were disciples of the same school, and more than native to Spain, but wrote in the Arabic language. The former was the successor of the latter, and lived in the eleventh century, and his works are among the few that exhibit even slight departures from the doctrines of Galen. The circumstances under which the Arabic school of medicine are, the more correct description of several diseases, the first records of some new and important ones, and the introduction of several valuable remedies, both from the vegetable productions of the tropical and oriental countries, and from the chemical processes which they then first brought into general use. But the physicians adhered too carefully to the doctrines of Galen to make much progress in their science; and anatomy, physiology, and pathology appear to have been almost entirely neglected.

The school of the Arabian school in the twelfth century to the beginning of the fifteenth, the history of medicine presents few circumstances of interest. The dissection of the human body was first publicly practised by Mondini at Bologna, about the year 1075, and at about the same time Robert, the first English writer on medicine who acquired any repute. Between the twelfth and fifteenth centuries several of the most important universities were founded, with a school of medicine attached to each: that of Salerno, which was established in the twelfth century, that of Montpellier in the thirteenth, those of Bologna, Visenna, and Paris in the fourteenth, and in the fifteenth those of Rome, Padua, Pavia, and several other cities in Italy. By means of these, and by the impetus which, with all other sciences, received a new impetus from the invention of the printing art, the study of medicine commenced a forward course. In this country it derived the greatest advantages from Linacre [LINACER] and the establishment of the college of physicians, to whose members, in succeeding years, several of the most brilliant discoveries are due.

In the fifteenth century the sect of chemical physicians arose, and their doctrines, under the bold advocacy of Paracelsus, who publicly burnt the writings of Galen, obtained considerable credit and numerous supporters. Their most important is the doctrine that the operations of the human body are entirely governed by the same chemical laws as obtain in inorganic matter; and the works of all the writers of the fifteenth century are filled with arguments in support of either this doctrine or of the doctrine of Valerius. The Galenic doctrine of the four elements is rejected, and the theory of the natural philosophers is that the human body is composed of four principles, that of the air, of the fire, of the water, and of the earth.

From the time of Vesalius, the study of anatomy was diligently pursued, and in the early part of the seventeenth century was rewarded by several of the most interesting and important discoveries; as that of the circulation by Harvey [HARVEY], of the absorbents by Aselli, and of the process of respiration by Malpighi [MALPIGHI], and numerous others. Among the most celebrated men of the seventeenth century, may be enumerated Glisson, Bartholin, Rudbeck, Fabricius, Hooke, Sylvia, Willis, Riolanus, and Huygens, all of whom and their disciples were employed in the diligent pursuit of anatomical and physiological knowledge; and, somewhat later, Sydenham again introduced a truly Hippocratic mode of observation of the phenomena of disease in its symptoms, causes, and effects, and in the influence of remedies, a research into the nature and properties of the phenomena of the living body. The ant-mathematicians, as those who supported this theory were called, were long engaged with the chemists, who had already conquered the Galenists; and to these rival sects the vanity of the discoveries of Newton and others was thrown. The medical profession was ignorant of the phenomena of the living body. The Vitalists held that there is in the living body a principle (upon which different members of the sect confer different hypothetical appellations) which presumably preserves the life of the living body and is directly opposed to the influence of chemical and mechanical agents. Stahl, Hoffmann, and Boerhaave were of this school, though each considerably modified the opinions of his former masters. Among the pupils of Boerhaave were Van Swieten and Haller. The former adopted the hypothetical spirit of the school too closely to add much of real value to medical science; but the latter may be fairly considered to have done more for it than any other single individual of the ant-mathematicians, and others, who devoted themselves to the simple observation of facts and the evident deductions from them, were exceptional; but since his time, the exceptions have rather been those who, with a comprehensive observation of facts, have endeavoured only to find or support some theory by which all the phenomena they met with might seem explained. Haller's contemporary Cullen [CULLEN], though he yielded much more to theory, was of eminent service in its opposition to the empiricism and other objections to the discoveries of those whose works are acknowledged to have introduced many useful lessons in the same branch of the study.

With the gradual oblivion of the hypotheses of both Cullen and Brown, the theoretical study of medicine may have extended its influence to different centuries, and on this day we may certainly be said to be without any general medical theory. From the time of Haller, medicine has acquired more and more nearly the character of a science of simple observation and the patient investigation of facts. The history of medicine, of the conquests of discovery, of the gradual and cumulative progress made by the study of facts, of the systematic classification of successive discoveries, each perhaps small when compared with the vast amount of knowledge still unexplored, yet altogether so numerous that even a sketch of them could not be here introduced. The reader must be referred to the Van Berchem [GALLEN], and to the philosophy of medical science and its collateral sciences, and to the lives of those who have been most conspicuous for their discoveries.

MEDICIN, a corruption of Medicina, is a name given to different branches belonging to the Papilionaceae division of the Leguminous order. Black medic is Medicago lupina; purple medic is M. sativa, or Lucerne; yellow medic is M. falcata. They are all agricultural plants, and of considerable value, but Lucerne is only the one generally cultivated. (LUCERNA.) Black medic, also called. Black medick, or M. lupins, is sometimes sown by farmers in dry gravelly soil as the commencement of a pasture; unless sheep-fed, it lives only for a couple of years, but during that time it yields a crop, and when it dies off, the perennial grasses soon supply its place. The pod of the black medic is green, and pass through the body. If the seed is not eaten by sheep or other animals, it becomes a true creeping herb, and forms a valuable part of the herbage. Its name is derived, not from the colour of the flowers, for they are yellow, but from the fact that the pods, which are curved, black, and clustered together. That it should be supposed to be the same as hop-trefol would have scarcely been credited, did we possess evidence of the fact in one of the best of our English works on agriculture; this latter plant resembles it in the leaves.
and flowers; but the latter, when the pods are ripe, cover the ground in such a way as to produce the appearance of a bed of hop-flowers. Yellow medick is only grown in very poor soils in some parts of Europe; in England it is not an agricultural plant, but is found wild on the tops of old walls and on ancient ruins, which it clothes with a green herbage, and on and between walls and stones, in yards, or in borders, there is room for its long roots to extend themselves. Tree medick (Medicago arborea) is a large bush in the south of Italy, and was doubtless the plant called Cytisus by the Romans.

**MEDINA. [ARABIA.]**

**MEDITERRANEAN (or Midland-Sea), the name of the sea between the Straits of Gibraltar to the west and the Dardanelles and Syria to the east. This sea was anciently called The Sea, or the Great Sea, by the Jews. The title of the Mediter-**ranean: Herodotus calls it *this sea* (i. 185); and Strabo calls it *the sea within the columns,* that is, within the Straits of Gibraltar (121, 491, Casab.). Meila calls the whole sea by the name *our sea* (*nostur mare*), and observes that, byfacility, the inference from this name appears to have no general name for it. The term Mediterranean is not applied to this sea by any classical Latin writer. It was called bahar-oorn, or the sea of Rome, by the Arabs.

The Mediterranean is comprised between the parallels of 30° 15’ and 45° 50’, and the meridians of 3° 30’ W. and 36° 10’ E. The distance from Gibraltar to the farthest shore of Spain is 2900 miles, and the narrowest part, between Sicily and Africa, is 79 miles across. The Mediterranean, including the Balearic, the Mediterranean, and the Adriatic, is from 344 to 1000 miles. The surface of country of which it receives the drainage is very difficult to estimate, but may be assumed to exceed this quantity. On the shores of this sea have been transacted the most important events in the history of mankind, and the character seems to mark it as the theatre best adapted to the complete and rapid civilization of the race. From the great diversity of soils and productions, under a varied and favourable climate, the colonists, from whatever points of the earth, of the time of its occupation, have been induced by different habits under which their several energies and capabilities would be developed. The comparative shortness of the distances of these places, by rendering navigation easy and pleasant in small and imperfect vessels, and by facilities large intercourse from the states appears to have no general name for it. The term Mediterranean is not applied to this sea by any classical Latin writer. It was called bahar-oorn, or the sea of Rome, by the Arabs.

The Mediterranean is comprised between the parallels of 30° 15’ and 45° 50’, and the meridians of 3° 30’ W. and 36° 10’ E. The distance from Gibraltar to the farthest shore of Spain is 2900 miles, and the narrowest part, between Sicily and Africa, is 79 miles across. The Mediterranean, including the Balearic, the Mediterranean, and the Adriatic, is from 344 to 1000 miles. The surface of country of which it receives the drainage is very difficult to estimate, but may be assumed to exceed this quantity. On the shores of this sea have been transacted the most important events in the history of mankind, and the character seems to mark it as the theatre best adapted to the complete and rapid civilization of the race. From the great diversity of soils and productions, under a varied and favourable climate, the colonists, from whatever points of the earth, of the time of its occupation, have been induced by different habits under which their several energies and capabilities would be developed. The comparative shortness of the distances of these places, by rendering navigation easy and pleasant in small and imperfect vessels, and by facilities large intercourse from the states appears to have no general name for it. The term Mediterranean is not applied to this sea by any classical Latin writer. It was called bahar-oorn, or the sea of Rome, by the Arabs.

As a notice even of a cursory kind, of countries and cities whose history is connected with almost every history in the world, would greatly exceed our limits, we shall confine ourselves almost entirely to those points which concern our subject as acts, relate the course of all specific information to the particular names. We shall therefore take a short view of the shores, beginning at Syria and proceeding along Asia Minor to Gibraltar, and return along the coast of Africa to Egypt, noticing some remarkable historical points, the commerce, winds, currents, and the saltness of the water, and introducing slight references to the navigation, ancient and modern, and the principal naval actions.

The shores of Syria, the general name of the country between Anatolia and Arabia, are mountainous between Tripoli and Tyre, but present in many places a large extent of low and flat coast. The climate is excessively hot in summer, and the winter often severe. The chief ports are Alexandria, Beyrut, and Tripoli. The trade is carried on in small vessels, and those whose cargoes are not sufficient for the present government of the Turkish pashas it is very small. Tyre, and Sidon, afterwards still more famous, are reduced to fishing villages. Though the country was antiqutly inhabited above Mount Carmel by the Phoenicians, but few ancient monuments have been found bearing inscriptions.

The coast of Anatolia, the west portion of Asia Minor, is mountainous, rising in some parts very near to the sea to 7900 and 9000 feet. It is now a Turkish province. About 50 leagues from the nearest coast of Syria is the island of Cyprus, where the greatest number of Phoenician inscriptions have been found, though none of a date prior to three centuries before Christ. The island of Candia, the name given by the Venetians to the ancient Crete, is highly fertile, very productive, and beautiful, but has little trade, and the hilly; Candia stands in the port of the same name; Suda is a fine port. The island of Rhodes, celebrated for the first code of maritime laws, for its schools in the time of the Romans, and in the wars of the Knights of Jerusalem against the Turks, in the Archipelago, and in the part of the same name, is in now in the hands of the Turks. It produces wine, fruit, and pine-temper.

The numerous islands in the sea called the Egean Sea, between Greece and Asia Minor, forming the Grecian Archipelago, are in general verdant and picturesque, and afford delightful sailing in summer, but they are subject to very heavy squalls. The sides of the islands being steep, and the water very deep, there are in general no anchorages but in particular places. Dolos, celebrated for its temple and oracle, the existence of which is doubted, was at one time noted for its trade in slaves. It declined in the wars of Mithridates. Scio, a high and beautiful island, covered with the gardens of the Greek merchants, of whom it was the favourite resort, was devastated by the Turks in 1822. Milo the island of Cythera, the most noted of the Archipelago. The Archipelago and its coasts contain many high mountains, as Athens, 6774 feet high, and many others. Smyrna, a place of high antiquity, is the great commercial entrepot of this part of Asia Minor. The chief exports are silk, drugs, and fruits, for which ships carry manufactured goods, sugar, corn, &c. Tenedos, opposite the site of Troy, retains its ancient name.

On the opposite side of this sea is Salomica, a large city of S. 7000 inhabitants, at the head of a bay. The anchorage is good and the trade to an area. Athens, the residence of the Greek merchants, of whom it was the favourite resort, was devastated by the Turks in 1822. Milo the island of Cythera, the most noted of the Archipelago. The Archipelago and its coasts contain many high mountains, as Athens, 6774 feet high, and many others. Smyrna, a place of high antiquity, is the great commercial entrepot of this part of Asia Minor. The chief exports are silk, drugs, and fruits, for which ships carry manufactured goods, sugar, corn, &c. Tenedos, opposite the site of Troy, retains its ancient name.

The coast of the Morea, the ancient Peloponnese, is mountainous, some of the summits exceeding 6000 feet. The country is verdant and of an agreeable aspect, but not well wooded; the productions are numerous, but the trade small. It was given up by the Turks in 1830, to form a part of the new state of Greece. It consists of an arm of the sea, and on the isthmus which joins Livadia to the Morea, formerly renowned as one of the most splendid and luxurious of cities, is now a small town exhibiting a few remains of its ancient architecture. Athens, beyond the isthmus, is the capital of the modern Greece, and has been increasing in importance since the commencement of the reign of Otho, the first king of Modern Greece. It is not a place of much trade.

The coast of Albania, including the ancient Illyricum, is more mountainous, and much more arid than those to the southward. It is now part of the kingdom of Greece; it has but little trade. The known harbours are Antivari, Dulcigno, Durazzo, Valona, Parga, and Preveza. Off this coast and the Morea lie the Adriatic Islands, a group of small islands, of which the largest is Corfu. This island is connected with Tragumena by a causeway, and is the seat of government, which is carried on in the name of the Republic of the Seven Islands, and which is placed under the protection of Great Britain by the treaty of Vienna, 1814. Corfu is picturesque, fertile, and wooded. Cefalonia has a good dry aspect; it contains 5380 feet high, which is a conspicuous landmark. Inside Cefalonia is Ithaca, now called Teaki, the native place of Ulysses. The fertile island of Zante, famous for its currants, is to the southward. Proceeding to the northward we enter the Adriatic Sea, which is broad. The shores of Dalmatia and Istria afford numerous fine harbours, and are covered towards the interior with extensive forests of timber, much of which is fine oak. In Dalmatia is Ragusa, formerly a republic, and a naval port, whose trade was long known even to our own shores. Above Ragusa the eastern shores are studded with islands affording good anchorage.

The Greeks, especially the Hydriots, are active sailors. Their employment is to fish, labor, and pull, but they seldom venture to sea except in fine weather or with a fair wind. The trade to the Black Sea is chiefly carried on in Greek bottoms.

Treaty, the chief port of Austria, is a large and handsome city, and a place of great trade, and the principal naval port, and the produce of the mines of Hungary. It is a free port.

Venice, founded in the fifth century upon numerous small islands at the mouth of the Po, celebrated as the entre-
The chief port on the south coast of France is Marseille, at the mouth of the Rhône, said to have been founded by a colony of Phocæans, who, from the great trading facilities of the place, extended their possessions along the shores on both sides. Amongst these are Frejus, where Bonaparte landed on his return to Italy in 1814; and Elba, from which he escaped in 1815. The Marseillais have been renowned as navigators. The principal exports are silk and wines; there is a great and increasing trade; and from 5000 to 6000 ships arrived in 1831. In the frescoes of the Rhône the fisher may be seen at far out on sea, and Exmouth's fleet sailed in this manner in the late war.

Toulon is the great naval arsenal of France. The Gulf of Lion, like all the gulfs on the north shores of the Mediterranean, is subject to violent gales from the northward, which may be blown, when out at sea, and Exmouth's fleet sailed in this manner in the late war.

The islands of Sardinia and Corsica, lying north and south, extend over 80 leagues of the sea between Genoa and Tunis. The climate of Sardinia is mild, and the soil fertile. It exports corn, salted provisions, and fruit. The natives are savage. These islands are the birthplace of Bonaparte. The small island of Malta, composed chiefly of calcareous sandstone, is, from its situation in the narrow sea between Sicily and the great Mediterranean, and second in importance to Gibraltar. The island is productive, and the population dense. Malta was ceded to the English in 1814. The Maltese are active sailors and export divers; their vessels are small and open.

The most productive coasts of the Mediterranean are a highly fertile but not well wooded coast. The chief products are wine and olives and wool. The coast is particularly adapted to navigation by steam-vessels; but the disturbance of the coast-line, and the countless cutlers of the straits, do not allow foreign steam-vessels to ply, keep the trade in a very low state. The chief ports are Valence, which is a very handsome city; Cartagena, which is one of the finest harbours in the world; Barcelona, not adapted to large ships; Alicante, and Malaga.

The Balearic Islands, Majorca, Minorca, with Ibiza, one of the Pyramids, now under the Spanish government, produce wine, corn, fruit, and some manufactures. The chief harbours are Palma and Port Mahon.

Minorca is a rocky mountain, 1430 feet high; the height of a place of extraordinary strength. From its situation, and the narrowness of the straits dividing Spain from Africa, which are only eleven miles across, Gibraltar is the key of the Mediterranean, and has been the object of violent war, as well as commerce. The difficulty of its possession was so great that it was left in the possession of the British. It is a free port, but not a place of very great trade, and smuggling as extensively carried on. A constant current sets through the Straits of Gibraltar from the Atlantic at the rate of two or three miles an hour, and is felt as far as Cabo de Gata in Spain, 150 miles distant. Dr. Halley supposed this current required to supply the loss by evaporation, considering that the rivers which flow into this sea were not sufficient for the purpose. The writers of the Encyclopédie Methodiques state that the supply of water in the Mediterranean is obtained by evaporation, and returned again in the form of rain. But this would be the case for the sea outside and inside the straits; and that the numerous rivers of the Mediterranean, draining down the whole of the region, would cause a supply in excess, which would require an outward current to carry it off. It had been taken for granted that the water of the Mediterranean must be saltier than that of the ocean, in consequence of the continual current; but the fact is the contrary. Below 800 feet, the proportion of saltiness increased with the depth; it would naturally follow that a much slower current below would be sufficient to carry off the excess of salt left by evaporation. Capt. Smyth, at the suggestion of Dr. Wollaston, obtained water
from the depth of 400 or 500 fathoms, and at 450 and 650 miles to the south of Alexandria, where, as I have elsewhere mentioned, the depth is not exceeded. But in the water drawn from 670 fathoms depth, at only 50 miles from the strand, he found four times the usual quantity of saline matter; from which it would appear that a current below of only three-quarters of a mile a day, for 500 miles, has carried this water towards the sea. It may be worth while to mention also that a story is told of a ship which sunk at Ceuta, opposite Gibraltar, having reappeared two miles farther to the westward. (Phil. Trans., 1819, 1825, 1829.)

Tunis, the most populous city of Africa after Cairo, stands at the bottom of an extensive bay, from which it is separated by a shallow lake of intense saltness, from the continued evaporation under a hot sun, and on which are seen great numbers of flamingoes of a brilliant red plumage. This trade is with Marseille, to which the inhabitants export corn, the product of these fertile countries, now, as it was, in the days of ancient Carthage. The ruins of Carthage, east of the Columns of Heracles, where the ground is strewn with small thin pieces of verd antique and red porphyry, are not the remains of the ancient city, but, of that which was built afterwards by the Romans.

It is remarkable that on the low shelving shores of parts of this sea, the vessels of the ancient Phoenicians do not blow home, and that accordingly a ship may bear up on a lee shore and anchor in smooth water.

Tripoli is the capital of the state of the same name.

Proceeding towards Barca, the ancient Polemais, we pass the Gulf of Sidra, or Great Syris, an object of so much dread to the ancient seamen on account of marshes and sea-monsters. Capt. Smyth, who examined this coast, found that these terrors were poetical exaggerations of the difficulties of navigating a low and dangerous bight. Passing the part of Crete in the south of which he has described, we arrive on a sandy neck of land by Alexander the Great, whose sagacity pointed out the situation as eminently adapted to commerce.

Alexandria, which was one of the greatest commercial cities that ever existed, began to decline with the invasion of Egypt by the Saracens. Under these warlike people the maritime trade of the East passed to the shores of Syria, and Alexandria further declined as Cairo flourished. The trade however is still considerable: the chief exports are corn and cotton. The wheat and corn, the dates, and the fertile shores of the delta at the mouth of the Nile, are known to our French Cornishmen. Fresh water may be had at two or three miles outside the Damietta mouth.

The voyage of the Mediterranean must no doubt be of very early date. The story of Minos setting out to destroy pirates (Thucyd., i. 4) takes for granted the fact, that there must have been merchant vessels carrying something worth stealing from the earliest recorded period. If with Strabo we take for granted the accuracy of Homer's descriptions, it is by no means follows that the Greeks knew everything that could have been known to every other nation at that time; and the stories told of the jealousy with which the Phoenicians and Carthaginians guarded their discoveries, prove at least this, that their shipping was of little value. The discovery of the Phoenicians, who were in the habit of planting colonies, was not a matter of great consequence; and with regard to these very nations, the knowledge which the Greeks could have had of them, among other barbarians, must have been inferior to that which we possess in the minute accuracy of the Scriptures alone. The story of the Moorish and Carthaginian piracies, which has origiated in the suddenness and frequency of squalls, which often require the sail to be instantly taken in, for this purpose the masts are made in one piece, and the topsails, on being lowered, can slide down without the least noise, might be calculated on by the Corsair to be his greatest advantage, with surprise or, refuge, and in which gales, though frequent and violent, never last so long as to wear the ship or the spirits of the men, and in which, besides, vessels have from the earliest times to the present ceased to be a terrifying sight, may be more favourable to training men to a certain degree of expertise in managing boats, but could never originate that seaman ship on the grand scale which has given to the long and boisterous sea-voyages, the rugged and dangerous coasting, and long winter nights, force upon the hardier sailors of the northern regions.

The winds have been remarked as peculiarly variable in the Mediterranean, and three or four vessels have often been seen carrying different winds at the same time. The equator, or 60 nautical miles; hence a stadium is 0'0857 of a nautical mile, or 6092 feet. The Mediterranean was divided into the following divisions: the first comprised the sea between the Columns of Heracles and Sicily; the second, between Sicily and Rhodes; and the third, between Rhodes and the shores of Syria.

From Strabo to the present time, the length of 360° passed through the Sacred Promontory (Capo St.Vincent), between the Pillars of Heracles (or Gibraltar and Ceuta), dividing this part of the Mediterranean in the middle of its breadth, which was believed by navigators to be 5000 statute miles, or 4292 miles, from the mouth of the Rhone to the end of the African coast, but which measures only 330. The sea here however lies altogether to the north of this parallel; and hence, as the configuration of the European shores seems to have been tolerably good, the coast of Africa must have been proportionally distorted. This parallel was carried through the straits of Sicily, Rhodes, and the gulf of Issus, now the gulf of Scanderoon.

In consequence of the above supposition, he placed Marseilles to the southward instead of the northward of Byzantium, as he supposed Sardinia and Corsica to lie north-west and south-east instead of north and south, and made the distance of Sardinia from the coast of Africa 2400 stadia, or 2053 miles, instead of 100, which is the true distance. From Alexandria to the end of the parallel of Strabo it considers to be 12,000 stadia, or 1028 miles, it is only about 800. From Cape Passaro (Pachyamn) to the west extreme of Crete he considered 4500 stadia, or 386 miles; it measures 400; and he supposed the length of Crete 2000 stadia, or 1714 miles, the latter certainly too great, though there do not blow home, and that accordingly a ship may bear up on a lee shore and anchor in smooth water.

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science, or south-east wind, has always been noted throughout the Mediterranean for its depressing effects upon the animal system, and for a prejudicial influence still more surprising in other ways, as upon paint newly laid on, which does not dry afterwards. It is usually accompanied with a gloomy sky and a thick fog, and is but slightly influenced by the lesser expanses of water (as the Yellow Sea, the Baltic, and the English Channel), soundings are comparatively of limited utility.

The Mediterranean, though poetically termed a 'tidelless sea,' is not strictly so, owing to the considerable current between Venice and the Lesser Sicily it experiences a rise and fall of from five to seven feet. Tides are also felt, but somewhat irregularly, on the sides of the Gibraltar current, in the Gulf of Corinth, and in the Faro of Messina; as are but slightly perceived. Water-spouts are very common, and in the month of September the writer of this article saw sixteen together at one time.

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The external antennae are setaceous, hardly one-fourth so long as the carapace, and formed of elongated joints; the intermediate ones terminated by two bristle-like appendages, the upper of which is the longest. External jaws, with the two first joints compressed, the second the shortest, and notched at the end for the insertion of the others. They are used in the pursuit of the prey, as in the Saurians, in the skin, or the flesh of other crustaceans. They consist of two smaller Series, each composed of several joints, of which the two intermediate ones are provided with appendages, viz. the four first with false feet, having their external division very long and expanded, and the fifth, on each side, with a horizontal blade or lamina, which is oval and ciliated, composing, with the last joint, a sort of fin, differing a little from that of the other Maturae.

Example, *Megalopa mutica*. This species differs from the others in having the rostrum a little inflected perpendicularly on the carapace and canaliculated in the middle; also in the absence of a recurved spine on the haunches of all the feet. The shell is truncated posteriorly, and has no point like that of *Megalopas armata*. Colour brownish.

**MEGALOPHUS.*** [MUSCICAPIDEA.]

**MEGALOPOLIS.*** [ARCADIA.]

**MEGALOSAURUS.*** The name assigned by Dr. Buckland and the Rev. W. Conybeare to an extinct genus of Saurians found in the oolitic slate at Stonesfield near Woodstock and other localities.

Though no entire skeleton has yet been discovered, the number of bones and teeth collected give sufficient data to enable the observer to pronounce upon the general ossaceous structure, with almost as great a certainty as would be the result of the examination of the examination of the bones of the animal in a perfect and connected state.

The femur, or thigh-bone, and tibia, or leg-bone, are nearly three feet in length severally, so that the entire hind-leg must have been nearly two yards long, and the discovery of a metatarsal bone measuring thirteen inches indicates that the foot was of a corresponding length. From these and other remains, including the vertebrae, teeth, &c., the size of this gigantic saurian has been calculated and its habits ascertained.

'The most important part of the *Megalosaurus* yet found,' observes Dr. Buckland, in his 'Bridge-water Treatise,' consists of a fragment of the lower jaw, containing many teeth.'
The admirable adaptation of the teeth for carnivorous
purpose is beautifully pointed out by Dr. Buckland in
the treatise above quoted.

The same author so long ago as the year 1824 figured
the fragment of jaw above alluded to and other bones of
this saurian, and thus speaks of it in the 1st vol. of the 'Ge-
ological Transactions' (2nd series). 'Although the known
parts of the skeleton are at present very limited, they are
yet sufficient to determine the place of the animal in the
zoological system. Whilst the vertebral column and ex-
tremities much resemble those of quadrupeds, the teeth
show the creature to have been oviparous, and to have be-
longed to a different order from that of the saurians.

The last thigh-bone of this animal in the Museum at Oxford is two
feet nine inches long, and nearly ten inches in circumference
at its central or smallest part. From these dimensions,
which compared with the ordinary dimensions of the lizard family,
a male exceeding forty feet and a bulk equal to that of
an elephant seven feet high have been assigned by Cuvier
to the individual to which this bone belonged; and although
we cannot safely attribute exactly the same proportions
to recent and extinct species, we may with certainty as-
cribe to it a magnitude very far exceeding that of any living
lacteal. Large as are the proportions of this individual, they
fall very short of those which we cannot but deduce from a
thigh-bone of another of the same species, which has been discovered
in that singularly fossiliferous part of the Near Cuckfield, in Sussex, and is
in the valuable collection of Gideon Mantell, Esq., of Lewes, together with
many other bones belonging to the same species, and of the
same size with those from Stonesfield. The femur in ques-
tion is nearly twice as long as the longest, and in its smallest part, at the distance of two feet from its
extremity, more than twenty inches in circumference, and therefore, when entire, must have equalled in magnitude
the femur of the largest living elephant. To judge from the dimensions of the sub-thuleus, its mass would have been
twice as great as that to which the similar bone in the Oxford Museum belonged; and, if the total length and
height of animals were in proportion to the linear di me-
surements, the question would have been equalled in height our largest elephants, and in length
fallen but little short of the largest whales; but as the longitudi-
nal growth of animals is not in so high a ratio, after
making some deduction, we may calculate the length of the
reptile from Cuckfield at least fifty feet, yet we may with certainty as-
cribe to it a magnitude very far exceeding that of any living
lacteal.

In Cuvier's opinion Megalosaurus partook of the struc-
ture of the crocodile and the monitor. See also Mantell's
Geology of Sussex; Cuvier, Osteum Postule; and Geol.
Trans., vol. iii. (2nd series).

Further to the above mentioned we may notice the
occurrence of this animal in the colline of Normandy; Forest
marble, Caen; Jura, near Solothurn (H. Von Meyer.)

MEGAPODIDAE. Mr. Swainson's name for a family of
Rasors, consisting of the genus Menura, the subgenus Menura
{Pseudo Menura}, and Lophocerus, Cuvier, Lophocerus, Cuv.
Cray, with the subgenera Crax, Ourax, Orlando, Penelope, and
Lophocerus. An account of Dichalophus will be found
under the title Carysia; and Prophila is described under that
of Agami, with the synonym of Trophura crista, an error
for the Linnean name Prophila cristata. For a de-
scription of Menura see the article. Megapodius and the
other genera are treated of under the title Cracidae. Lopho-
cerus being the Gallicus Carausus, but thus distinguished subgenera Swainson; for the head and neck being an elevated, pear-shaped, horn-like protuberance. Bill
intermediate in shape, between Crax and Ourax Cere
small. Nostrils basal, oval or round. 'Example, Crax galeata.

The name Cray was generally restricted by Mr. Swainson, who gives
Ourax erythrornychus as the type, appears to be the
Ourax Mitu of Cuvier and others.

MEGARICAN SCHOOL. After the death of Socrates
the three great schools of philosophy were founded (Digg. Laer.
it. 126, iii. 5., 6., i. 116, ii. 106, ii. 106, iii. 6., wherein, in the one of the seat of them
resided. [EUCLID] A few of these disciples remained at
Megara with Euclid, who was looked upon as the founder
of a school of philosophy which is usually known by the
name of Megarism. In this school the Eleatic philosophy

was taught, modified to some extent by the doctrines of
Socrates. The Megarican philosophers maintained that
the Supreme Good was always the same and unchangeable.
They were distinguished in later times by their dialectic
subtlety, and by the invention and solution of sophisms: on
which account they were called Aristotelics (Periormo) and
Dialectics (Anvarerx). (Digg. Laer. ii. 106.)

The most celebrated of the successors of Euclid were
Eubulides of Miletus, who opposed certain opinions of
Aristotle; Diodorus, surnamed Cronos, who was originally
of Ipsiss in Caria, a pupil of Eubulides, and who lived in
Egypt in the time of Ptolemy Soter; and Stilpo, who was originally
of Megara, but afterwards resided at the court of
Ptolemy Soter.

(Ritter's History of Antient Philosophy, b. vii., part i.
c. 3.; F. Deycks, De Megaricomor Doctrina, &c., Bonn.
1827.)

MEGARISMA, the name proposed by Raffles for
those species of Terrabradula which are nearly equiva-

cle and smooth, as T. levis, T. crassus, &c.

MEGARIS, one of the political divisions of antient
Greece, and the area of the plain buildings which
range of Mount Cithereon, and from Attica on the east and
north-east by the high land which descends from the
north-west boundary of Attica, and terminates on the west
side of the bay of Eleusis in two summits, formerly called
the Apsus and the Agyiou, the one of which is called
the Mount Parnes, and the other the Mount Helicon.

One of them was divided from the Corinthian territory on the
west by the range of mountains, which belong to the Oenian range,
and led to Pegae, on the Corinthian gulf, and thence to
Boeotia.

The extreme breadth of Megaris, from Pegae to Niagara
on the Corinthian gulf, is reckoned by Strabo at 120 stadia.
(p. 334); and the area of the plain buildings which
belonged to Mr. Clinton, from Arrowsmith's map, at 750 square miles
(Thai. Hill. ii. 385), which is about the area of the county of
Worcester. Megaris is a rugged and mountainous country,
and contains only one plain of small extent, in which the
principal town, Megara, and the site of the ancient city, was
situated.

According to Procopius (Bell. Vandal., i. 103.) Megara was 210 stadia from Athens. Dion
Chrysostom calls it a day's journey. Dolwell reckons
it an easy, but a long, journey from Athens; and
Strabo points out the road, which is 177 hours' and
Strabo's map, at 750 square miles (Paus. iv. 40, § 3; i. 42, § 1.)
It was connected with the north by the ports of
Stymphalos, or Prophila, and by the line which the
Athennians when they had possession of Megara, a.c. 461
(Thucyd., i. 103.) The length of these walls is said by
Thucydides (iv. 66) to have been eight stadia, and by
Strabo (p. 391) to have been eighteen stadia. Pausania has
described at considerable length the public buildings in a few
exists in Megara in his time; but scarcely any remains
of them can now be traced. According toProcopius (Bell.
Vandal., i. 1) Megara was 210 stadia from Athens. Dion
Chrysostom calls it a day's journey. Dolwell reckons
it an easy, but a long, journey from Athens; and
Strabo points out the road, which is 177 hours' and
(Thucyd., iii. 31.) Strabo, in speaking
of the Poloponean war, (Thucyd., iii. 31.) Strabo, in speaking
of the Poloponean war, observes, that after passing the Scirnian
roads we come to the promontory Minos, which forms the
port of Nisus. This apparent though not real discrepancy
between Thucydides and Strabo has been made to appear
greater than it is by translating the Greek word (eporos)
'peninsula' instead of 'port,' and this in no way contradicts the
statement of Thucydides and Pausania that it was an island.
The positions of Minos and Nisus seem to be satisfactorily identified by
Lieutenant Spratt (J. of the Geographical Journal vol. vi., p. 265.)

The port of Pegae or Pegae on the Corinthian gulf was

* This collection has been purchased by the nation; and is now in the Bri-
lan Museum.

† In Mr. Swainson's work, 'Classification of Birds,' the words are 'Family
Megapodiinae. Ornithologia,' but 'Megapodius' must be an error of the press,
the termination of that word being used to indicate a subfamily.
the only other place in Megaris of any importance. Tripodiscus, situated on the road from Pega to Megara, is mentioned by Thucydides (iv. 70) and Strabo (p. 394), and is said by Plutarch (Qu. Gr., xvii., p. 387) to have been one of the five hamlets (leases) into which Megara was originally divided; the names of which were, Herrea, Pirea, Megara, Cynousoria, Tripodiscus. According to the traditions preserved by Pausanias (i. 39, § 5), Car, the son of Phoroneus, originally reigned at Megara, and was succeeded, after the lapse of twelve generations, by Lelex, who gave to the people the name of Leleges. Lelex was succeeded by Cleon, and Cleon by Pyla. By the marriage of Pyla with the daughter of Pandion, Megara was annexed to Athens. Here, therefore, is no doubt that Megaris in early times belonged to Attica, since it is represented on the best authority that Megaris formed one of the four antient divisions of Attica. On the death of Pandion, Megaris fell to the lot of his son Nisaus; but it was wrested from the Athenians during the reign of Codrus, when the Dorians invaded Attica. A Corinthian colony was settled at Megara, and the country was from this time regarded as a Dorian state. It remained for some time subject to Corinth; but it afterwards asserted its indepen- dence, and became a member of the Ionian league, which was associated by him in his attempt to usurp the government of Athens. (Thucyd., i. 126.) Thesigens was at length expelled from Megara; and shortly afterwards a most violent struggle arose between the democratic and democratic parties, of which a vivid picture is drawn in the poems of Theognis, a native of Megara, who appears to have been born shortly before the death of Solon, and to have lived down to the beginning of the Persian wars.

For some time after the Persian wars Megara appears to have been constantly engaged in war with Corinth; and her enmity to Corinth was the occasion of her forming an alliance with Athens, about a.c. 461. (Thuc., i. 162.) Athenian garrisons were placed in Megara and Pega; but six years later the Corinthians, not having maintained their alliance with Athens, and put to death the Athenian garrison at Megara. (Thuc, i. 114.) In the seventh year of the Peloponnesian war the democratic party formed a plan for surrendering the city to Athens, which was defeated by the arrival of Brasidas with a Lacedaemonian force. We read little more of Megara in Grecian history. In a.c. 357, democracy was again the established constitution. (Diod., xv. 40.) Megara was taken and almost destroyed by Demetrius; it was also taken by the Romans under Metellus (Paus, vii. 15, § 4); it suffered greatly in the invasion of Alaric (Procop., Bell. Vand., i. 1); and its ruin was completed by the Venetians in 1687.

MEGASPIRA. Mr. Lea's name for a papuiform, terrestrial, testaceous mollusk, remarkable for the length of the spire of its shell, which consists of twenty-three close-set, narrow, gradually increasing whorls, which he thus character- izes:

Shell clavate; aperture nearly oval, but rounded; margins reflected, above disjunct; columella many-folded, below enture, not effuse.

Animal unknown.

P. L. No. 929.

This genus, which is closely analogous to the genera Bulinus, Papa, and Auricularia, according to Mr. Lea, is founded on a single species, Megaspira Rhenburgiana.

Description. Shell subbylindrical, turrited, thickly striate, brownish, with longitudinal reddish-brown dots, having a solid apex; whorls twenty-three, rather flattened; spire obtuse at the apex; columella with four folds; outer lip reflected.

MEGA'STHENES lived in the time of Seleucus Ni- cator, king of Syria, who sent him on an embassy to Pal- bothra, the capital of Sandracottus, king of the Prasi. The territories of Sandracottus were on the Ganges and the Jumna. Megasthenes stayed in India several years, and on his return recorded his observations in a work entitled 'India.' Of this work, which is unfortunately lost, there are extracts in Strabo, Arrian, and Athen. Though Strabo has on several occasions given an erroneous opinion of the trustworthiness of the author, it is at least certain that the work contained much valuable information which was then entirely new to the Greeks. Megasthenes gave the first account of Trapobane, or Ceylon.

MEGATHERIIDÆ, Megatheroids of Owen, who in- cludes under the family the following gener of extinct Edentata, viz. Megatherium, Megalonyx, Glossotherium, Mylodon, and Scelidotherium, all of which have as yet been found in America only. Megatherium. (Cuvier.)

A gigantic extinct mammiferous quadruped, more nearly allied to the Ant-eaters and Sloths than to the Armadillos. The dental formula cannot be definitely stated, because the number of teeth in the lower jaw is not known. The upper jaw, as Mr. Owen has shown, contains five on each side, and from the analogy of Scelidotherium it may be conjectured that Megatherium had only four teeth on each side in the lower jaw. In that case the formula would be

Incisors 0 0 0 0
Canines 0 0 0 0
Molars 5 5 4 4 = 18.

Cuvier pointed out the skull of this animal as very much resembling that of the Sloths, but observed that the rest of the skeleton bore a relationship partly to the Sloths and partly to the Ant-eaters. The Madrid specimen was for a long time considered the principal, but not the only source of information with regard to the genus, and as Mr. Clift remarks in his paper, to which we shall presently allude more largely, "that magnificent though imperfect skeleton had remained in England for the last century altogether unique. "Very few addi- tional specimens," says that able osteologist, "appear to have been sent to Europe, and no other cabinet save the solitary one at Madrid possessed (as far as I am able to learn) a single intelligible fragment which could with certainty be assigned to this great unknown." The real and energy of Sir Woodbine Parish have added greatly to the materials for arriving at a just conclusion as to the proper place of this animal in the series; and the history of the Megathe- rium may now be considered to be completely determined.

According to the description of Don Joseph Garriga, Spain possessed considerable parts of at least three different skeletons. The first and most complete is that which is preserved in the royal cabinet at Madrid. This was sent over in 1789, by the Marquis of Loreto, viceroy of Buenos Ayres, with a notice stating that it was found on the banks of the river Lucan, west-south-west of Buenos Ayres. In 1793 a second arrived from Lima, and other portions, probably not very considerable, were sent by Dr. Fernaldo Seco, who had received them as a present from a lady who had come from Paraguay. According to MM. Pander and D'Alton, they were unable in 1818 to find any traces of the Lima specimen, or that which had be- longed to Fernand Seco.
The remains collected by Sir Woodbine Parish were found in the river Salado, which runs through the flat alluvial plains (the Pampas) to the south of the city of Buenos Ayres, after a succession of three unusually dry seasons, which lowered the waters in an extraordinary degree, and exposed part of the pelvis to view, as it stood upright in the bottom of the river.* This and other parts, having been carried to Buenos Ayres by the country people, were placed at the disposal of Sir Woodbine Parish by Don Hilaro Sosa, the owner of the property on which the bones were found. A further inquiry was instituted by Sir Woodbine Parish, and, on his application, the governor, Don Manuel Rosas, granted assistance, the result of which was the discovery of the remains of two other skeletons on his excellency's properties of Las Averias and Villanueva; the one to the north, the other to the south of the Salado, but at no great distance from the place where the first had been found. *An immense shell or case was found with the remains discovered on the properties of Don Manuel, portions of which were brought to this country, but most of the bones associated with the shell crumbled to pieces after exposure to the air,* and the broken portions preserved had not been sufficiently made out, when Mr. Clift published his memoir, to enable that zoologist to describe them satisfactorily; but he gives very accurate figures of a portion of the shell.

The cuts here given will convey to the reader more accurately than words the osseous structure of this enormous animal, which, when full grown, must have been more than fourteen feet long including the tail, and upwards of eight feet in height.

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**Skeleton of Megatherium. (Clift.)**

The simple outline (from Pander and D'Alton) shows the extent of the skeleton at Madrid. The pale tint expresses the extent of corresponding parts sent to England by Sir Woodbine Parish. The dark tint shows the additions parts, which are deficient in the Madrid skeleton. (Geor. Trans.)
boscia, which must have borne a good deal of resemblance in its proportions to that of the modern Tapirs.

We have seen that an immense shell or case accompanied the remains discovered to the north and the south of the river Salado; and Dr. Buckland was led to suppose, without considerable apparent ground for the opinion, that this shell was the armour that protected the *Megatherium*.

The size of the *Megatherium*, says Dr. Buckland, in his *Bridgewater Treatise*, 'exceeds that of the existing *Entedanta*, to which it is most nearly allied, in a greater degree than any other fossil animal exceeds its nearest living congener. With the head and shoulders of a Sloth, it combined in its legs and feet an admixture of the characteristics of the Ant-Eater, the Armadillo, and the Chlamyphorus; it probably also still further resembled the Armadillo and Chlamyphorus, in being cased with a bony coat of armour. Its haunches were more than five feet wide, and its body twelve feet long and eight feet high; its horns were not in length, and terminated by most gigantic claws: its tail was probably clad in armour, and much larger than the tail of any other beast among extinct or living terrestrial Mammals. Thus heavily constructed, and ponderously accoutered, it could neither run, nor leap, nor climb; nor burrow under the ground, and in all its movements must have been necessarily slow; but what need of rapid locomotion to an animal whose occupation of digging roots for food was almost stationary? And what need of speed for flight from foes, to a creature whose giant carcass was ensconced in an impenetrable cuirass, and whose, by a single pat of his paw, or lash of his tail, could, in an instant have demolished the Couguar or the Crocodile? Secure within the panoply of his bony armour, where was the enemy that would encounter this Leviathan of the Pampas? or in what more powerful creature can we find the cause that has effectually the extirpation of his race? His entire frame was an apparatus of colossal mechanism, adapted exactly to the work it had to do; strong and ponderous, in proportion as the work was heavy, and calculated to be the vehicle of life and enjoyment to a gigantic race of quadrupeds, which, though, they have ceased to be counted among the living inhabitants of our planet, have, in their fossil bones, left behind them the imperishable monuments of the commensurate skill with which they were constructed. Each limb and fragment of a limb forming co-ordinate parts of a well-adjusted and perfect whole; and through all their deviations from the form and proportion of the limbs of other quadrupeds, affording fresh proofs of the infinitely varied and inexhaustible triviances of creative wisdom. Much of this eloquent passage is unassailable: but Professor Owen has demonstrated most clearly, and, we have reason to believe, to the entire satisfaction of Dr. Buckland himself, that the tesselated shell or case found with the Salado remains did not belong to the *Megatherium*, whose tegumentary covering seems to have been not unlike that of the Ant-eaters and Sloths, but to a *Dasyplodon* or Armadillo-like gigantic extinct animal, by which Mr. Owen has assigned the name of *Glyptodon*, whose hind-foot, like the fore, appears to be expressly modified to form a base to a column destined to support an enormous incumbent weight; whilst in the *Megatherium* the toes were free to be developed into long and compressed claws, such as form the compensating weapons of defence of the hair-clad Sloths and Ant-eaters. Mr. Owen, in his paper read to the Geological Society of London, entitled 'A description of a tooth and part of the skeleton of the Glyptodon, a large quadruped of the *Entedanta* order, to which belongs the tesselated Megatherium so described by Mr. Clift in his *Memoir on the remains of the Megatherium brought to England by Sir Woodbine Parish*, showed that the portions of tesselated armour described and figured by Weiss (*Berlin Trans., 1827*) are identical in structure with the brought to England by Sir Woodbine Parish, and that the bones which were found with the armour in both cases are the same in their characters, and therefore that they belonged to animals specifically identical. He next entered upon the inquiry, Had the Megatherium a bony shell? and be concluded, from a comparison of its skeleton with that of the Armadillos, that it had not. In the pelvis of the Armadillo there are twelve sacral vertebrae anehlosed together, and the spines of the vertebrae are greatly expanded anteriorly posteriorly, forming a continuous vertical ridge of bone, bearing immediately the superineumb
weight. In the Megatheres the sacral vertebrae are only four in number, and are not anchylosed, and the spinous processes are comparatively small, not locked together, as in the Armadillos, but separated by intervals as in the Bia
dos. In the Megatheres, the weight of the curass is
transferred from the sacrum to the thigh-bones by two
points on each side. One of them, the ischium, is an-
chylosed to the posterior part of the sacrum, the other point
is formed by the convexity of the line of the ilium,
and the less ischium is on the inside. In passing straight
against the anterior part of the sacrum, where the weight
of the shell is greatest, a structure which is wanting in
the Megatheres. In no species of Armadillo is the ilium
expanded quite so much as in the Megatheres, or in shape,
resembling to that of the Elephant in size, form, and position;
and among the Edentata the nearest approach in this por-
tion of the skeleton is to be found among the Sloths and
Ant-eaters. The inferior part of the neural arch of the
vertebrae of the Armadillos, with reference to the support of
a bony covering, is the remarkable production of a part of
the vertebra from above the anterior articular process on each
side, in a straight direction upwards, outwards, and forwards,
to nearly the level of the true spinous processes. No new
these oblique processes, which are developed only in
the loricated Edentata, beautifully correspond in form and use
with the tie-beaters in the architecture of a roof, and are en-
tirely wanting in the Megatheres, the structure of this part
of the vertebra being that of an animal corresponding in
the character of the vertebrae of the hair-clad Sloths and
Ant-eaters. Mr. Owen noticed other supposed adaptations
in the skeleton of the Megatheres to sustain a bony covering,
as the breadth of the ribs, but the ribs of the Sloths and
Ant-eaters are without exception stouter than those of the
Armadillos. The paper contained a tabular account of the discovery
of twelve skeletons of the Megatheres, and in no instance did
any portion of bony armour occur with or near the bone. A
notice was also given of the remains of a Glyptodon, found
in the left bank of the Pedernal before its junction with the Sala,
an affluent of the Rio Santo, near Monte Video, and preserved in the museum of that town. From the
accounts which have been given of these remains, they appeared
by those of the Sloths and Ant-eaters in the same cases as that
described in the paper. An allusion was made also to some
portions of bony armour obtained in the Rio Seco, in the
Banda Oriental, and similar in structure to the specimen of
the Pedernal. One of the portions was covering the whole
of the tail. It was hollow to its extremity, and covering it
in its concavity vestiges of modest vertebrae very distant from
each other.

In conclusion, Mr. Owen observes, that having brought
together in the description of the remains of five species (found
in the Rio Seco, Rio Janeiro, Villanuvas, Pedernal, and
the Banda Oriental) of a large Edentata species undoubtedly
covered with armour, and more or less corresponding with
the characters of the Glyptodon, and having established the
characters of the Banda Oriental genera and locomotive organs;
he trusts at the same time that he has vindicated the opinion of Cuvier with reference to the Megatheres, by
proving it to be, by its tegumentary covering as well as its
ossaceous system, more nearly allied to the Ant-eaters and
Sloths than to the Armadillos.

* Sir Woodbine Parish has just now (May 29, 1839) kindly communicated to
me the following information, which will enable the reader to acquire an idea of an entire
skull of an adult Megatheres on the banks of the Rio de la Matanza,
in those days, or, what is the same thing, the whole of the bones except the tail and one foot. Close
on the head, in short, with the whole of the bones except the tail and one foot.
There was found among them the most perfect Megatheres which must have been only born at the epoch of destruction. No mention is made of any traces of bony remains or shell about the Megatheres.

The old animal only one foot is wanting. It has been suggested that the so-
called young Megatheres may possibly be a skull of Sciodendron.

The decomposition of the soft parts. A long continued

drought would naturally have brought these extinct ani-
mals from the drained and parched country to the rivers,
where they would be gathered in large numbers, to be
running between extensive mud banks, in which these gi-
gantic quadrupeds may have been engulfed in their anxious
efforts to reach the water.*

Megalonyx. (Jefferson.)

Under this name Mr. Jefferson, formerly President of
the United States, described, from some bones found in ca-
vern,s in the west of Virginia, an extinct mammiferous
animal, which he considered to be carnivorous. The bones
of these animals have been brought together from a fragment of a femur or a humerus, a complete radius, an ulna com-
plete but broken in two, three claws, and half a dozen
other bones of the foot.

From the memoir above mentioned, and on comparison
with the analogous bones in the Lion, Mr. Jefferson came
to the conclusion that the Megalonyx must have been up-
wards of five feet in height, that it must have weighed
nearly nine hundred pounds, that it was the largest of Un-
culated animals, and that it was probably the animal
of the Mastodon of the Ohio, as the Lion is of the Elephant.
When once a theory takes possession of the human mind,
there is generally no want of materials to confirm it in the
imagination of the theorist. Thus Mr. Jefferson appeals to
the authorities of various writers to confirm his views, and
ancient historians of the Anglo-Americans as visible on
a rock at the mouth of the Kanhawa, a branch of the Ohio,
which must have been traced by the hands of the Indians
from their tradition, and to the testimony of a man who had heard
during the night frighten-

roarings which terrified the dogs and the horses; and he asks if they do not prove the existence of some great
unknown carnivorous species in the interior of America.

Cuvier, who saw at once the true analogies of the animal,
and was ridiculed for his opinion by Faujas de St. Fand,
who mistook the clear-sightedness of that great zoologist
for the blindness of one who must naturalize to the factitious
classification of an artificial system, obtained casts of the bones
indicated by Jefferson from
Mr. Peale of Philadelphia, and was afterwards furnished
by the Rev. Mr. Palisot de Beauvois with the bones of the
same species from the same bed as those of Jefferson, is
fortunately one of those that

with these additional materials Cuvier completed his labours, and satis-
factorily showed that the Megalonyx belonged to the Eden-
tata.

Mr. Owen, in his description of his genus Mylodon, says,
"The greater part of Cuvier’s chapter on Megalonyx is de-

to the beautiful and justly celebrated reasoning on the
unguals phalanges, whereby it is proved to belong not to a
gigantic Carnivore of the Lion kind, as Jefferson supposed,
but to the less formidable order of Edentate quadrupeds:
and Cuvier, in reference to the tooth,—the part on which
alone a generic character could have been founded,—merely
observes its correspondence with that of the great Armadillos as it does those of the Sloths.
In the last edition of the "Regne Animal" Cuvier introduces
the Megatherium and Megalonyx between the Sloths and
Armadillos, but alludes to no other difference between the
two genera than that one of—"l’auré, le Megalonyx, est un peu moindre." Some systematic naturalists, as Desma-
rest and Fischer, have therefore suppressed the genus, and
made the Megalonyx a species of Megatherium, under the
name of Megatherium Jeffersonii. The dental characters

* Mr. Darwin states that he was informed by an eye-witness, that during the
great severe drought in 1828, in the course of six months, in the Patagonia, those

which were两手 were carried from the muddy banks, and were

from a distance, with their heads on the shore, only a little body, of an arm, a leg, a

which continued during the whole of 1830, 31, and 32. It was calculated that a

by the river, and about a hundred of them, were found on the shore. Some of

in the lakes and streams in the province were long afterwards with these

The unequal phalanges of Megalonyx are much more compressed than that
of Megatherium.
of the genus Megatherium are laid down by Fisher, as follows:—"Dent. prim. et lan. 3 0
molars 4 4-4 0, molares 4 4-4 0, odonti,
tritores, coronide nune plana transversis sulaeae, nune medio excaevat marginalius prominulis." That Megalonyx had these number of molars, as Megalonyx, signi-
fying that number in the Megathere to be correctly stated, which it is not) is here assumed from analogy, for neither Jefferson, Wistar, nor Cuvier,—the authorities for Mego-
lonyx quoted by Fisher,—possessed other means of know-
ning the dentition of that animal than were afforded by the fragment of a single tooth." (Owen, in Zoology of H. M. S.
Bragle.)

The same author (loc. cit.) adds, 'With respect to existing Mammalia, most naturalists of the present day seem to be unanimous as to the coincidence at least of forming a general or subgeneric distinction on well-marked modifications in the form and structure of the teeth, although they may cor-
respond in number and kind, in proof of which it needs only to peruse the pages of a Systema Mammalium which relate to the distribution of the order. According to this mode of viewing the logical abstractions under which species are grouped together, the extinct Edentate Mammal discov-
ered by Jefferson must be referred to a genus distinct from Megatherium, and for which the term Megalonyx should be sufficiently evinced by the following part of the descriptions given by Cuvier of one of the teeth of Me-
galonyx Jeffersonii, and by Dr. Harlan of a tooth of his Megalonyx laqueatus, with those of the Megalonyx which
have been described. Mr. Jefferson's tooth is a molar tooth of the Megalonyx Jeffersonii, described and figured in the 'Ossemens Fossiles,' seems to have been implanted in the jaw like the teeth of the Megatherium by a simple hollow base, similar in form and size to the pro-
trochion, which is turned down by Cuvier as consisting of a central cylinder of bone enveloped in a sheath of enamel. The transverse section of this tooth presents an irregular elliptical form, the external contour being gently and uniformly convex; the internal one undulating, con-
vened. The former, originating from the tooth being traversed longitudinal on its inner side by two wide and shallow depressions. The imperfect tooth of the species called by Dr. Harlan Megalonyx laque-
atus, and of which a cast was presented by that able and industrious naturalist to the Museum of the Royal College of Surgeons, resembles in general form, and especially in the characteristic double longitudinal groove on the inner side, the tooth of the Megalonyx Jeffersonii.'

Two claws of the foot, a radius, humerus, scapula, one of the present contentions of the genus Myrmecoth-
emur, and a tibia of Megalonyx laqueatus, which were discovered in Big-bone Cave, Tennessee, United States, are also described by Dr. Harlan, who, though he does not enter into the question of the generic characters of Mego-
lonyx, and only mentions in a general way, had he been familiar with the descrip-
tion and certain of the species of Megalonyx, to a distinct species of the genus Mega-
therium, or to regard it as a type of a subgenus distinct from both. With reference however to the Pleuron of Dr. Harlan, after a detailed comparison of the cast of the tooth with the sketches furnished by the author, and a careful examination of the descrip-
tions and figures of the tooth of the Megalonyx Jeffe-
sonii in the 'Ossemens Fossiles,' they seem to differ in so slight a degree as to warrant only a specific distinction, and the difference, even, viewing the various proportions of the teeth, is mainly due to the peculiar arrangement of the teeth as firmly established by the characters pointed out by Dr. Harlan, in the form and proportions of the radius, than by those of the tooth itself.

* * *

Among the bones collected by Spix and Martins in the cave of Lassa Grande, near the Arrayal do Torrejões in Brazil, and described by Professor Doellinger, there were no teeth, and only a few bones of the extremities. The professor considered the shape, the presence of an osseous sheath for the clav, and the arrangement of the bones, that they doubtless belong to a Megatherial animal of the size of an Ox. The bones, according to the Professor, are not those of an immature individual, and agree suffi-
ciently well with Cuvier's descriptions and figures of the Megal-
lonyx to warrant there being referred to that kind of animal.

Glossotherium. (Owen.)

This genus is founded on a fragment of a cranium in Mr. Darwin's collection, discovered on the bed of the same river in Banda Oriental with the skull of the Toca-
un. The fragment includes the parietes of the left side of the cerebral cavity, the corresponding nervous and vascular foramina, the left occipital condyle, a portion of the left tympanic process, and the last but not least, the left arti-
cular surface of the lower jaw. No tooth, no locomotive extremity, was present to lend its aid; and yet, upon the slender materials above stated, Professor Owen has been enabled to give generic distinction to the animal to which they belonged, and to fix its place in the animal series satis-
factorily.

Professor Owen remarks, that the importance of the articular surface of the lower jaw in the determination of the animal has been but little appreciated since the relations of the motions of the bone to the kind of life appointed for each animal were pointed out by Cuvier; but he observes that we should be deceived if we were to establish, in conformity with the generalization laid down by Mr. Cuvier, that the articulation of the surface, of the nature of the food of the extinct species under considera-
tion; for the shape of the glossoform is such as to allow the lower jaw free motion in a horizontal plane from right to left, and forwards or backwards, like the movements of a pavement. 'Nothing,' continues he, 'can be more calculated to affir to it be most probable that the food of Glosso-
thereum was derived from the animal and not from the vegetable kingdom, and to predict, that when the bones of the extremities shall be discovered, they will prove the Glosso-
thereum to be not an ungulate but an unguiculate, with a fore-foot endowed with the movements of pronation and supination, and armed with claws, adapted to make a breach in the strong walls of the habitations of those insect societies upon which there is good evidence, in other parts of the world, to have used the animal, though as large as an ox, was adapted to prey.'

The data on which Professor Owen rests this affirmation are, in the first place, a remarkable cavity situated imme-
diate behind the tympanic bone, of nearly a regular hemi-
spherical form and of large diameter, which Mr. Owen supposes the whole length of the orbit to be sufficient to support the teeth, to be peculiar to it, if that if the whole frame should hereafter be discovered, it may even claim a generic distinction, in which case either Aulaxodon or Pleuron would not be an
impropriate name. Upon this Professor Owen makes the following pertinent observation:—'There can be no doubt, as it appears to us, with respect to a fossil animal, in the same number and of the same general structure as in the Megatherium, and with individual modifications of form as well marked as those which distinguish Megatherium from Megalonyx, that the paleontologist has two teeth, a central tooth, and a lateral tooth, which constitutes an exception of the kind of this cavity does not appear to have been covered with arti-
cular cartilage, because it is irregularly pitted with many deep impressions, and Mr. Owen concludes therefore that it served to afford a ligamentous attachment to the styloid element of a large or hyoides. In addition to this evidence of the size of the bones of the tongue, there is a more cer-
tain indication of the extent of its soft and especially its muscular parts in the magnitude of the foramen for the passage of the muscles of the tongue. That this foramen is larger than any of those which perforate the cranium, with the exception of the great foramen; it is eight lines in the long diameter, and readily admits the passage of the little finger.'

The Professor states that it is only in the Ant-eaters and Pangolins that we find an approximation to these pro-
portions; and that in the Giraffe, the largest of ruminants, and having the longest and most muscular tongue in that order, the foramen for the corresponding nerve is scarcely more than that of the great foramen of Glossotherium. In other parts of the cranium Mr. Owen finds more de-
cisive evidence of the relationship of this extinct edentate to the genera Myrmecophaga and Mantis.

The question 'Had the Great American tooth' is an-
swered by the Professor in the affirmative, from the rugged surface of the temporal fossa indicating an extensive tem-
poral muscle; from the well-defined boundary, forced by

* Spix and Martins, 'Reise in Brasil,' band ii., p. 5.
MEG

a slightly elevated bony ridge, extending to near the sagittal suture; the size of the zygomatic portion of the temporal bone, and the remains of the oblique suture by which it was articulated to the malar bone; and he is of opinion that they probably will be found to be molar teeth of a simple structure, as in the Orycteropus.

Here is evidence of the existence of an antecedent. This bone is wanting in the Pangolins; in the true Ant-eaters it does not reach the zygomatic process of the temporal bone. From this evidence of the completion of the zygomatic arch, the Professor concludes that Glossotherium was more nearly allied to the Armadillos and Orycteropus; and from the form and loose condition of the tympanic bone, which, through the care and attention of Mr. Darwin, was preserved in situ, that the affinity of the animal was closer to Orycteropus than to the Armadillos: but the tympanic bone of Orycteropus differs from that of Glossotherium in forming part of the external auditory meatus!

in the anterior teeth. This and the relative distance of the teeth will be seen in the following figure.

The implanted part of each tooth is simple, of the same size and form as the projecting crown, and with a large conical cavity at the base, for the persistent pulp, indicating that their growth, during life, was perpetual.

The posterior teeth of Mylodon, showing the depth of their implantation. The crown of the 1st tooth is seen in figure 2. Two thirds nat. size. (Owen.)

Professor Owen remarks that these teeth are composed, as in Bradypus, Megatherium, and Megalonyx, of a central pillar of coarse ivory, immediately invested with a thin layer of fine and dense ivory, and the whole surrounded by a thick coating of cement.

The external surface of the symphysis of the jaw (which is completely analysed) is characterised by two oval or almost circular processes, situated on each side of the middle line, and about half-way between the anterior and posterior extremes of the symphysis. Nearly four-thirds behind the anterior extremity of the above processes is the large anterior opening of the dental canal, which is five lines in diameter, and situated about one-third of the depth of the ramus, at the jaw from the upper margin. The Professor observes that the magnitude of this fissure, which gives passage to the nerve and artery of the lower lip, indicates that the part was of large size; and that the two symphylar processes, which probably were subadjacent to the anterior face of large retractor muscles, denote that the motions of such

Mylodon. (Owen.)

A genus of Edentate Megatherioids, founded on some fossil remains described by Dr. Harlan in his "Medical and Physical Researches," and referred by him to Megalonyx, and on a mutilated lower jaw and teeth discovered by Mr. Darwin among the many interesting novelties which have been the result of that zealous naturalist's researches in the southern division of America.

The fossil last alluded to was found in a bed of partly consolidated gravel at the base of the cliff called Punta Alta, at Bahia Blanca, in Northern Patagonia, and consists of the lower jaw, with the series of teeth entire on both sides: the extremity of the symphysis, the coronoid and condylid processes, and the angular process of the left ramus, are wanting;

The teeth are implanted in very deep sockets, and about one-sixth only of the last molar projects above the alveolus; but the proportion of the exposed part increases gradually
Two species, Mylodon Harlani, founded on the fossil described by Dr. Harlan, and Mylodon Darwinii, on that discovered by Mr. Darwin, are recorded by Professor Owen; and he gives the following admeasurements of the lower jaw of the latter species:—

<table>
<thead>
<tr>
<th>Feature</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length (as far as complete)</td>
<td>17.6 cm</td>
</tr>
<tr>
<td>Extreme width, from the outside of one ramus to that of the other</td>
<td>9.0 cm</td>
</tr>
<tr>
<td>Depth of each ramus</td>
<td>4.9 cm</td>
</tr>
<tr>
<td>Depth of alveolar series</td>
<td>4.8 cm</td>
</tr>
<tr>
<td>From first molar to broken end of symphysis</td>
<td>6.0 cm</td>
</tr>
<tr>
<td>Breadth of symphysis</td>
<td>3.7 cm</td>
</tr>
<tr>
<td>Longitudinal extent of symphysis</td>
<td>4.6 cm</td>
</tr>
<tr>
<td>Circumference of narrowest part of each ramus</td>
<td>5.9 cm</td>
</tr>
</tbody>
</table>

He further observes that the teeth and bones of Mylodon Darwinii, above described, exhibit all the appearances and conditions of those of a full-grown animal, and that they present a marked difference of size, as compared with those of Mylodon Harlani, which must have been a much larger animal. In this species, the lower jaw of the latter species bears the same proportion to its teeth as that of Mylodon Darwinii, and it must be about two feet in length. (Zoology of M. S. Beagle.)

Scelidotherium. (Owen.)

A large extinct edentate mammal, allied to Megatherium and Ortygopsus.

The remains on which this genus is founded include the cranium, which is nearly entire, with the teeth, and part of the os hyoides; the seven cervical vertebrae, eight dorsal and six lumbar vertebrae, both sternal, humerus, radialis and ulna, two carpal bones, and an unguen phalanx; the two femora, the proximal extremities of the left tibia and fibula, and the left astragalus. These bones were discovered by Mr. Darwin at Punta Alta in Northern Patagonia, and in the same bed of partly consolidated gravel as that wherein the lower jaws of Tardodon and Mylodon were imbedded. All the parts were discovered in their natural relative position, indicating, as Mr. Darwin observes, that the subtiliorm formation in which they had been originally deposited had been but little disturbed. This beach is covered at spring-tides, and many portions of the skeleton were encrusted with Muriatæ: small marine shells were lodged within the crevices of the bones.

Sufficient of the cranium remains to indicate that its general form resembled an elongated, slender, subcompressed cone, beginning behind by a flattened vertical base which expanded slightly to the symphotic region, and thence contracted gradually in all its dimensions to the anterior extremity.
alleged to demonstrate, in like manner, that the laws of acoustics have not changed, and that the extinct giants of a former race of quadrupeds were endowed with the same exquisite mechanism for appreciating the vibrations of sound as their existing congeners enjoy at the present day.

'The brain,' says Mr. Owen, 'being regulated in its development by laws analogous to those which govern the early perfection of the organ of hearing, appears to have been relatively larger in the Scelidotheres than in the Glioso-

otheres: it was certainly relatively longer; the fractured cranium gives us six inches of the antero-posterior diameter of the brain, but the analogy of the Orycteropus would lead to the inference that it extended further into the part which is broken away. The greatest transverse diameter of the cranial cavity is four inches eight lines; their dimensions however are sufficient to show that the brain was of very small relative size in the Scelidotheres; and, both in this respect and in the relative position of the principal parts of the brain of the extinct Edentata closely accords with the general character of this organ in the existing species of the same order. We perceive by the obuse ridge continued obliquely upwards from above the upper edge of the petrous bone, that the cerebellum has been situated wholly behind the cerebrum; we learn also, from the same structure of the enduring parts, that these perishable masses were not divided, as in the Manis, by a bony septum, but by a mem-

branous tentorium, as in the Gliosothere and Armadillos in the Orycteropus, as has been before remarked, there is a strong, sharp, bony ridge extending into each side of the tentorium. The vertical diameter of the cerebellum and medulla oblongata equals that of the cerebrum, and is two inches three lines: the transverse diameter of the cere-

bellum was about three inches nine lines: its antero-pos-
terior extent about one inch and a half. The sculpturing of the internal surface of the cranial cavity bespeaks the high vascularity of the soft parts which it contained, and there are evident indications that the upper and lateral surfaces of the brain had been disposed in a few simple parallel longitudinal convolutions. The two anterior con-

dyloid foramina have the same relative position as the single corresponding foramen in the Gliosothere, Orycteropus, and Armadillo, and the inner surface of the skull alluding to the same unfor-

tunate skulls of the Orycteropus and Scelidotheres.

The size of the orbit is relatively smaller than in the Orycteropus, and still less than in the Ant-eaters. The bones of the orbit do not extend so far forwards in front of the orbit as in either the Orycteropus or Armadillo; in the inclination however with which the sides of the face converge forwards from the orbits, the Scelidotherium holds an intermediate place between the Armadillos and Orycteropus.

The dental formula of Scelidotherium appears to have been:—

\[
\text{Inesion} \quad 0 \quad \text{Canines} \quad 0 \quad \text{Molars} \quad 3 \quad 5 \quad 3 \quad 18.
\]

Though the teeth of Mylodon and Scelidotherium have a close analogy to those of existing small Insectivorous Edentals, there is nothing in their structure to militate against the presumption that these extinct genera were fed on succulent plants, such as cabbage-palms, or on farina-

ceous vegetables, such as large ferns. Their teeth are well adapted to chew vegetable tissues of moderate firmness. (Zoology of H. M. S. Beagle.)

The Dr. and Mrs. Owen

* This name is proposed. See the title.

A Myrmecophaga of the size of an ox (Myrmecophaga
gigantea).

Family of Edentata.

1. Two species of Dasyurus; one allied to D. octocon-
sinus, and the other twice as large as the living species.

2. Xenurus. 3. Euoryx, a lost genus of Tatuus, or Arma-
dillo. 4. Heterodon, distinguished from all the living armadillos by the proportion of its teeth. 5. Chamy-
dotherium, a new genus of armadillo, representing on a great scale the genus Euphractus of Wagner (the Ec-

niberte) of Buffon; two species, one of the size of a tapir, the other larger than a rhinoceros.

6. Hoplophorus. A very extraordinary genus, whether we consider the massive proportions of the species, the gigantic stature, or the singular combination of different types of organization manifested in them. Their character

evertheless approach more and more to the family of
hydromorphs.

Those singular animals were armed with a cuirass which

covered all the upper parts of their body, and was com-
posed of small hexagonal scuteleths, except on the middle of the body, where the scuteleths put on a square form and were

arranged in immoveable transverse lines on the back as well as the large bones of the extremities are very similar to those of the Armadillos (Tatuus) and especially to those of the Cachirames (ARMAcILLO, vol. II, p. 332); but the bones of the feet are so abridged and the articular surfaces present such a considerable flattening that nothing similar is to be seen in any animal skeleton and one cannot conceive how such feet could serve for dug-

ing in the earth (ecare le terre): the form of the re-

tum indicates that these singular animals could only have been nourished with vegetable substances, and we must

suppose that they fed after the manner of the great Parke-
dermert. However this may be, the Hoplophorus, of which

Resolution of Scelidotherium.

In a, Teeth of upper jaw in situ, seen from above; b, teeth of lower jaw in same view; c, teeth, showing the depth of their implantation in the jaw and their structure; d, crown of tooth, seen from above. (Owen.) Reduced.

After the above was written, and indeed while the article

was in the press, we received the Comptes Rendus (April

1839), in which appears an extract of a letter from M. Lund

to M. Victor Audouin, dated the 5th of November, in
giving an account of the discovery by M. Lund of numer-
ous fossil mammals in Brazil. The portion of the country

examined by this zealous zoologist is comprised between
the rivers Rio das Velhas, one of the confluent of the Ri-

o de Francisco and the Rio Paranaebus. This formed an

elevated plateau of 2000 feet above the level of the sea,

and is traversed in the midst by a mountain-chain only

from 300 to 700 feet high. The chain is formed by a

limestone (calcaire secondaire) stratified horizontally

and having all the characters of the holsten-kalkstein of the Germans (calcaire a cavernes). It is

entirely ridde with caverns and traversed in all direc-

tions by fissures, the interior of which is more or less

lined with a red earth which is a soil of the superficidal

of the country. In this basin of the Rio das Velhas, M. Lund has discovered in company with the remains of Ferre, Glires, Pachydermata, Ruma-

niania, Mammalia, Chiroptera, and Simi, the following

mammiferous fossils, which seem to claim attention here.

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M. Lund distinguishes two species, present this particularly, that their zygomatic arch is furnished with a descending branch, a character regarded till now as exclusively proper to the Sloths. These two species were each of the size of an ox. Fragments of these skeletons have already been described by MM. Wegel and D'Alton of Berlin.

M. Lund has found fragments belonging to a genus approaching Hoplophorus, and to which he assigns the name of Pachytherium. Its proportions were still more massive and its stature taller.

Family of Bradypoda.

M. Lund is thus conducted to the family of the Sloths, which, at this epoch, played in these countries a very important part, whether the number and variety of their forms, or the great size which the species attained, are considered.

The first genus which he notices is Megalonyx. It is considered, the Aramid; the Aramid, which, from being continuous in the Tatus, were separated from each other by great intervals. The Megalonyx exhibits the greatest affinities with the Edentata, principally in the fact that no cusp of the fore-foot and those of the hind feet present the same torsion as the feet of Bradypus tridactylus, although proceeding from a different cause. In the Aï this torsion is produced by the particular mode of the articulation of the fingers; in Megalonyx; according to M. Lund, the articulation is effectuated in the ordinary manner, and it is the carpal surface of this last bone which, by its anomalous confirmation, caused the torsion of all the rest of the foot. These animals, to the number of five above and four below, are deprived of roots, as in the animals of the order Edentata; in that they differ from those of Megatherium, which are described as having two roots.

The Megalonyx, which is provided with a tail, which was excessively strong and probably prehensile, and this, joined to the torsion of the hind feet and the enormous size of their claws, leads, to the belief, says M. Lund, that these animals, notwithstanding the enormous weight of their body, were destined to climb, like their analogues in the present creation.

This genus appears to have been very rich in species. M. Lund already distinguishes five; one of which, M. Cuvieri, was the stature of a very stout ox; and this was not the largest species.

By the Megalonyxes, a new genus (Sphenodon), was of the size of a hog, finds its place.

Still nearer to the Sloths must be arranged a new genus which M. Lund designates under the name of Coloson, and which consists of only five species.

Returning to the consideration of the animals which he enumerates, and which are comprised in the order Bruta or Edentata of Cuvier, M. Lund observes—

1. That the family of Ant-eaters properly so called, that of the Tatus, and that of the Sloths (was) by the osseous plates which protected a part of its body; but these plates, although of excessive size, far from forming a continuous cuirass as in the Tatus, were separated from each other by great intervals.

2. That these families were exclusively proper to this part of the world, as they are at the present epoch, and that this gives causes for the belief that no species of those three families has hitherto been found in the diluvial beds of the other parts of the world.

3. That this great order of the Edentata was then more numerous in the genus than the species in the Sloths, and which, at the present epoch, are peculiar to America, were also found at the preceding epoch.

4. That then, these same families were exclusively proper to this part of the world, as they are at the present epoch, and that this gives causes for the belief that no species of these three families has hitherto been found in the diluvial beds of the other parts of the world.

5. That this order of the Edentata was then more numerous in the genus than the species in the Sloths, and which, at the present epoch, are peculiar to America, were also found at the preceding epoch.

6. That every species has been destroyed, two species only exhibiting affinity, but not perfect identity, with the living species.

7. Finally, that the animals of this order attained at that epoch dimensions much greater than those which they now present.

The family of the Sloths has now entirely disappeared in the basin of the Rio das Velhas, which is explained by the want of virgin forests, all this country being occupied by the form of vegetation called by the Brazilians Campos. It is probable that at the epoch when these great animals lived it was otherwise, and that the country was then covered by immense forests. Everything leads to the belief that they led the same kind of life as their analogues of the present creation, that is to say, that notwithstanding the colossal proportions of their bodies, they sought their nourishment on trees.

Such is the extract from the letter of M. Lund relating to the subject of the present article. The zoologist will look with anxiety for more detailed descriptions, which will enable him to ascertain which of the animals mentioned by M. Lund are identical with those noticed above, and give him a further light into the species detected by this magnificent discovery. Hoplophorus, we presume, is the todom of Owen. The gigantic Myrmecosphenus is probably the Glossotherium of the same author.

MEGATREMA, Dr. Leach's name for those species of Procyon which have a large aperture. [GIRALDEA, vol. vii., p. 203.]

MEIBOM, MARC, a member of a numerous German family, who were distinguished in the seventeenth century for their classical knowledge and scientific attainments. He was born at Tonnaingen, in the duchy of Schleswig, about the year 1630, and died at Utrecht about the year 1711. Dr. Hutton gives 1590 as the year of his birth, and 1668 as that of his death, which are no doubt incorrect. Marc Meibom was patronised by Christiana, queen of Sweden, to whom he dedicated a collection of seven Greek authors upon music. Amster., 1652, 4to. He was subsequently appointed to a professorship in the university of Upsal, by Frederick III., to whom he acted in the capacity of librarian. He quitted Upsal for the professorship of belles-lettres in the University of Rhenen, which he retained but a short time. In 1674 he came to England, where he prepared the publication of a new edition of the Hebrew Bible, asserting that the edition then in use was full of errors; his pretensions appear however to have been ridiculed by the learned. Meibom was the author of a 'Dialogue', which will be found in the 'Biographie Universelle', there is a curious 'Dialogue on Proportion,' wherein he introduces the whole of the ancient geomaticians, Euclid, Archimedes, Apollonius, Ptolomy &c., &c., and the author of Meibom in this work respecting the doctrine of proportion were shown to be erroneous by Langius, and by Dr. Wallis in a tract printed in the first volume of his works. (Hutton's Diet. and Bibliog. Univer.)

MEIGLYMPHES (MEISSENGER.)

MEINAN, River. [SIAM.]

MEININGEN, or MEINUNGEN, the capital of the duchy of Saxe-Meiningen-Hildburghausen, is situated in 50° 39' N. lat. and 10° 24' E. long., in a pleasant valley on the banks of the Unstrut, which here divides into several arms. It is a well-built town, with broad, straight, and paved streets; the ducal palace, called the Elisabethenburg, is a handsome building; the centre part is 500 feet in length, and it has two wings. It contains a library of 10,000 volumes, a gallery of paintings, a collection of engravings, and the archives of Henneberg. In a separate building in the garden there is a cabinet of medals and a collection of natural history. The other principal buildings are the house of the archbishop, the bishop's palace, the hospital, the city hall, the library, the four churches, an infirmary, and a theatre. There are a lycamum, a gymnasia, a seminary for country schoolmasters, and several schools. The environs are very agreeable. The inhabitants, now 6000 in number, have manufactures of black crape, yarn, calico, and woollens of various descriptions, in which they carry on a considerable trade.

MEISSEN, one of the circles of the kingdom of Saxony, is a part of the antient Margraviate of the same name. It lies on both sides the river Elbe, in lat. 51° 10' N. lat. and 13° 20' E. long. on the left bank of the Elbe, and in lat. 51° 0' N. lat. and 13° 20' E. long. on the right bank of the Elbe, between hills on the left bank of the Elbe, over which there

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is a covered bridge, supposed to have been originally built in the eleventh century; this bridge was destroyed in 1547, 1737, and in 1813, but has since been restored. It is on the right bank of the river, having been founded in 922 (as some say, 928), by King Henry I., as a bulwark of his German settlements against the conquered Slavonians. His son, Otto I., founded the cathedral, and established a town around which the town continued to be built till the Reformation. There are now but few remnants of the fortifications which were begun by Henry I. The cathedral, a masterpiece of ancient German architecture, has a tower surmounted with a spire 60 feet high, composed of bronze and iron. It is richly adorned.

Adjoining it is the princes' chapel, founded in 1425, by Frederick the First, elector of Saxony, of the house of Meissen, for the hereditary vault of his family, in which there is a bronze monument of the founder. The palace of Albrechtsburg, near the cathedral, was formerly the common residence of the margraves, burgbishops, and bishops of Meissen; but the margraves transferred their residence to Dresden in the thirteenth century. The palace was almost entirely rebuilt in 1517 (ii. 3) and contains the celebrated porcelain manufacture, the productions of which rival or surpass those of China and Japan in hardness, durability, the beauty of the forms, and the taste of the painting. The former convent of St. Afa, on a lofty rock which is just below the palace, which the prince's chapel, stands, contains the school, in which there are 120 scholars, most of whom live free of all expense. There are various flourishing manufactures, but the chief source of profit is the making of *Die Domkirche zu Meissen,* &c.; *Uranus,* &c.

MEISSNER, AUGUSTUS GOTTLIEB, a popular and voluminous German writer of the last century, was born at Buxen in Upper Silesia, November 4, 1753. In 1785 he was appointed professor of mathematical and classical literature at the university of Prague, and in 1803 director of the high school at Fulda, where he died, February 20, 1807. He wrote several dramatic pieces, including some translations from Molière and Dusouches; also an abridgment in German of the *Aeneid.* Many of these pieces were translated or imitated in French, Danish, and Dutch, and one or two were translated by Thompson in his *German Miscellany.*

His *Tales and Dialogues* (1781-9) may be considered as the continuation of his sketches, being similar in plan. His *Alchibades,* *Massianello,* *Bianca Capello,* and *Spar tacus,* are productions of greater length (the first mentioned being in four volumes), and are specimens of the historical and biographical romance. With the exception of the last, they have all been translated into English literature, and a variety of other works, Meissen contributed a great number of literary and historical articles to different periodicals.

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MEIER, or BA'WARAS, is a river in Northern Africa, and probably the largest river of that continent which is situated in the Mediterranean. The upper course lies within the territories of Algiers; in its middle course it forms the boundary-line between that country and Tunisia, and in its lower course it traverses the northern district of the last-mentioned state. A great number of the mountains of the Mediterranean, between 36° 27' and 36° 60' N. lat., and 7° and 8° E. long., constitute the chief eastern of the elevated ranges of Mount Atlas: after watering a rich and populous country, which extends east of those ranges, they unite about 33° 30' N. lat., and form the Wady Serat, the principal branch of the Mejerda river. In its course, which is nearly due north, it separates Algiers from Tunisia, until it reaches 36° 10' N. lat., where it is joined by the Wady Hamsa from the west, and takes the name of Mejerda. Up to this junction its course exceeds 100 miles, and from this point it runs about 60 miles eastward through a low and fertile country. In its channel, it commences to cut itself through hills and ranges, and continues this course until it falls into an inlet of the bay of Tunis near Cape Farina, after a course of more than 260 miles. The Mejerda does not appear to be navigated, but it is used to irrigate the fields in the lower part of its course, and is called the river of the short wood. The Nile, having overflown and fertilized the adjacent country; but these inundations do not, as in the Nile, take place in the middle of the summer, but in the spring. They are the effect of the winter and spring rains, and of the melting of snow on the high mountains that form its upper branches.

MEKRA (PERSIA)

MELA, POMPONIUS, a Roman writer on geography. He is thought by some critics to have been the same person as Mela the satirist, or Melas, or Melasz. He was the author of a conspiracy against Nero, and who put an end to his own life (Tac. *Ann.* xvi. 17; *Plin.* *H. N.* xix. 6); but this opinion is only founded on the similarity of the names. It is probable, from a passage in which Mela speaks of the coast of Syria, that he was the same as an author who speaks of the sea between the Persian Gulf and the coast of Cyrenaica. Mela's work is entitled *In meris omnibus.* He divides it into three books, and contains a very brief description of the various parts of the world. In the first book, after giving a short account of the great divisions of the earth, Mela commences with Mauritania (part of Morocco), and follows generally the coast, he describes successively Numidia, the parts spoken of as the Aegyptiaca, and the parts spoken of as Persia, and more particularly the coast of Cilicia, as far as the Rhine Mountains. In the second book he commences at the river Tanais (Don), and gives a description of the countries in Europe on the western side of the Caspian, and the Caspian and the Euxine as far as Thrace. He then proceeds to describe Greece, Italy, Gallia Narbonensis, and the coast of Spain as far as the Strait of Gibraltar, from which he commences his description of the first book. In the second book he describes the islands of the Mediterranean, the Adriatic, *Ignea Terra,* &c. In the third book he commences again at the Strait of Gibraltar, and follows the western coast of Spain till he reaches Gaul; and then he commences again in Italy. Many of these books were translated or imitated in French, Spanish, and in French, Spanish, and in English; and afterwards describes Germany and the central parts of Europe and Asia as far as the Caspian. After mentioning some of the islands in the ocean, he next describes India and the maritime coast of Carmania, Persia, and Arabia, and connects them with the description of the Mediterranean, the Red Sea, and the Persian Gulf. He then describes the Caspian Sea. The singular error in the Caspian is the more remarkable when contrasted with the fact that Mela describes the Caspian to be a lake. (Herod. *v.* 23; *Strabo* p. 121; *Mela* l. i. *iii.* 6.)


MELA, a name which has been given to the colouring matter of the ink of the mussel. It consists of evaporating the ink by dryness and boiling the residue successively in water, alcohol, hydrochloric acid, more water, and a little carbonate of ammonia. Dr. Prout found 1 part of the dry residue of the ink of the cuttlefish to be composed of: *Mela* 78; carbonate of lime. 18; carbonate of magnesia. 7; substance analogous to mucus. *94:* various salts, *816.*

MELALEUCA CAJEPUTI (Roxb.), the Melaleuca
Minor (Smith), a native of the Moluccas islands, yields the oil termed cajeput. It is obtained by distillation of the leaves and branches, which are collected the night before they are subjected to this process. It is very limpid, pellucid, and of a light or yellowish green colour. Specific gravity, 0.927; it boils at 146° (Reaumur). It is potted of a penetrating odour; the taste is acrid, aromatic, leaving a sense of coldness in the mouth. Its chemical composition is: carbon 78.12, hydrogen 11.49, oxygen 10.38. It seems to consist of two distinct oils: one transparent as water, of specific gravity 0.909, the other, a dark green, of specific gravity 0.920. Unrefined oil reddened litmus paper, but rectified does not. It does not deteriorate with iodine, nor does it form an artificial camphor with hydrochloric acid gas, but has its colour much changed by that gas. It never deposits a stratum by its own volition in cold, and after a long time, on vigorous agitation, it is often detected by different tests; an artificial oil is also sometimes vended, but it is not difficult to detect the fraud.

In its action on the human frame cajeput participates in the properties of other volatile oils, and is rubefacient externally, stimulant and antispasmodic when taken internally. Mixed with other ingredients it has proved a useful application to the joints in rheumatism and similar affections, while a few drops given in sea water, or added to the bath, are often remedied off slight attacks of hysteria or epilepsy. It by no means realised the expectations entertained of it as a remedy in spasmodic cholera.

MELANOPUS (Zoology). De Montfort's name for a genus of turpentine beetles (Convolvulaceae). The family, as distinct from the Melampsidae, placed by Cuvier next to the great genus Acuria, and by M. de Blainville and M. Rang under the family Acuriculaceae. De Blainville arranges both Melanops (Convolvulaceae) and Tornatella under Pedipus (Anasoin). This genus has, like the Acuria, plates on the column, or pillar of the shell, but the external lip has no roll or bourrelet, and is finely striated internally. The general contour of the shell is that of a cone, of which the spire forms the base.

Example, Melanopus coniformis.

Melanopus coniformis, a little enlarged.

MELANCHTHON, PHILIP, or MELANTHON, as he himself was most accustomed to write the name, according to Christ. Saxius, 'Onomast.' iii. 589), was born in the small town of Bretten or Brétheim, in the Palatinate of the Rhine, or Lower Palatinate, as it was used to be called, the dominion of the elector palatine. They still show at Bretten, or did a few years ago, the house in which his parents lived. His father was George Schwarzerde, or Schwarzedt, and is called by Melchior Adam, the earliest authority, Magister Armorum, a description which has given rise to some controversy. It appears that whatever was the original condition of Melanchthon's father, he was a man of remarkable integrity in his profession, and had worked his way up to a situation of some distinction, that of principal engineer to the elector, before the birth of his son. (See Bayle, Dict. Crit., 2nd edit., ii. 206, and the authorities there quoted.) According to Joachim Camerarius (in Vit. Phil. Melan.) he was a native of Heidelberg, and came to take up his residence at Bretten upon marrying the daughter of John Reuters, a person who had been mayor of that town. Reuters, who lived till his grandson was eleven years old, has the credit of having been the chief superintendent of his earliest training. On the death of his grandfather, which was followed within a fortnight by that of his father, he was sent to the college of Pforzheim, where the remarkable progress he had already made in his studies was continued at an answerable or an accelerated rate. (See a short notice of the early life of Melanchthon in Baillet's Enlume Célébres., pp. 42, 43.)

At Pforzheim he lodged in the house of a sister of the celebrated Greek scholar John Reuchlin, who was his relation, and it was from Reuchlin, who had trans-
lated Gastropoda, placed by Lamarck in his family Melaniinae; by M. de Blainville in his family Ellipisóstomata; by Cuvier in his order Pectinibranchiata, between the genera Hectina and Rissoa; and by M. Rang under the order last mentioned, and in the first family of it (Turbinids of De Férussac), between the subgenera Helicina and Rissoa.

Generic Character.—Animal elongated, with a foot which is ordinarily short and not thick; head proboscidi-form, subconical, truncate, and terminated by a buccal slit which is small and longitudinal; one pair of tentacles elongated, filiform, carrying the eyes on the external side; sometimes near the base, sometimes towards one-fourth of their length; mantle open, with festooned edges; operculum horny, elongated, and narrow, with an apical and pachydermal summit. (Deshayes.)

Shell with an epdermis, of an oval oblong, a pointed spire, which is often elongated or turriculated, and an oval aperture which is widened anteriorly, and has a very sharp edge.

Animal and Shell of Melania (Pirense) aurita. a. Operculum.

Geographical Distribution of the Genus.—The rivers of warm climates generally, and of Asia especially. Species are also recorded from Africa and North and South America. Mr. Conrad has described several new species from the rivers of Alabama.

Melania amarula.

M. Deshayes thus divides the Melania —

β. Shell elongated, turriculated.
Example, Melania truncata.

γ. Shell with the inferior angle detached.
Example, Melania costellata.

δ. Shell with a bordered aperture.
Examples, Melania marginata and Melania subulata.

Lamarck gives the rivers of the East Indies, Madagascar, the Isle of France, &c., as the locality of Melania amarula, the animal of which, he says, is very bitter, and passes for an excellent remedy for the dropsy.

The apex of all the species is generally eroded as the animal advances in age.

Fossil Melaniinae.

M. Deshayes, in his Tables (Lyell, 1833), makes the number of living species thirty-four, and the number of fossil (tertiary) twenty-five. The species recorded as both living and fossil (tertiary) are, Melaniinae inquinata, inflexa, Cambessedes, and a new species. The habitations allotted to the living species of inquinata, inflexa, Cambessedes, and the new species, are, the Philippine Isles, the Mediterranean, and the lakes of Como and Geneva. Melanopsis lactea, nitida, and costellata, are noticed as fossil species found in more than one tertiary formation. In the last edition of Lamarck (1838) the number of recent species is thirty-six, and of these Melania inquinata only is noted as occurring in a fossil state. The number of fossil species recorded in this edition is eight, and of these M. Deshayes notes the species costellata, marginata, and nitida, as not being Melania, M. nitida having all the characters of the genus Eulima. The other two M. Deshayes keeps provisionally among the Melaninidae. Melania sempiterna, another of the eight, he conceives to be a variety of M. lactea, and is of opinion that it should be expunged from the catalogue.

Dr. Mantell records two species (tecuta and costellata) in the blue clay of Bracklesham. Professor Phillips notes a Melania inquinata, among the Pocony clay, and he believes they should be united.

MELANINIA, Lamarck's name for a family of fluviatile, testaceous, operculated Mollusks, breathing water only, and belonging to the order Trachelpoda. The family consists of the genera Melania, Melanopsis, and Prunus, according to Lamarck, and Mr. G. B. Sowerby, jun. (Conchological Manual) suggests that to these may be added Ancylosa and Pusticera. M. Deshayes, in the last edition of Lamarck, adds the genera Eulima and Rissoa to Melania, Melanopsis, and Prunus, the latter of which, it seems, should be expunged.

MELANOPSIS, a genus of fresh-water, testaceous, turriculated mollusks, to which Lamarck assigns a position among his family Melaninidae. M. de Blainville places it in his family Entomematostomatida, between Cerithium and Planaxia; and M. Rang, who includes in it the genus Planaxia, between Scalaria and Planaxia.

The genus Melanopsis was established by M. de Férussac, and much difference of opinion appears to have existed among zoologists as to its proper place in the series. M. Deshayes, in the last edition of Lamarck, gives it as his opinion that it should be arranged in the family of Melaninidae; and he observes that if one considers the zoological and conchological characters of the two genera Melanopsis and Melania, it becomes evident that the conviction that soon arises. He remarks that M. de Férussac gave, in the first volume of the ‘Memoirs of the Society of Natural History of Paris,’ an interesting account of the animal of the Melanopside, which he had observed in Spain in the neighbourhood of Seville and Valencia, and that M. Deshayes has since made known the animal of Prunus teresbruxia of Lamarck; so that the means are now at hand for comparing with exactness the three principal types of the family of...
Melanopsis, and of observing the analogy of their zoological characters.

If, continues M. Deshayes, we have before us a great number of species of Melanopsis and Melanopsides, living and fossil, we remark a phenomenon entirely similar to that which we have pointed out with relation to the genera Bulimus and Achatina; that is to say, that we have seen the columnar truncation established by nearly invariable degrees from the most uncertain commencement to a notch as deep as that which marks the Buceph. If, in relying on the identity of the organization of the Bulimus and Achatina, we have been able to reduce almost to nothing the value of the character of the columnar truncation, we are authorised to employ here the same means for demonstrating the little importance which the truncation of the columna in the Melanopsides ought to have in the eyes of zoologists as a ground for separating them from the Melanidae. Already we have explained ourselves as to the value of the genus Pirena, and have shown that it was composed by Lamark from heterogeneous materials; on one side we find true Melaninae, and on the other singular shells, approximating in their characters to certain Cerithia which Linnaeus comprised among his Strombi. On approximating these species we find all the facts that mark the Melanopsis, and that they do not in reality differ from them, except by a notch in the right lip, which notch occupies in these species the place of the posterior gutter in the biconiform Melanopsides. M. de Ferussac clearly perceived the relation of these shells to the Melanopsides, and joined them to that group, leaving in the genus Pirena only those which we actually comprise among the Melanidae. Thus dismembered, the genus Pirena should be expunged from the system.

Geographical Distribution of the Genus.—M. Deshayes observes that the Melanopsides inhabit the fresh waters of the south of Europe, and particularly those in the neighbourhood of the Mediterranean; and that they show themselves in Africa, and in a fossil state in the greater part of the tertiary beds of Europe. He remarks that M. de Ferussac has noticed that among the fossil species in our temperate countries there are some analogous to those which live in much warmer regions,—an interesting fact, from which he has been led to conclude that the lowering of the temperature had been a sufficient cause for the destruction of the races which once lived in the centre of France. M. Deshayes states that he had objected to M. de Ferussac's drawing a conclusion so general from so confined a number of observations; and he thinks that, in order to establish a fact so important as that of change of temperature by the aid of observations on the mollusks, it would be necessary to find a great collection of facts, not only regarding the fresh-water mollusks, but also respecting those which inhabit the sea. He has, he says, collected these facts, and is thus able to estimate approximately the temperature proper to each of the principal tertiary epochs.

Generic Character. Melanopsis, Fér., and Pirena, Lam.,—Animal with a penis which terminates in a conical tentacula, which are conical, annulated, and each with an oculated peduncle at their external base; foot attached to the neck, very short, oval, angular on each side anteriorly; respiratory orifice in the gutter formed by the union of the mantle with the body. Operculum horny, subspiril.

Shell with an epimera, elongated, fusiform or cono-cylindrical, with a pointed summit; spire consisting of from six to fifteen whorls, the last often forming two-thirds of the shell; aperture rounded, oblong; columella convoluted, solid, callous, truncated at its base, separated from the external border by a sinus, the callosity prolonging itself on the convexity of the penultimate whorl, forming a gutter backwards; sometimes a sinus at the posterior part of the right lip.

A single sinus at the external border of the aperture, separating it from the columella. (Genus Melanopsis, Lam.)

Example, Melanopsis prora (Melanopsis larvalis, Lam. Melania buccinoides, Olv., Melanopsis bicornida, Fér.).

Two distinct sinuses at the external border of the aperture, one which separates it from the columella, and the other situated near the union of this border with the penultimate whorl.

M. Deshayes, in his Tables, makes the number of living species of Melanopsis ten, of fossil species (tertiary) eleven, and notes Melanopsides buccinoides (prora), Dufourii, costata, nodosa, acicularis, incerta, as species occurring both living and fossil (tertiary). He assigns as habitations to the latter, Asia, Spain, Greece, and Lyubach. Of Pirena he makes the number of living species three, and of fossil (tertiary) two. In the last edition of Lamark, M. Deshayes gives nine recent species, and of these he notices Melanopsis costata, prora, nodosa, Dufourii, and acicularis C. M. subulatus, Sow. Min. Cus.; as occurring in a fossil state, observing that it is to be presumed that the species found fossil at Dax is to be distinguished from M. Dufourii, which occurs in a fossil state in the Isle of Rhodes. The number of species which are fossil only he makes seven. The number of recent species of Pirena he gives as four, but records none as fossil only. Under Pirena terebralis (Melanopsis atra) is a reference to Ferussac's fossil Melanopsides, pl. 2, f. 7, 8c.

Dr. Fitch records three species with a query, two under the names of Melanopsis perforata and M. p. terebrata, in the Weald-clay (Dorset), and Hasting sands (Suffolk), and the third, without a name, in the Purbeck beds (Bucks).

MELANORRIGEA, a genus of the natural family of Terebrithaceae, tribe Anacardieae, so called from the brown fluid turning black upon exposure to the air, with which every part of the principal species abounds. This tree (M. usitata) is familiarly known as the Burmese varnish-tree,
or theetsee, but was not described by botanists until discovered by Dr. Wallich, and figured in his splendid work 'Planta Asiaticae Rariores,' t. 11 and 12. The tribe to which it belongs, abounds in plants yielding a blackish, acrid, and resinous juice used for varnishing and other such purposes, as the Marking Nut and the Japan Varnish-tree. This tree was first seen near Prome, and is found in different parts of Burma and along the coast from Tenasserim to Tavoy, extending from the latter in 14° to 25° N. lat., as Dr. Wallich has identified it with the Khau or Varnish-tree of Manipur, a principality in Hindustan, bordering on the north-east frontier districts of Silhet and Tippera. It grows especially at Kubbu, an extensive valley elevated about 500 feet above the plains of Bengal, and 200 miles from the nearest sea-shore. There it attains its greatest size, some, and those not the largest, having clear stems of 42 feet to the first branch, with a circumference near the ground of 13 feet. It forms extensive forests, and is associated with the two staple timber-trees of continental India, Teak and Salu (Tectona grandis and Shorea robusta), especially the latter, and also with the gigantic Wood-oil tree, a species of Dipteroncarnus. A second species of the genus, M. glabra, has been obtained by Dr. Wallich from Tavoy.

The Theetsee forms a large tree, with the habit of Somecurus, and abounds in every part with a viscid ferruginous juice, which quickly becomes black by the contact of the atmosphere. Its leaves are large, coriaceous, simple, very entire, and deciduous. The panicles of flowers are axillary, oblong; those of the fruit simple and lax, with very large rufous and finally ferruginous involucres. It sheds its leaves in November, and continues naked until the month of May, during which period it produces its flowers and fruit. During the rainy season, which lasts for five months, from the middle of May until the end of October, it is in full foliage.

A branch with leaves.

At Prome a considerable quantity of varnish is extracted from this tree, but very little at Martaban. It is collected by inserting a pointed joint of a bamboo, which is closed at the other end, into wounds made in the trunk and principal boughs, which are removed after twenty-four or forty-eight hours, and their contents, which rarely exceed a quarter of an ounce, emptied into a basket made of bamboo and rattan previously varnished over. The collecting season lasts from January to April. In its pure state it is sold at Prome at about 2s. 6d. for about 3½ lbs. avoirdupois. (Wallich.) Mr. Smith, who was long resident at Silhet, and was acquainted with this substance in 1812, states that it is procurable in great quantities from Manipur, where it is used for paying river craft and for varnishing vessels designed to contain liquids. The drug, he says, is conveyed to Silhet for sale by the merchants, who come down annually with horses and other objects of trade. In Burma, Dr. Wallich states that almost every article of household furniture intended to contain either solid or liquid food is lacquered by means of it. The process consists in first coating the article with a layer of pounded calcined bones, after which the varnish is laid on thinly, either in its pure state or variously coloured. The most difficult part consists in the drying. It is also much employed in the process of gilding: the surface, being first besmeared with this varnish, has then the gold leaf immediately applied to it. Finally, the beautiful Pain writing of the Burmese on ivory, palm-leaves, or metal, is entirely done with this varnish in its native and pure state.

Some difference of opinion exists as to the effects of the juice on the human frame. Dr. Wallich states that it possesses very little pungency, and is entirely without smell, and that both Mr. Swinton and himself have frequently exposed their hands to it without any serious injury, and that the natives never experience any injurious consequences from handling its juice; but he has known instances where it has produced extensive erysipelas-like swellings attended with pain and fever. Sir D. Brewster, on the contrary, considers it a very dangerous drug to handle, one of his servants having been twice nearly killed by it. (Wallich, Pl. As. Rar., t. 9, p. 11 and 12; and Edinb. Journ. of Science, viii., p. 96 and 100.)

A naked fruit-bearing branch, with the large involucres.

**Melanosis** is a malignant disease distinguished by the deposition of a peculiar soft morbid substance, of which the most prominent character is a deep brown or black colour. This substance may be deposited in separate masses, or infiltrated into the tissue of different parts of the body, or it may be effused from the blood in a fluid form into natural or morbidly formed cavities, or separated from it with the secretions. The deposition of melanotic matter generally takes place successively in numerous parts of the body, producing in all the injurious effects of compression and irritation, till it proves fatal either by its direct influence on some important organ or by the exhaustion which it gradually induces.

**Melantherite**, one of the mineralogical names for native sulphate of iron, or green vitriol. [1001]

**Melanthera/Crce** are a natural order of poisonous Endogens, very nearly related to Lilaceae, from which indeed they are only to be distinguished with certainty by their anthers being turned towards the sepals and petals, and by their styles or carpels being distinct or at least separable. The species vary exceedingly in their appearance, some being subterranean-stemmed herbaceous plants, producing a few flowers without their leaves just above the surface of the ground, as is the case with Colebium; others forming a stem of considerable size with large leaves and numerous flowers. The consequence of this difference

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[1001]
in their manner of growth is a considerable difference in the appearance of the species, but they are all found to conform to the characters of Lilaceous, with the difference above explained. Iridaeum, to which they bear a striking resemblance, because of the similarity between Colchicum and Crocus, are readily distinguished by their inferior fruit and triandrous flowers.

The most important species of this order are medical plants, viz.: Colchicum, or Meadow Saffron, which is employed as a remedy for gout and rheumatism; Veratum album, whose acrid poisonous rhizoma is White Hellebore; Asagrea officinalis and Veratum Sabaddilla, both of which furnish the seeds called Cebadilla, now largely consumed in the preparation of Veratria; and a few North American plants of less moment.

MELASOMA. [SHRIES.]

MELASTOMACEAE, an extensive natural order of polygamous Exogens, nearly related to Myrtaeae. They have opposite ribbed leaves without any trace of dots; anders prolonged into a beak, and having in the bud their points curved downwards, and inserted into sockets between the side of the ovary and that of the calyx. The ovary itself is many-seeded, and many-seeded, and connected with the calyx by vertical plates, which form the partitions between the sockets in which the anthers are confined. The species are extremely numerous in tropical countries, where they usually form bushes or small trees, and are scarcely known beyond the tropics, with the exception of some Rheoxis, which straggle into North America. In Europe the order is unknown, unless in gardens, where many species are cultivated for the sake of their gay purple or white flowers. Some of the species bear berries, which are eatable, and stain the mouth a deep purple, with their own Melastoma, or black-mouth; otherwise they are of no known use to man; not a trace of aromatic secretions being found in them, notwithstanding their near relationship to the aromatic Myrtaeae.

MELAZZO. [MELAZA.]

MELCOMBE REGIS. [WEYMOUTH]

MELEAGGER. [ANTHOLOGY]

MELEAGRINA. [AVICULA; MALACURE.]

MELEAGRIS, the generic name for the Turkeys. [TURKEY; PAVONAME.]

MELES. [BADGER.]

Meles vulgaris fossilis (Ursus Melis, Linn.), occur in the Bone-caves at Lunel and in Brabant.

MELENGIAN. [BOS.]

MELEAGRIS, the generic name for the Turkeys. [TURKEY; PAVONAME.]

is given with an English translation, and other species of Mel{e}i's poetry, in an article 'On the Dialects and Literature of Southern Italy,' in No. IX. of the 'Foreign Quarterly Review,' November, 1829.

Mel{e}i has excelled particularly in his 'Eclogae Pescatoriae,' or fisherman's dialogues, in which he has borrowed the peculiar language and humour of that class of people. Unlike Guarini, Tasio, and other courtly writers of pastoral poetry, Mel{e}i makes his shepherds, husbandmen, and boatmen speak their own homely and unpretending language, which is nevertheless susceptible of poetical imagery. The seventh idyll is in a loftier key: it is the lamentation of Polemuni, a man persecuted by fate, forsaken by his fellow-creatures, a despairing outcast, who is represented as seated on a lonely cliff which overhangs the deep waves that have wasted the base of the rock, and have hollowed out caves in it, within which the surge roars in dark eddies. The halcyon has built its nest on the bare sides of the cliff, and its melancholy cry is heard far over the foaming billows. Polemuni was the son of a substantial fisherman, who himself followed for a time his father's trade, had a tight gallant boat, and store of nets and tackle: when on shore he was the gayest of the gay, and the favourite of the girls of his district. Misfortune came: a storm swamped his boat, his love proved faithless, and he found himself slighted and forsaken by all. Houseless and almost naked, he is sitting on the lone cliff with his poor reed in his hand, attempting to follow his wonted occupation, while his grief is in song. He remembers his former happy days, and contrasts them with his present bereavement; he rails at the faithlessness of pretended friends, he sees the gloom of despair closing all around him, until at last a fearsome tempest breaks forth, the waves swell beyond all bound, and, rising in one mountain billow, overflow the cliff, and hurl the devoted victim down into the abyss of the sea.

Mel{e}i's odes, which fill the second volume of his works,
are mostly amorous, though not inconsiderable. Some of them are
exquisitely finished, such as 'Lu Labbru' (the lip), and 'Lu Petru' (the breast). An Italian version of them has been published
by Professor Rosini of Pisa, which however is inferior in gracefulness to the original.

Meli has written a mock heroic poem, under the title of
Don Chisciotto (Don Quixote), in twelve cantos, which is
one of imitation of Cervantes's celebrated novel. It abounds with beauties of detail, but the ludicrous prevails
throughout, and often becomes mere farce. He also wrote
a volume of fables, besides satires, some of which reflect on
peculiarities of Sicilian life and manners, and other
writings. His works were collected and published at
Palermo, under his own revision, in 1814, in seven volumes.

King Ferdinand granted the author a copyright for ten
years, and gave him also a small pension, for which the
author expressed his gratitude in his compositions.

Meli died, not long after, at an advanced age.

The Sicilian dialect has assumed, under his pen, a delicacy of refinement which places it foremost among the
written languages of Italy. Some remarks on the Sicilian
and other Italian dialects, with some of the natural family's
capabilities, are given in an article 'On the Study of the
Italian Language and Literature,' in No. X. of the 'Quarterly
Journal of Education.'

MEL'IA (Zoology). M. Latreille's name for a genus of
Cucurbitae, to which it has given its name, and which is, like
Melia, characterized by having the filaments of the anthers
combined into a tube, with the anthers sessile within it,
and opening inwards; the seeds without wings. The
species are found in North America; of these, Melia Azadirachta, the Neem tree or Margosa tree of the Peninsula of India, has been separated
into a distinct genus on account chiefly of its ternary,
not quadriangular, fruit, which is the part of the tree in which the fruit is found. It has also been employed in this country
in the South of Europe, and one is found in North America;
of these, Melia Azadirachta, the Neem tree or Margosa tree of the Peninsula of India, has been separated
into a distinct genus on account chiefly of its ternary,
not quadriangular, fruit, which is the part of the tree in which the fruit is found. It has also been employed in this country.

MELIA (Botany). M. Latreille's name for a genus of
Cucurbitae, to which it has given its name, and which is, like
Melia, characterized by having the filaments of the anthers
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and opening inwards; the seeds without wings. The
species are found in North America; of these, Melia Azadirachta, the Neem tree or Margosa tree of the Peninsula of India, has been separated
into a distinct genus on account chiefly of its ternary,
not quadriangular, fruit, which is the part of the tree in which the fruit is found. It has also been employed in this country
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MELIA, so called from Mélia, the Greek name of the
common ash, which one species of the genus is thought to
resemble in foliage.

It is a valuable tree, its wood being of great size, and its
cortex sometimes being inconsiderable. The leaves
are universally used in India for pollens, and both
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by that generally stronger and more perfect conformation which distinguishes them from the more typical families, they form the aberrant groups; that they are united among themselves by general affinities; and that they form distinct tribes of a conterminous group. It is with the Scansores at the one extreme, and with the Fittorostes, where we first entered on the order, at the other.

Mr. Swainson (Classification of Birds, vol. i.), after observing that he had the opportunity of examining the tongue of the African Sun-birds (Cimpridae), states that by a fortunate chance he had discovered that the type among the Australian Honey-suckers (Meliphagidae) which represents the Trochilidae, has the tongue constructed precisely the same as the last, except that it is prolonged and sometimes very long, so much so that it is a second description of extensible, or rather of sectorial tongues, and which is of a form almost peculiar to the honey-suckers of Australia and its islands. In these birds the tongue is not nearly so extensible as in the Trochilidae, a being, though more than half as long again as the bill; nor are the bones of the os hyoidei carried back upon the skull, as in the woodpeckers and humming-birds. Nevertheless the structure appears especially adapted for suction; the form of the lower part is the same as in the Trochilidae, and they possess a great number of delicate filaments or fibres exactly resembling a painter's brush. Lewin, who drew and described these birds in their native region, has figured the tongue of the twenty-faced honey-sucker (Meliphaga Pyrgia) (Birds of New Holland), and described it as being 'aroused to great numbers, constantly flying from tree to tree (particularly the blue gum), feeding among the blossoms by extracting the honey with their long tongues from the bottom or side of the flowers, a kind of picking transverse holes in the bark, between which and the wood it inserts its long tongue in search of small insects, which it draws out with great dexterity.' Now, as Lewin describes this bird as a honey-sucker, we must conclude until facts prove it otherwise that the tongue of the honey-suckers, that it is used for the purpose, not of spearing insects, but of catching them by means of the glutinous matter on the filaments, a mode of capturing its prey by no means improbable, provided the insects do not get out of the way. It is as well known that the food of the Meliphagidae, several of which are as large as a thrush, and three or four much larger, is restricted, any more than that of the humming-birds, simply to the nectar of flowers. They indeed feed upon the honey, but, as in the Trochilidae, in combination with the nectar. The bunched flowers, which are not supposed lower hives, lodged in most of the flowers, which they extract in a dexterous manner with their tongues, peculiarly formed for that purpose. It is clear however, when we come to reflect upon the matter, that birds which are attired to the scarce extensible, tongue of the Meliphagidae, can only enjoy their favourite food for a comparatively short season, that is, while the tree or plant is in blossom. They must therefore either feed at other times upon small insects or upon fruit. The two first habits we have shown them to possess; and the last, that of devouring fruits also, is exemplified in the yellow-eared honey-sucker of Lewin, who remarks that 'in the winter season these birds have been seen feeding on the sweet berry of the white cedar in great numbers.'

Mr. Swainson makes the Meliphagidae the first family of the tribe Tenuorostes; and he thus characterises these Honey-suckers:

BILL the strongest in this tribe (Tenuorostes), having the middorsal disc considerably flatter than the front; the hinder too much developed. Tongue extensible, generally ending in a bunch of filaments.

The following genera and subgenera are placed by this author under the Meliphagidae.

**Genus. Meliphaga. (Lewin.)**

**Bill** moderate or short, weak; the under mandible not thickened. Lateral toes equal; the inner the shortest. Tail rounded or graduated. Tongue short; each division ending in numerous filaments. (Sw.)
Subgenera.—*Meliphaga*. (Example, *Meliphaga barbata.* (Ois. Dor.,) p. 57, and *M. Australasiana.*) Pirotot (Sw.), leading to Glyciphila. (Example, *Lew. Bds.*, pl. 6.)

Zanthomiza (Sw.). (Example, *Zanthomiza Phrygia*, Shaw, 'Zool. of N. H.,' pl. 4, the tenuostral type. *Anthochera* (Horsfield and Vigors), the racial type. (Example, *Anthochera carunculata*, White's 'Voyage,' pl. 6.)

Glyciphila. (Sw.)

Habit of *Meliphaga*. Bill either shorter or slightly longer than the head; the notch in the upper mandible far removed from the tip. Tongue rather short, terminated by numerous filaments. The third and following quills longest and nearly equal. Lateral toes equal. Tail evon. (Sw.)

(Example, *G. fulvifrons*, Lewin, 'N. H. Birds,' pl. 22.)

*Anthomiza.*

Habit of *Meliphaga*. Bill rather short. Tongue $9$ Wings much rounded; all the quills more or less terminating in points. Tail forked. Lateral toes equal. The filostrual type. (Sw.)

Example, *A. caruloscephala* (Mus. Carl.,) i., pl. 5.)

Leptoglossus. (Sw.)

Habit of *Cinnynis*. Bill remarkably long, slender, and curved. Tongue retractive, long, bifurred, as in *Trochilus*. Lateral toes unequal. Tail nearly even. The tenuostral type. (Sw.)

Example, *L. cucullatus* (Ois. Dor.,) pl. 60.)

*Pirototus*. (Sw.)

Bill much lengthened, slightly curved; the upper mandible dilated, and folding over the base of the under; the margins of both infected towards their tips. *Nostrils* lengthened; the aperture linear. Wings moderate, rounded; the first quill spurious; the four next very broad at their base, and emarginate at the inner web. Lateral claws unequal. Tail very long, graduated; the middle feathers lax and narrow. The rasorial type. (Sw.)

Example, *P. Capornis*. (Le Vaill., 'Af.,' vi., pl. 287, 288.)

Manorhina. (Vieill.)

Bill short, robust; the under mandible thickened: culmen arched, and much elevated from the base, considerably compressed its whole length; commissure curved; upper mandible notched near the tip.

Example, *M. viridis*. ('ILL. of Orn.,' pl. 78.)

Subgenera.—*Gymophrys* (Gymophrys?) (Sw.) Example, *G. torquatus*. (Lewin, 'N. H. Birds,' pl. 24.) *Ei- dorpeus* (Sw.). (Example, *E. bicinctus*.)

*Entomiza*. (Sw.)

Bill strong, moderate; culmen much elevated. *Nostrils* large, naked; the aperture large, oval, and placed in the middle of the bill, at the termination of the naked membrane; culmen obtuse, convex. Frontal feathers small, compact. Hind toe and claw very large, and as long as the middle toe.

Example, *E. cyanotis*. (Lewin, 'N. H. Birds,' pl. 4.)

*Philedon*. (Cuv.)

*Culmen* sharp, carinated. Head and face naked. Front with an elevated protuberance. Hind toe and claw shorter than the middle.

Example, *P. corniculatus*. (White's 'Voy.,' pl. 16.)

Myzomela. (Horsf. and Vigors.)

*Bill* with both mandibles very considerably curved; the sides broad and much compressed. Tongue and nostrils as in *Meliphaga*. Wings lengthened; the third, fourth, and fifth quills equal. Tail short, even. Middle toe much longer than the hinder; lateral toes equal.

Example, *M. acutirostris*. (Lewin, 'N. H. Birds,' pl. 19.)

Mr. Swainson inquires whether this can be the fifth subgenus of *Meliphaga*? or an aberrant *Melitrepis*?

Mr. Vigors and Dr. Horsfield, in their 'Description of the Australian Birds in the Collection of the Linnean Society,' after remarking on the then (1836) imperfect state of knowledge with regard to this group, and the constant influx of new species from New Holland and the Australian Islands, observe that the then known species exhibited five prominent modifications of form, according to the variation chiefly of the characters of the bill and tail, and that they wished to consider these types of form as sections only of the group which they name provisionally the genus *Meliphaga*. When the species should become more known, they express their opinions that the sections there mentioned might justly be considered genera, and the higher group be denominated *Meliphaginae*. 'When this subdivision takes place,' say our authors in conclusion, 'the section which stands first in our text may be considered the true *Meliphaga*.' The *Meliphaga Novae Hollandiae* will form the type. It may be thus characterized:—Bill rather slender, subelongate; the culmen arched, subulillated at the base; nostrils longitudinal, linear, very narrow, covered above by a membrane, and exceeding the middle of the bill in length. Tongue furnished at the apex with many short, sharp, recurved, and somewhat sharp, spreading, spines.

Example, *Meliphaga Novae Hollandiae*.

Mr. Caley says, 'This bird is most frequently met with in the trees growing in scrubs, where the different species of *Banksia* grow, and the flowers of which I have reason to think, afford it a sustenance during winter. I have often seen it when sucking the flowers of *Leptospermum flavescens*. In the scrubs about Paramatta it is very common.'

*Meliphaga Novae Hollandiae*.

The following are the sections given by Mr. Vigors and Dr. Horsfield.

*Tail* rounded, bill rather long and slender.

*Mel. Novae Hollandiae, Australasiae,* and *melanopt.*

*Tail* rounded, bill rather shorter, and rather strong.

*Mel. australis, chrysoter,* and *leucotis.*

*Tail* equal, bill rather short, strong. (*Melitrepis* of Vieillot?)

*Mel. chrysoter, humilis, indica, et brevirostris.*

*Tail* equal, bill rather short and slender.

*Mel. cardinalis.*

The other genera recorded by Mr. Vigors and Dr. Horsfield are *Myzornis* (V. and H.), *Anthocharis*, *Tropinodrillus* (V. and H.), *Serendus* (Sw.), *Melurus*, *Hypo- phodes* (V. and H.), and *Pomatostomus* (Horsf.).
MELITA. Dr. Leach's name for a genus of Amphipoden crustaceans generally found beneath stones on the seashores.

Example, Melita palustris, Cancer palustris, Montagu. Colour blackish; antennae and feet annulated with pale grayish.

MELITB. This term is employed by Peron and Blainville for a group of Medusae, by Lamarck and Lamouroux for Polyplacophora, analogous to Iis and Gorgonia. Polyplacophora Cocciferidae.

MELITHEPTUS. Melaphidion; Sou-Manga.

MELITO, SAINT, was bishop of the church at Sardis in Lydia, in the second century. He is supposed by some to have been the angel of the church at Sardis, to whom St. John addressed the epistle in Rem., iii. 1-8; but this conjecture is not supported by any ancient writer, and it is also improbable in the account of the length it assigns to the episcopate of Melito.

By Polycrates, bishop of Ephesus, in the second century, he is called 'Melito the Eunuch,' probably because he lived in celibacy, in order to be better to discharge the duties of his office: the same Dr. Leach adds, that he was guided in all his conduct by the influence of the Holy Spirit. (Euseb., Hist. Ecc., v. 24.) Tertullian, as quoted by Jerome, praises his eloquent and oratorical genius, and says that he was thought by many to be a prophet. Yet he has been charged with heterodoxy: but upon no better ground than the titles, or perhaps a misunderstanding of the titles, of one or two of his works. During the persecution of the Christians in the reign of Marcus Antoninus, Melito wrote an apology for them. It is addressed to the emperor, but we are not told whether it ever reached his hands. Eusebius, who has preserved an extract from this apology, places it in A.D. 170; Tilmont assigns to it the date of 175; Basnage and Lardner, that of 170.

Melito died and was buried at Sardis before the end of the second century. Eusebius and Jerome have given lists of Melito's works, of which the most important is a 'Catalogue of all the Books and treatises which are universally acknowledged.' This is the earliest catalogue of the O.T. Scriptures found in any Christian writer. It was obtained, as Melito himself informs us, in Palestine, whither he had travelled on purpose to procure it. It contains all the books at that time received as canonical, except Nehemiah and Esther, of which the former is probably included under 'Redas.' (Euseb., Hist. Ecc., iv. 20; Hieronymus, De Vir. Illust. ; De Puff. Ecc. Hist., cent. 2; Cave's Lives of the Fathers, vol. i., p. 179; Lardner's Credibility, part ii., c. 15.)

MELIZOPHILUS. Dr. Leach's name for a genus of Insectida of the order of Hymenoptera.

MELLITHE, a mineral which occurs crystallized. Primary form a square prism. Scratches apatite. Colour reddish or greyish yellow. Lustre vitreous. Translucent.

Specific gravity 3.24 to 3.28.

Uses by the blow-pipe into a greenish glass; the powder gelatines in nitric acid. Found at Tivoli and Capo di Bove near Rome.

Analysed by Carpi—Silica, 38; Lime, 19; Magnesia, 19; Alumina, 29; oxide of Iron, 12; oxide of Manganese, 2; oxide of Titanium, 4.


Analysis by Klaproth—Mellite acid, 46; Alumina, 16; Water, 38.

Mellitic Acid was discovered by Klaproth in mellite, which is a melillite of alumina; this, when digested in carbonate of ammonia or potash, is decomposed, and the alkaline mellite formed is to be decomposed by acetate of lead, by which mellite of lead is precipitated, and this treated with hydrogen-sulphuric acid is decomposed, and sulphur of lead is precipitated, while mellite acid remains in solution.

This acid has a very bitter and aseptic taste in water, and also in alcohol, and it crystallizes in colourless needle-form crystals. Neither nitric nor hydrochloric acid produces any effect upon it, but it undergoes some change when heated with alcohol.

According to Liebig and Pelouze this acid consists of—

| Equivalent of hydrogen | 1 |
| Four equivalents of carbon | 24 |
| Four equivalents of oxygen | 32 |

Equivalent 57°

MELLIVORA. [Ratel.]

MELION, a compound of azote and carbon, discovered by Liebig, and containing in the proportion of the same elements in different proportions, is considered as a compound radical. When dry sulphocyanogen is heated to redness in a retort, it is decomposed; there are obtained a considerable quantity of sulphur and sulphuret of carbon, and there remains a substance of a lemon-yellow colour, which is insoluble.

The properties of this substance are, that it has a yellow colour; is insoluble in water, alcohol, dilute hydrochloric or sulphuric acids; it is dissolved and decomposed by nitric acid and solutions of potash and soda; and with the last mentioned, ammonia is evolved. Mellow decomposes the iodide, bromide, and sulphocyanide of potassium, when fused with them, iodine, bromine, and sulphocyanogen being evolved. When heated with calcium it forms meliloluret of potassium, which, being dissolved in boiling water, and nitric, hydrochloric, or sulphuric acid being added to the solution, hydrodextrine is formed, which is precipitated, in the state of hydrate, as a dirty white gelatinous substance, which becomes transparent on drying; it is slightly soluble in water, has a weak acid reaction, and is not decomposed by hydrochloric or nitric acid.

Mellon is composed of—

| Six equivalents of carbon | 36 |
| Four equivalents of azote | 56 |

Equivalent 92°

and this, with one equivalent of hydrogen = 1, forms 1 equivalent of hydrodextrine acid = 33.

MELOMOTH, WILLIAM, bencher of Lincoln's Inn, born in 1666, died in 1743. The work by which his name is known is 'The Great Importance of a Religious Life,' a book of which the author was not known till after his death, and which was written by Way and Blame, Nicholas Nason, in his 'Literary Anecdotes,' that since the death of Melmoth to his time above 100,000 copies of this work had been sold.

MELOMOTH, WILLIAM, son of the above, born in 1710, died in 1799, was appointed commissioner of bankrupts by Sir Eardley Wilmot. He was twice married, first to the daughter of the well-known Dr. King, secondly to Mrs. Ogle. He was an accomplished scholar, though not educated at either University, and his translations of the Epistles of Pliny, those of Cicero to his friends, and those on Old Age and Friendship, are generally allowed to be the best in the English translations. These translations are made in an easy and pleasing but rather diffuse style. He was the writer of 'Fitzwarin's Letters, concerning dissertations on the Christian Religion, and Memoirs of his father. Both Birch and Warton, the former in his life of Tillotson, the
latter in a note on Pope's works, mention Malmoth's translations with the highest praise. He also wrote a poem on Arbico and Retired Life, in Datsby's 'Collection,' which is characterised by smooth versification and sound morality. (Chalmers's Biographical Dictionary; Nichols's Literary Anecdotes.)

MELO (Malacology), Broderip's name for a subgenus of Polistes (Voltea.)

MELOCBITIS, a genus of Polybiaria, proposed by Lamy.

MELOCRIUS, a genus of Crinoids, employed by Goldfuss in his 'Periplus Europae' for some fossils of the transitional type. It has not yet been mentioned as Royal. [Encyclopedia.]

MELODRAAMA. [English Drama, p. 409.]

MELODY (μουσική), in music, is Air or Song—a succession of single dactylic sounds, in measured time.

Melody and Air are synonymous terms in modern music, whatever their difference may have been in that of ancient Greece; we therefore shall add but little to what we have already said on the subject under the word Air, to which the reader is particularly referred.

The question—which exercises most influence over the mind, melody or harmony? has often been agitated. Rousseau taking the lead, who certainly has treated it eloquently, but inconsistently, acting the part of advocate on both sides, and in opposition to himself. He seems to think that, however to agree with Metastasio, that music is a kind of language, but overlooks the fact, that, like every other language, it can only affect those who understand it by either studying its principles, as in the case of few, or by frequently hearing a selection of single sounds, in measured time, as in the case of many. He does not seem to have considered that simple music, that is, melody, like simple language, makes most impression on the unlearned majority, because natural, whereas harmony, like high-wrought rhetoric, excites more pleasure in the minds of the instructed minority, who enter into its combinations and perceive all its relations. Melody and harmony may be said to generate each other, the one being a selection of single sounds in measured time, the other a union of two or more melodies simultaneously heard. Thus both are closely connected; and Dr. Burney has remarked, that after melody and harmony have been heard together, nothing can compensate for their separation.

MELOSECATORIUS. [Cantehoris.]

MELOGALIC ACID. The reference to this article under Gallic Acid is a typographical error. It should be referred to Algalic Acid. [Metagallic Acid.]

MELOCYTHOSIUS, a family, the common cockchafer (Melolontha vulgaris) is an example, may be thus characterised: labrum transversely oval, the clypeus as broad as the head, the clypeus and the head at the mouth as long as broad, or with the length exceeding the breadth; sometimes nearly heart-shaped, and sometimes square; the anterior margin either straight or notched in the middle, but without any projecting process or tooth; mandibles strong and horny, and grunting at most but a single membraneous appendage, which is situated in a concavity on the inner margin; the apex truncated, and having two or less dentiations; maxillae generally horny, and armed in most cases with five or six dentations; antennae usualy short; maxillae three lamellate; the femora are furnished with two claws, which are usually furnished with a spine on the under side near the base, and sometimes divided at the apex.

The family Melolothinae consists of three genera: Melolontha, Rhizotrogus, and Sertic. and some subgenera of minor importance. Species of this family are found in all parts of the world. In the genus Melolontha the antennae are ten-jointed; the terminal five, six, or seven joints are lamellate as a rule; the maxillae are furnished with a spine on the under side near the base, and in the females the lamelated joints form a smaller club than in the males, owing to their smaller size, and also to a decrease in their number, there being six, five, or four; the labrum is deeply cleft on its lower margin; the claws of the tarsi are furnished with a spine on the under side near the base; the abdomen in the male sex often terminates in a very pointed process.

Two species of this genus are found in England, the common cockchafers (Melolontha vulgaris, Fab.), of which there is a figure in the article Coleoptera, and the Melolontha fulus, a large species nearly an inch and a half in length, and which is of a blackish-brown colour, with uniform white markings. This beautiful insect is common in some parts of the Continent, but rare in this country, and has been found chiefly in the neighbourhood of Deal.

The genus Rhizotrogus differs from Melolontha chiefly in having the lamelated joints to the antennae, which are nine-jointed.

Rhizotrogus solstitialis, an insect which makes its appearance in the month of June, and often occurs in great abundance in some parts of this country: it very closely resembles the humble-bee, but is of a smaller size, narrower form, and paler colour.

In the species of Rhizotrogus, as in Melolontha, the claws of the tarsi are furnished with a spine on the under side of the joint, and in the females the tarsal vesicles of all the tarsi are divided at the apex; the body is of a convex, ovate form, generally has a silk-like appearance, and changes in hue according with a change in the direction of the light.

Sertic brunnea, a common insect in England, as well as in various parts of the Continent, is about three-eighths of an inch in length, and of a uniform pale-brown colour; the elytra are rather deeply striated, and, as well as the thorax, thinly punctured.

Sericus is one of the British species of the present genus, is of a black colour; the elytra are reddish-brown, and have the suture and outer margin black. This is a smaller insect than the last (being about three-twelfths of an inch in length), and of a shorter and more rounded form: it also differs from the above by the form of the legs, which is not acute, as in S. brunnea. This difference in the form of the palpi is considered by many authors of sufficient importance to separate the two insects generally, and by these authors the S. Brunnea is placed in the genus Omalothorax.

The genus Serica is found in all the quarters of the globe; and in M. Dejean's 'Catalogue des Coléoptères' there are sixty species enumerated.

In addition to these five subgenera, there are several others, among which the following three groups, which appear to constitute the more typical Melolonthidae, Larraque families in this country the following six genera:—

1. Dasyus (Lepel. et Serv.). This genus contains but few species, and appears to be confined to Brazil: they have the claws of the two anterior tarsi bidentatus, and those of the other tarsi entire.

2. Macrogylyctus (Larraque). In this genus all the joints of the tarsi are alike in both sexes, and all the claws are bidentatus. The legs are very long, and the body is of an elongated form; the maxillae are furnished with two claws, the elytra, and is contracted both anteriorly and posteriorly.

Macrogylyctus subspinosus, a common insect in some parts of North America, is about three-eighths of an inch in length; the head and thorax are black, but covered with minute yellow scales; the elytra are of a yellowish-brown colour, also covered with yellow scales: the under parts of the body are nearly white, owing to the dense clothing of scales with which they are furnished; the legs are deep-yellow, and the tarsi are black. About seven other species of this present genus are known, nearly all of which inhabit South America.

3. Diphysephala (Dejean). The species of this genus are confined to Australia. [Diphysephala.]

4. Platygylyce (Larraque). The claws of the intermediate tarsi unequal in size; the larger of these two pairs of claws are bidentatus, and all the claws of the remaining tarsi are also bidentatus. Twelve species are known; they inhabit Brumalia.

5. Ceraspis (Lepel. et Serv.). The species of this genus, all of which inhabit Brazil, may be distinguished by having two small notches near the middle of the hinder margin of the thorax; the space between the notches is received into a notch in the scutellum. The antennae are 10-jointed; the claws of all the tarsi, with the exception of the posterior pair, are unequal; the larger claw of the intermediate tarsi is entire in the male sex, the other claws are bidentatus. In the females all the claws are bidentatus. The body is covered with minute yellow scales, and the elytra elongated, forming an obtuse angle at the apex.

6. Arrosa (Leach). Antennae 10-jointed; sterna produced anteriorly; the claws of the tarsi unequal in the male sex, and equal in the females. The larger claws of the males...
Melons will thrive if their roots are actually allowed to extend themselves in water; and in the case of the floating-beds on which they are grown in some parts of Persia, they find their way through the water by its support into the water. But a drier medium for the roots becomes essential for good flavour in the comparatively close mode which in forcing them it is necessary to adopt in this country, in order to prevent the dissipation of heat, which would otherwise take place from a limited atmosphere the temperature and elasticity of which are so much above that by which it is surrounded.

About four months may be allowed, on an average, for the period between the sowing of melons and the ripening of the fruit in countries of January; it is generally expected to have been long enough to sow; and the young plants are so exceedingly tender, that accidents are then very likely to occur to them. It is on this account necessary to make successive sowings, in order to be prepared for replacement, if requisite, and also for continuity of the supply. The sowing for the latest crops will require to be made in April.

Melons may be grown by means of frames on hot beds (Hor-Benz), or in pits heated according to some of the modern, socalled hot water application now so generally adopted. The seeds are sown in pairs, or more, as they are transplanted into other small pots when their seed-leaves are about half an inch broad. It is best to put only a single transplanted melon into each pot. While this is done in a greenhouse, the young plants and their general growth and fructification are prepared for their reception, by placing small hills, rather than a foot high, of light rich mould below each sash, and nearer to the back of the frame than the front. Care must be taken that this mould be the product of the young leaves and stems, which is to take place when they have made a few rough leaves. As the roots extend, more soil should be added of a gradually stronger nature; and ultimately the roots should have a depth of about 15 inches of such soil. The soil should be never introduced in a cold state; and if there are no means for previously bringing it to the temperature of at least 75°, it should be put into the frame in small quantities. When water is required, it should never be much below the above-mentioned temperature, nor should it exceed 78°. It should not be allowed to completely fill the frame, while at a high temperature from sun-heat. Shading is necessary immediately after watering, when the sun's rays have any great degree of power; unless this precaution is attended to, scorching will take place, and the red spider will be likely to attack the foliage.

With regard to pruning and training the runners or vines of melon plants, it is necessary that a sufficient number of these for filling the frame should be made to ramish as close as possible to the base of the bed in a direction at right angles to the bed of the greenhouse, by pinching off the top of the latter when it has made a few joints, or four leaves above the cotyledons; and the laterals, which in consequence become developed, may be again subdivided by a similar process. Blossoms of a monocious character will soon after make their appearance. The male blossoms, or at least a portion of them, must be retained for the purpose of fertilisation till the requisite quantity of fruit is fairly set, after which those shoots which have only male blossoms may be disposed with, in order to afford more space for the foliage connected with the fruit. The extremities of the fruit-bearing vines are stopped by pinching at the second or third joint above the fruit. The vines must afterwards be kept regulated so as not to overgrow the frame, both to secure the fruit from the damp soil. The heat must be fully maintained, or even considerably increased, as the fruit approaches maturity, in order to allow the admission of a more free circulation of air; but if at the same time the bottom heat be allowed to decline, the plants will become diseased and fall a prey to the mildew or to the red spider.

It has been observed that the Persian melons differ from those generally cultivated in Europe; the best account of which is in the "History of the Growth and Culture of the Melon," by Mr. William Horticulurist Soc'y. It is there stated that 'they are found to require a very high temperature, a dry atmosphere, and an extremely humid soil. In that country we are told...
that the melon is grown in open fields, intersected in every direction by small streams, between which lie elevated beds richly manured with pigeons' dung. Upon these beds the melons are planted. It is further observed that the Persian gardener has therefore to guard against nothing but scarcity of water; the rest is provided for by his own favourable climate. With us the atmosphere, the ventilation, the water, and the host are all artificial agents operating in opposition of one another. From this it is clear that such a perfection in the art of melon culture, when the climate is favourable, may be frequently combined without the latter being at the same time much counteracted by the former.

The varieties of melons can scarcely be kept permanent, particularly where many are cultivated, as they hybridise so readily. One of the finest, and perhaps the best of all, is the Beechwood melon. The Early Cantaloup, Windsor Scarlet Fleshed, Cephalonian, Green Fleshed Egyptian, and Green Fleshed Melville, are esteemed excellent. Of the Persian varieties the green Hoosainee, Striped Hoosainee, and the large Germek are considered the hardiest; and the Melon of Keesing, Melon of Nukalowan, Sweet Melon of Ispahan, and the Geree Melon of Multan, are the most favourably. The形 is a yellow melon, or one of those varieties which are cultivated in the East, and have the property of keeping for a long time after being cut.


 Thiên môn là [-coraminippera, vol. x., p. 348, where the name of the genus is erroneously printed Melonis.]

MELOPHUS. Mr. Swainson's name for a subgenus of Luffa, was erroneous, and the subgenus is:—

General structure of Frangillaria, but the upper mandible is notched near its tip. Hinder claw lengthened, but rather shorter than its toe. Lateral toes equal. Tail even. Head covering of velvety down. Example. M. erythrophorus. ('Ill. of Orn.; pl. 132.)

PRINGILLIUS. [Fringilla, vol. x., p. 453.]

MELANS. [Milo.]

MELPORENE. [Muser.]

MELTON. [Homburg:hire.]

MELTON MOWBRAY. [Lineshires.]

MELUN, a town in France, capital of the department of Seine et Marne, situated on the Seine, 24 miles in a direct line south-east of Paris, or 26 miles by the road.

MELVILLE MOWBRAY. [Lineshires.]

MELVILLE, the town is for the most part built on a slope on the right bank of the Seine, and, from the advantage of its situation and approach, though neither well laid out nor well built. It has a large meadow, and the town is formed of two insignificant promenades. Of its two churches, that of St. Aspais is distinguished by some handsome stained-glass windows. The prebend of residence was formerly a Beato, and has not since been occupied. At the south end of the town, where the church of an old castle in the island, in which the Celtic town stood. The population in 1813 was 6664 for the town, and 6622 for the whole commune; in 1836 it was 6846. The chief manufactures are cotton yarn, printed cottons and other cotton goods, woollen cloths, druggists and seers, leather, window-glass, and earthenware. There are flour and tan mills, and lime and plaster kilns. Trade is carried on in corn, flour, wine, cheese, wool, and cattle: there is a well-attended market for corn intended for the supply of Paris. There is much meadow land round the town. There are a priory or house of correction, a barnack for cavalry, and a theatre; a high school, a free drawing-school, &c.
chair of humanity in the Academy, which happened to be then vacant. When he received this appointment he was, as to pecuniary means, in a state of almost total destitution. Leaving his books and other effects behind him, he had set out on his journey to Geneva on foot along with a young Frenchman, who wished to accompany him, and on reaching their destination the joint fund of the two travellers did not exceed a crown. The quarter's salary, which was ad-
vanced to Melville at his admission to the chair, proved accordingly a most seasonable relief. Geneva was a scene to which the mind of Melville has left no record. It is there he made that progress in Oriental learning for which he became so distinguished. There also he enjoyed the society of some of the best and most learned men of the age; but above all it was there the hallowed flames of civil and re-
ligious liberty began to glow in his heart, with a fervor which continued unabated ever after. He left Geneva in the spring of 1574, at the urgent request of his friends at home, and returned to his native country after an absence alto-
gather of about ten years. On this occasion Beza addressed a letter to the General Assembly, in which, among other expres-
sions of a like kind, he declared that Melville was 'equally distinguished for his piety and his erudition, and that the Church of Geneva could not give a stronger proof of affection to her sister church of Scotland than by suffer-
ing to remain with us, that he that his native country might be enriched with his gifts.'

It was about this time Melville seems to have made his first appearance as an author. His earliest publication con-
sisted of a poetical paraphrase of the Song of Moses, and a 
letter to the Bishop of Winchester, in which he defended the people of the Eastern languages, his correct understanding of which he thought might be enriched with his gifts. On Melville's arrival in Edinburgh, in July, 1574, he was inducted into the Chair of the Man- 
sic tutor; but this invitation was declined by Melville, who was averse to a residence at court, and preferred an academic life. He was early gratified in this wish; for shortly afterwards he was appointed by the General As-
sembly to the Tutorship of the University, and talents were eminently serviceable, not only to the university over which he presided, but to the whole kingdom and to literature in general. He introduced im-
provements in teaching and discipline, of great importance, and infused an uncommon spirit into his pupils. His very table-talk and conversation were so interesting and in-
structive that the master of the grammar-school, who was afterwards principal of the college, used to say 'he learned more of Mr. Andrew Melville, cracking and playing, for under- standing, than by all his commentators.' It was not however as a mere scholar or academician that Melville was distinguished. He took a prominent part in the ecclesiastical disputations of the time, and was active in the church courts and in the controversies of the age. He became to the then much agitated subject of church government, to him is generally ascribed the overthrow of episcopacy at that time and the establishment of presbytery, and he com-
monly went afterwards by the name of Episcopastick, or the Scourge of bishops. His intrepidity was often very re-
markable. On one occasion, when threatened by the regent Morton in a menacing way, which few who were acquainted with his temper could bear without apprehension, Melville replied, 'This is as strange a thing to me as the same to me whether I rot in the air or in the ground; and I have lived out of your country as well as in it. Let God be praised; you can neither hang nor exile his truth!'

Another matter to which the attention of the General Assembly is particularly addressed in their serous fluid is the intellectual improvement of the universities. Here Melville also took a leading part. At the end of the year 1580 he was trans-
lated from Glasgow to be principal of St. Mary's Col-
lege in the university of St. Andrew's, where he distin-
guished himself in the way of an eloquent and learned 
giving lectures on theology, he taught the Hebrew, Chaldean, Syrian, and Rabbinical languages, and his prelections were attended not only by young students in unusual numbers, but also by several masters of the other colleges, who in those schools were the representative of the diocese of the district of the Church, and being called on to open an extra-

* In a copy of verses addressed to Buchanan, Melville calls him his master. And

Andrew Melville Geo. Buchananus praeceptor mei et Museorum patronus. To read pressed this address however, we have no precise information.
surface of an organ and the cavity in which it is contained. They are adapted for this condition by possessing a remarkably smooth polished surface, covered by a very fine layer of epithelium, through which their moistening secretion can easily pass. The basis of their structure is a fine and rather loose network of very delicate fibres; which, once compacted into gelatine. The serous membranes in man are, the arachnoid, which is found in the cerebro-spinal cavity [Brain], lining the dura mater, and covering the brain and spinal chord, and lining the ventricles; the pleura, lining the chest and covering the lungs [Respiration]; the pericardial serous membrane, similarly related to the heart and its investing sac [Heart]; the peritoneum, lining the abdominal walls and covering the abdominal part of the digestive canal, the liver, spleen, part of the pancreas, &c.; and the tunica vaginalis, forming the sac of the testis. The synovial membranes, by which joints are lined, and the heads of bones which move on each other covered, may be regarded as a modification of serous membranes, differing from them chiefly in the nature of their secretion and in some of their diseases. [Articulation.]

A membrane very similar to the serous lines the whole vascular system, and forms the internal membrane of the arteries, veins, lymphatics, and lachrymal gland, forming a closed cavity with innumerable ramifications, and affording with its polished surface and fine epithelium, the least possible obstacle to the movement of the circulating fluids.

The mucous membranes, like the serous, are named from their peculiar secretion. [Mucous.] While the serous membranes line the cavities and canals and vessels in contact with living parts, the mucous membranes line those canals and cavities which, in the adult condition of man and the higher vertebrata, are exposed to the contact of the air and other inorganic substances. The basis of these membranes is the cellular or nervous system, which does not form gelatine in boiling, and whose acrolein do not contain fat. Their epithelium is thicker than that which covers serous membranes, but thinner then the epidermis covering the skin, to which they are in many respects similar. In other parts, numerous glands for peculiar secretions open on their surface or orifices through which the membrane is connected with the branches of the ducts into the very substance of the gland. [Gland.] Nearly all the tracts of mucous membrane in man communicate with each other: they are, the nasal, which lines the cavities of the nose; the conjunctival, which covers the front of the eye-ball and lines the conjunctiva; the nasal by the lacrimal duct into the eye [Eye; Lachrymal Gland]; the auditory, which lines the cavities of the ear [Ear] and opens into the pharynx; the digestive, including that which lines the mouth, orophagus, stomach, intestines, and the several glands whose ducts open into the stomach, and the respiratory, which lines the larynx, trachea, and bronchial tubes [Respiration]; the ur- genital; and the mammary.

The fibrous membranes are those which are chiefly formed of tenacious tissue. They serve either to form strong cavities for the protection of important parts, as the pericardium, the dura mater, the fibrous capsules of joints, the sheaths of tendons, &c., or to envelop and strengthen certain parts, as the peristomeum, fascia, &c.; or they are merely expanded tendons as are the suspensoria. They are tough and inelastic membranes, composed of the shining dense wavy fibres which constitute the usual structure of tendons, mixed with more or less of a dense cellular gelatinous tissue.

**MEMBRANOPORA.** [Polyplaria Membranacea.]

MEMECYLACE is a very small natural order of Polypetalous Exogen, consisting of a few tropical plants of little interest. Most of them inhabit the East Indies, the Isle of France, and Madagascar. They are in habit and structure similar to the terebinthaceas, and in order they are placed most in respect; but they have anthers which in form resemble those of many Melastomaceae, and the leaves have not transparent dots. From the latter order they are distinguished by their leaves not being ribbed, and by their cotyledon being convolute. In the opinion of Brown and Chamisso, it is rather as a section of Melastomaceae than as a peculiar order that Memecylnaceae are to be accounted. No useful properties have been assigned to any of the species, except to Memecylon edulis, an East Indian plant, whose leaves are an ingredient in the dye of Coromandel, according to Roxburgh, and whose ripe astringent pulp black berries are eaten by the natives.

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1. Monstria guayanae; 2. a full-bown flower; 3. a stamen, with the anther opening by pores at the upper end; 4. a transverse section of a ripe fruit, copied from a figure by Turpin.
known by the name of Memnonium. Diodorus also adds that the Ethiopians claimed Memnon as a native of their country. Paussinus combines the two accounts: he represents Memnon as king of the Ethiopians, but also says that the scene of his death was on the coast between Egypt and Asia, subduing all the nations in his way. (Paus., x, 31, § 6; i. 42, § 2.)\footnote{Anchialus also, according to Strabo, spoke of the Casian, that is, Susan, parentage of Memnon (xv., p. 729) and Herodotus mentions the palace at Susa, called Memnon, by the Persians, and also says that the city itself was the city of Ammon, or 'devoted to Ammon,' belonging to Ammon.'}

Memnon then must be regarded as one of the early heroes or kings of Egypt, whose fame reached Greece in very early times, and whose name was preserved down to our own day. Two places in Egypt are called Memnonia, and some have been called Memnonian, of which the most celebrated is the vocal statue described by Strabo and Paussinus. At sunrise a sound was said to proceed from this statue, which Paussinus compares to the singing of a harp or lyre string (i. 42, § 3). Strabo states that he heard the sound himself, in company with Ælius Gallus (p. 816); and Tacitus relates that Germanicus also heard the sound. (Jan., ii. 61.) This statue is identified, by the descriptions of Strabo and Pausanias, with the northernmost of the two colossal statues in the Theban plain, on the west bank of the Nile. Its height, according to modern travellers, is about 50 feet; and its legs contain numerous inscriptions in Latin and Greek, commemorating the names of those who contributed towards it. It is probable that some of these inscriptions belong to the period of the early Roman emperors. There is some difficulty however, notwithstanding these inscriptions, in identifying this statue with the one described by Strabo and Pausanias. These writers say that the upper part is in a very imperfect state, and that the upper part exists in its proper position, though not in a single piece. Heeren conjectures that the broken statue might have been repaired after the time of Strabo. With respect to the he of Ammon was the brother of the wife, it is conjectured that they were caused by some trickery of the priests. Alexander Humboldt speaks of certain sounds that are heard to proceed from the rocks on the banks of the Oronoko at sunrise, which he attributed to confined air making its escape from crevices or caverns, where the difference of the internal and external temperature is considerable. The French savans attest to having heard such sounds at Carnak, on the east bank of the Nile; and hence it is conjectured that the priests, who had observed the advantages accruing from such a legend, and contrived, by what means we know not, to make people believe that a similar sound proceeded from the colossal statues. (British Museum, Egyptian Antiquities, vol. i., p. 290.)

The head of the colossal Memnon in the British Museum has no claim to be considered as the vocal Memnon described by Strabo, Tacitus, and Paussinus. The height of the figure to which the head belonged was about 24 feet, whereas those of the British Museum are 25 feet. The colossal statue of the British Museum, 9 feet 6½ inches high, which is a copy of the great Memnon at Thebes.

(Hamilton's Egyptians; British Museum, Egyptian Antiquities, \footnote{Philological Museum, No. 4, art. 'Memnon.'})

According to Herodotus (iii., 20), Memnon was the son of King Charles I, by Sir Philip Warwick, 1701, Memnon; 'Memoirs concerning the Affairs of Scotland,' by George Lockhart, Esq., 1714; 'Memoirs of John Ker, of Kersland,' by himself, 1726, &c. The French language is particularly rich in those biographical materials which are expressed by the term Mémoires.

MEMORIAL. [Annoty.]
MEMORY is a name given to one of the faculties of the mind, as it is otherwise expressed, remembering or recollecting. The word is used to denote at the same time the operation or act of remembering, the state of the mind when it exercises the faculty, as distinguished from the faculty itself; but this last is always understood when memory is said.

What ideas are, how they are first generated, and how afterwards reproduced, are matters the explanation of which belongs to other articles. [IDEA; SENSATION; ASSOCIATION.] But when an idea is reproduced in the mind by association of ideas, it is an exercise of the faculty of memory, and there conceives with this idea the idea of its having been present in the mind, this complex state of mind is a case of memory. We are then said to remember the thing (whatever it may be), the idea of which is thus present to the mind. This is an exercise of the faculty of memory. Mr. Stewart seeks to make a distinction between the memory of events and the memory of things, on the ground that in the former case alone does the idea of past time form part of the complex state of mind. This does not seem to be correct. In all cases of memory, in the memory of things as well as of events, there is (as has been said) the idea of the idea which is now present to the mind having been present before. And this idea is obviously a complex of the previous time and the present time, the idea of the interval between that and the present time are parts. The particular idea of past time, by means of which Mr. Stewart seeks to make his distinction, belongs to the event that is remembered, and has evidently nothing to do with the faculty of memory. It is an exercise of the faculty of memory, and it is the memory of the impression which, as the principle of the memory of the event, is a case of memory. So that the memory of the event, and the memory of the impression, are the same. This may be generally described as consisting in seeking out for different ideas which are likely to recall, by any of the ordinary modes of association, the desired idea. These different modes of association have all been fully explained in two previous articles, ASSOCIATION and DREAMS.

It will be seen that the thing which is essential to the faculty of memory, and which distinguishes it from other faculties of the mind, is that which can be said to be, is the faculty of recognising an idea which has before been present to the mind, as having been before present. But this faculty of recognition can never be exercised until the idea is that to be recognised has been introduced by the ordinary modes of association. This is the principle or (as it may also be called) the faculty of association is necessary to the exercise of the faculty of memory. This principle of association, which, though necessary to the exercise of the faculty of memory, is yet only accidentally connected with that faculty, becomes consequently the basis of mnemonics, or the art of recollection.

The principle of all systems of mnemonics, however much these may differ in complexity, is the same, and simple. It is to select a number of objects which, whether of themselves or by reason of the order of selection, are more easily remembered than those which it is our object to remember, and to associate in our minds each one of the latter set with some one of the former. One of the simplest systems of mnemonics, which is used to be taught to immature otaries, of connecting in their minds the different parts of a speech with different parts of the building in which it was delivered. The different systems of Memory Techniques which have been put forth in later times are more complex specimens of these, and unnecessary to give a detailed account here. One of the best known is that of Dr. Grey (London, 1730).

MENAPHE, GILLES, was born at Angers (where his father, the celebrated learning and eloquence, held the office of Advocate du ROI), in the year 1613, where he has himself informed us in his 'Anti-Baillet,' chap. 71, where he inveighs with no small bitterness against the malignity of Baillet, who, in his 'jugements des Savans,' had made a mean use of his manuscript, forgetting, observes Menage, that the older I am, the more respect I owe me, and that Calistras, the jurist, consul, on the fifth law of the Digest, 'De Jure Humanissimis,' has said, 'In our state, old age hath been at all times venerable; 'Er ancien age est en honneur, et de ces honneurs de l'honneur as to magistrates.' Menage began life by practising as an advocate at Paris; but finding this profession not to suit his taste or his temper, he got himself made a subde, which enabled him to hold some livings in the church without cure of souls. He then resided for a time in the family of Cardinal de Bets; but he finally established himself in a house of his own in the cloister of Notre Dame, which soon became celebrated for the assemblies of men of letters, whom he continued to gather around him on
the Wednesday evening of every week to the end of his long life,—his Mercuriales, as he called them, from the Latin name for that day. A very considerable range of learning, an admirable memory, and some wit enabled Ménage, notwithstanding a pedantry which was often ridiculed, to maintain his situation with sufficient felicity as the central figure of these reunions; and he also made some small profession of gallantry, both Madame La Fayette and Madame Serigné having the honour of ranking him among their friends. And other evidences however did not prevent him from writing a great many books, which brought him a wide reputation, and were highly applauded in his own day by the general voice of the literary world, although the satiric and contemptuous style which he maintained, and which could not but excite in him a good many enemies; and one unfortunate performance in particular, his Requête des Dictionnaires, published in ridicule of the Dictionary of the Academy, for ever shut against him the doors of that institution, or at least excluded him for a time till he thought himself too old and infirm to accept one when he might have had it. (See the account he himself has given of this affair in his Anti-Ballot, chap. 83.) Of his numerous works, the following are the most important: Origines de la Langue Française, 8 vols., 1694; Poèmes de la Langue Française, 2 vols., 1694, and 2 vols. folio, 1720; Poèmes de la Langue Française, 12mo., Paris, 1672; Poèmes de la Langue Française, folio, 1594; Poèmes de la Langue Française, 2 vols., folio, 1686; Poèmes de la Langue Française, 12mo., Paris, 1671; Origenes de la Lingua Italiana, folio, Genev. 1682; Anti-Balot, 8vo., Paris, 1685, and, along with Ballot's 'Jugemens,' 4to. Amst. 1712; a valuable edition of Diogenes Laertius, with annotations and notes of classical and other works. After his death, which took place in 1692, his friends published, under the title of 'Ménagiana,' a collection of his bon-mots and other remarks made in conversation, upon the value of which Buyle, in his Dictionary, has pronounced a question that gives general reason to be considered one of the best, if not the very best, of this class of works. It was originally published in two volumes, the first of which appeared in 1693, the second in 1694; but the edition published in 1718, and 1724, was translated from the learned editor, M. de la Monnoye, to four volumes.

MENAI BRIDGE, across the Menai Strait, where it connects Caernarvonshire with the Isle of Anglesey, at the rocky point called Ynys-y-Moch (or Pigs' Island), situated in the Caernarvonshire side, and the island of Anglesey, and a noble monument of the scientific skill of the late Thomas Telford. Formerly the passage between Anglesey and the opposite mainland was kept up by six ferries, the chief of which was called the Bangor Ferry, from the port of Bangor to that town; but a permanent connection by means of a bridge, had been in contemplation, and various projects for one had been considered long before the present structure was undertaken. In 1785 a petition for such a bridge was presented to parliament, but the scheme advanced for many years was not furthered till the union with Ireland, when it was deemed expedient to facilitate the intercourse between the two countries by forming a commodious route to Holyhead. Mr. Rennie, the engineer, was accordingly directed to make plans for the purpose in 1801, and four different designs were made by him, one of which was for a cast-iron arch of 450 feet span, and rising 150 feet above high-water mark. The measure was however postponed until 1810, when it was again resumed, and a committee of the House of Commons was appointed for the purpose of advising with Rennie on his position. On this occasion Rennie was instructed to make a survey of the roads from Shrewsbury and Chester to Holyhead, and also to prepare designs for a bridge across the Menai Strait. He made two, adapted to connect the island with one at the Swallows, where he proposed a bridge of three cast-iron arches, each 250 feet in span, with a stone arch between each two of them, 100 feet in span; the other at Ynys-y-Moch, with a single cast-iron arch 500 feet in span, to which latter he himself gave the preference, though it was not executed at all, but great doubts were entertained of the practicability of the plan. In the meanwhile Telford published his design for Menan Bridge, with a centre opening 1000 feet wide, and two others of 500 feet each. Upon this he was directed by government to make one on a similar principle that is, a suspension bridge, for the passage across the Menai.

The site fixed upon by him at Ynys-y-Moch was highly favourable, the opposite shores being bold and rocky, and allowing the roadway of the bridge to be 100 feet above high-water mark. The distance between the supporting pyramids or points of suspension was proposed to be 500 feet, the height of the pyramids above the level of the roadway, the main chains to be 16 in number, with a deflection of 37 feet, their ends being secured in a mass of masonry built over stone arches between each of the supporting pyramids and the adjoining shore, and these arches, four on the one side of the Menai and five on the other, were to be 100 feet each in span. The roadway is divided into two carriage ways, each 12 feet wide, with a footpath 4 feet wide between them.

The plan having been approved of by parliament, the sum of 20,000£ was voted to enable the commissioners to commence operations. Accordingly, in July, 1818, all the requisite preparatory steps were taken, labourers were engaged, workshops built, and the levelling for the foundations commenced, when such opposition was made to the scheme, that the commissioners were obliged to apply to parliament for an act to confirm and amend their powers. Although this occasioned considerable delay, all the preparatory works continued to be proceeded with. The new bill was passed July 2, 1818, under which the contract was let on the 10th August following. The three arches on the Caernarvonshire side were key'd in on January 18, February 27, and March 25, 1822; those on the Anglesey side, after August 31, September 3 and October 3 and 4 of the same year. In March of the following year the work for the attachment of the main chains to the rock was begun to be fixed; and in July a new act of parliament was passed, conferring greater authority on the commissioners; besides a grant of £10,482, for completing the bridge and paying the sum awarded by the jury for the purchase of Bangor Ferry. In 1824 the works were so far advanced, that the only remaining difficulty was, 'How are the main chains to be put up?' a question which the Treasury issued 188,492l. 18s. for, completing the bridge and paying the sum awarded by the jury. In the beginning of May the cast-iron segments and saddles were carried up to the pyramids; but it was not till the April of the year 1825 that the first chain was fixed, and the operation was most satisfactorily accomplished. After the second chain had been put up, it was found necessary to replace some of the bars which had been damaged; and owing to this it was practically ascertained that if one or more links of a chain should at any time be injured, the whole chain would be rendered unmanageable. Accordingly the last chain was fixed, and by the end of August the whole of the suspended parts of the chains had been connected with each other; and on the 2nd September the suspending of the roadway-bearers was commenced. In January, 1826, preparations were made for opening the bridge, and on Monday the 30th the mails drove over it for the first time. Shortly after however (February 6) a tremendous gale did considerable damage to the iron-work, and repeated gales during the spring tended greatly to retard the necessary operations in repairing this inconvenience has been since felt; and there is reason to believe that, with ordinary care and attention, this noble structure will last for ages.

With respect to the constructive details and operations of the work, those who wish for such information will find all the particulars in a large folio by W. Alexander Provis, the superintending engineer, entitled 'An Historical and Descriptive Account of the Suspension Bridge over the Menai Strait in North Wales,' &c. &c.

All that we add is the following (as given by Drewry in his work on suspension bridges):

The weight of the 16 main chains between the points of support, including connecting plates, screw-pins, wedges, &c., is 1119 tons, 2 cwt. 15 lb.

The transverse ties 26

The suspending-rods and platforms, &c. 245 tons 13 cwt. 27 lb.

Making the total suspended weight 643 tons 2 cwt. 7 lb.
According to Mr. Rhodes's experiment the tension on the iron at each point of suspension is 1 7 times the whole sus-

pended weight, or 1094-42 tons. The entire section of the
bars of the chains is 260 square inches, which would bear 
2722 tons without breaking; or, at the standard of 9 
tons per square inch, the chains will bear without any risk 
(9 x 260 =) 2340 tons, or 2340 - 1094-42 = 1245-5 tons 
more than the strain produced by the weight of the bridge 
itself; consequently it may safely be loaded with 1 7 
or 7231 tons, besides its own weight.

MENANDER (Menander), a Greek comic poet, one of the 
three great masters of the new comedy, was born B.C. 341, 
and died, as some suppose, by drowning, B.C. 289 or 290. 
According to Suidas he was the son of Diopeithes and 
Hegistratê, was cross-eyed, and yet clever- 
headed enough. 6 The same authority says that he was in-
ordinately addicted to women. He wrote more than one 
hundred comedies, of which only fragments remain, but in 
spite of this fertility, and although the most admired writer 
of his time, he was only eight times victor. His name 
was Theophrastos, according to the testimony of Pamphila.

All antiquity agrees in praise of Menander. We learn 
from Ovid that his plots all turned on love, and that in his 
time the plays of Menander were common children's books—
Compare pour y saúde ace amo Menander,
E se o foi pescar virtuosa.

Julius Caesar called Terence a 'dimidius Menander,' 
referring to his professed imitation of the Athenian 
dramatist; and it is generally supposed that Menander, 
with Dion Chrysostomus to all the writers of the old comedy. 
Quintilian (Inst. Orat., x, 1, 69) gives him unqualified 
praise as a delineator of manners. From these notices, 
from the plays of Terence, and from the outward 
compliment passed upon him by Aristophanes the grammarian, 
we may infer Menander to have been an admirable painter of 
real life. His effeminate and immoral habits, and that carelessness 
in his verses, which subjected him to the charge of 
plagiarism, are not points of the most useful or 
fashionable character of the imaginative poet. And indeed 
the writer of what is termed the new comedy (that, namely, 
which satirised characters, not persons) had more occasion 
for knowledge of the world than for higher qualities, just as 
the fashionable novel-writer of the present age had much 
better be a nobleman or a member of parliament than a 
philosopher or a speculative thinker. It has been observed 
that there is very little of the humourous in the 
fragments of Menander which remain, and we cannot judge 
american and men of Shakespeare's plays, if reduced to 
the same state, would be open to a similar charge, although he 
is perhaps the most witty writer of any age or country. The 
esential aim of the comedy of manners is to excite interest 
in itself, not laughter.

The plays of Menander were probably very simple in the 
dramatic action. Terence did not keep to this simplicity, 
but, as he tells us himself, he added to the main plot some 
subordinate one taken from a different piece of Menander; 
thus, as he says, making one piece out of two.

Between the time of Aristophanes and that of Menander 
a great change must have taken place in the Athenian char-
acter, which was probably mainly brought about by the 
change in the political condition of the Athenian state. The 
people had decided on the notorious patriotic which characterised the plays of Aristophanes at a 
time when Athens was struggling for supremacy in Greece; 
and in the time of Menander, Macedonian influence had 
early extinguished the spirit that once animated the con-
quests of Marathon and Plataea. Manners probably had 
not changed for the better in Athens, though the obscenity 
and ribaldry of Aristophanes would no longer have been 
tolerated. The transition from coarseness of expression to 
a decent propriety of language was the history of the age 
in every country. Thus the personal satire and the 
coarseness which characterised the old comedy were no 
longer adapted to the age and circumstances in which Men-
ander lived, and there remained nothing for him to attempt 
as a comic poet wholly in the spirit of which he, by 
the unanimous judgment of all antiquity, he attained the 
highest excellence.

The fragments of Menander are principally preserved in

* Ξρωμία τίς ήκοώς κανές ήν τί νοσών.
partnership. His intimacy with Lessing began in 1754, and is said to have been of the greatest advantage to him. Philosophy now became his favourite study, and his first work was his 'Briefe über die Empfindungen' (letters on the sensations). He published other philosophical works from time to time, and gained a high reputation for acuteness rather than for originality of thought: his excellent moral character also greatly contributed to the respect in which his religious authority was held. His 'Jerusalem, oder über Religions- Macht und Judenthum' (Jerusalem, or an account of the Abolition of the Jewish Race of Religion and Judaism) appeared in 1783. He had begun a philosophical work entitled 'Morgenstunden' (morning hours), of which the first volume was published, when he received Jacob's 'Essay on the Doctrine of Spinoza. He thought that the new charge (the deceased) with Spinozism; a change then much more heavy than at present, when many German philosophers are avowed admirers of Spinoza. The zeal with which he defended his friend by a written answer excited him to such a degree, that the cold, which he subsequently took, was sufficient to terminate his existence in 1786.

As an instance of the successful pursuit of knowledge under difficulties, Mendelssohn is immortalised; and to do him full justice, the circumstances of his life must be remembered, and probably to some extent, his work. The two texts have been translated into almost every European language: this is his 'Phedon,' a dialogue on the immortality of the soul, held between Socrates and his disciples. The characters are taken from Plato's dialogue of the same name, and the desperation and the indignation of the Jewish philosopher have made Socrates produce new arguments in place of those attributed to him by his disciple Plato; thinking these new arguments better adapted to the conviction of modern readers. The following is his principal argument, and it is distinctly that of the dialogue being employed in its defence, and in expressions of reliance on the goodness of the Deity. For every change three things are required: first, a state of the characters that is necessary, and capable of being realized, that follows the change; and, thirdly, a middle state, as change does not take place at once, but by degrees. Between being and not-being there is no middle state. Now the soul being simple, and not, as a compound body, capable of resolution into parts, and incapable of being annihilated; and in its change from death to life, it must pass at once from being to not-being, without of course going through any middle state; a change which, according to the three requisitions of change, is impossible. Thus by reducing the immortality of the soul to a proof, Kant, in his 'Critik der reinen Vernunft' (second edition*), has shown the futility of Mendelssohn's argument, while he admits his acuteness in perceiving that mere incapability of resolution into parts was of itself not sufficient to the immortality of the soul, as had been supposed by many philosophers of the time. Mendelssohn, by assuming that change must be gradual and not sudden, thought that he had established his point, as the soul, being simple, could not admit of gradual resolution; Kant however shows that we may conceive a gradual annihilation even without resolution into parts; or, to use his own expression, a diminution of the intensive magnitude. Thus a deep red colour may grow fainter and fainter till at last the redness is gone, and this without the immediate appearance of the surface of the candle. Another fallacy in Mendelssohn's argument is that his definition of change applies only to a transition from one state of being to another, and therefore does not include a transition from being to not-being. For if not-being be considered as a state of being, there is no occasion for an argument at all, as the continuance of being is assumed in the definition of change, nor would anything be gained by supposing the soul in such a paradoxical state as nonentity with still a soul being at the same time.

A magnificent edition of Mendelssohn's works was published lately at Berlin: an English version of the 'Phedon' appeared in 1789 and also in 1838.

MENDELEEV, D. [LOXEN]

MENDICITY. [HERBERT]

MENDIP HILLS, a long ridge of limestone extending from Wells in Somersetshire to the Bristol Channel at Blydon Hill and Brean Down. Through its whole length it is what geologists term an anticlinal axis, the strata dipping to the north, under the drainage of the Avon and the Yeo, and to the south under the low plains watered by the Axe and the Broe. This axis passes from Fore from the Beacon Hill above Shepton Mallet, Masbury Castle, Nine-Barrow Hill, and Black Down, to Blydon Hall, Uphill, and Brean Down, from whence, according to Buckland and Conybeare, it may be supposed to be continued into the Steep Holm in the Bristol Channel.

Along the line of the axis of Mendip old red-sandstone strata show themselves for considerable lengths, and form the nucleus of this miniature mountain-range. They are exposed on the roads from Wells to Chewton Mendip, and to Harp- worth, in each of which valleys below the carboniferous limestone. Upon the slopes of the limestone, both north and south, rest considerable stratified masses of what is often justly termed magnesian conglomerate, and this is covered by the general mass of red marls which fill so large a tract in the low parts of Somersetshire. The limestone series is estimated by Buckland and Conybeare at from 500 to 700 yards thick. The axis of the Mendip Hills runs irregularly east and west; the geological area of its principal upward movement appears to be anterior to the red marls, and probably to the red conglomerate limestone. Here the upturned and almost vertical strata of mountain-limestone are found covered by horizontal strata of oolite, each of these contrasted rocks containing the characteristic fossils which belong to them elsewhere. What renders the case more curious is the fact that the level surface of the subjacent inclined beds of limestone is not only worn smooth by littoral action below the oolite, but also covered by attached oysters, and perforated by the lithophagous shells of the oolite itself. Hence, in large and small holes now full of the oolite, and partly retaining the blemishes not uncommon in that rock.

The most elevated point of the Mendip Hills is Masbury Castle, about 999 feet above the sea-level.

The features of these hills remind the observer of some parts of northern Derbyshire, both in the wide bare surface of limestone and the rugged gorges which suddenly break the dullness of the open country. These narrow valleys appear like cracks and fissures in the mass of calcareous rocks, which, in Cheddar Cliffs, rise 285 feet perpendicularly from the base of the spectator, and undoubtedly succeeded in grandeur the noblest rocks of Derbyshire or Yorkshire. Several of these gles are called 'combies,' and Brockley Combe may be taken as a beautiful example of the mixture of gray rock and antient wood.

From the chasms just alluded to the transition is easy to the caverns and internal fissures, which are numerous in Mendip. Many of these have become familiar to geologists by the uncommon abundance of bones found in them by a host of explorers since the days of Catcott, the celebrated and unfortunate explorer of Hutton Hole.

Dr. Buckland, in his 'Reliquiae Diluvianae,' describes, from the notes of Mr. Catcott and Mr. Conybeare, the circumstances under which the teeth and bones of elephants, horses, oxen, stag, bear, fox, and other animals of the Mastozootic' occurred at Hutton. The bones were found in the ochre-pits, which were antiently worked; they were mostly white, well preserved, and appear to have been drifted in by water, or collected from the falling in of quadrupeds roaming on the surface.

o, the oolite in level beds; i, the mountain limestones in steeply inclined beds.

* Not in the first edition. The complete edition of Kant's works, now published by Mr. Rowsekrans, at Leipzig, is highly valuable, as distinguishing the additions made in subsequent editions to the original form.
To fetch his being he is but From In land), to Family, and pointed was knowledge, of native severe to him, weidler) is known of those he is, or rather work of the same class, the vita albanii, obtained for him much greater renown, and is disposed but well in comparison with those by the greatest Italian masters. About this time he became acquainted with Webb, to whom he communicated his ideas on art, which the other passed off as his own. His remarks on the work of Mengs was greatly increased by the numerous works he executed for Charles III. of Spain, by whom he was invited to Madrid in 1761, and remained in that country till 1772, in the course of which he painted a picture de' Papiri at Rome. His pencil was employed in decorating the royal palaces of Spain; and the Apotheosis of Trajan, in that of Madrid, is considered his chef d'œuvre. After a marriage of the utmost domestic harmony, Mengs lost his wife in 1778. From that time his health began to decline, nor was it long before he followed her to the tomb; he died on the 29th of June in the following year, and was buried by her side in the church of San Michele Grande at Rome. Notwithstanding the great sums he had received during his life, about 250,000 livres, instead of amassing money he left scarcely sufficient to defray the expenses of his funeral; but the king of Spain bestowed pensions on his widow, and provided also for his five daughters. Although Mengs was born as a Spaniard, and some say he was so high in the last century, he undoubtedly possessed many excellences, and, compared with his immediate contemporaries, deserved the applause showered upon him. Finest taste, natural genius, and a disposition of ideas, correctness of drawing, vigour of colouring, finished execution, and judicious arrangement, are merits of a high rank, which he possessed in an eminent degree; but though most carefully studied, and in conformity with the principles he laid down for the art, his works do not display those four qualities with as much success as the higher branch of historical painting demands. His writings, which were published after his death by the Cavaliér d'Asara, contain many excellent precepts, and both practical and critical observations, and have accordingly been translated into many modern languages. Menén, or Menén, a fortified town in West Flanders, situated on the left bank of the river Lys, by which it is separated from France. It is 11 miles north from Lille, and 30 miles south from Bruges; in 50° 46' N. lat. and 3° 19' E. long. Menên contains manufactures of linen, lace, and soap, besides many breweries, salt-refineries, and oil-mills. It also carries on a considerable trade in horses, cattle, sheep, corn, fish, wool, and tobacco; and has a population of 7500 inhabitants. Meniscus. [L.]

Menisperma/Cær. are an important and extensive natural order of Exogenous plants, considered by some to be Polypetalous, and referred to Do Candolle's Thalamflu- with this subclass; but do not belong to the same family as the order of that author. The order consists of twining or scrambling shrubby plants, with alternate leaves without stipules, and small greenish or white unisexual flowers, often collected in large loose panicles or racemes. The floral envelopes are arranged in a power of three or four, or usually in more rows than one; whence arises the opinion that these plants belong to Polypetalous Exogenous, the inner series being regarded as a corolla. The stamens are either distinct or monadel- phous, either of the inner or the inner series of the flower, and of the same number, or nearly so. The carpels are in most cases three, or some multiple of that number, either distinct from each other or consolidated. The fruit consists of succulent one-celled drupes, with a outer coat of fleshy seed, and a horsehoe-shaped embryo, with thin flat cotyledons. The wood of the stem is arranged essentially upon the Exogenous plan, but has some striking peculiarities. According to M. Dechain, it has no annual concentrical layers. The woody plant displays some similarity to that of other trees, but is more irregularly, as in other Dicotyledons, but increase each year by the formation of a new woody layer outside the former and inside the liber. The latter ceases to grow after the first year. In Cissampelos Palustris and some others new woody centres, like the annual vessels in trees, appear in the spring, or old vessels, if the outer ones die, show themselves, at the end of several years, on the outside of the first, and produce around them a concentric ring, which becomes the basis of a new woody layer each year. The ring increases in thickness each year, as the inner one of the two old rings, and the black spot in the center of the outer one, the place of the cambium, increases in diameter. This seems to be the case in many other plants which are so arranged. The wood is hard and heavy, and the heart-wood is of a reddish brown color. It is called 'Red Heart.' The wood is also used in making stakes, for nails, and in some cases for turnery and. The inner surface is smooth, and the outer one rough, or furrowed, or both; but the color is deeper in the outer part than in the inner. The growth of 100尺寸: 1000.0 x 1562.0
...trio circle, a formation which may be repeated a great many times. (Comptes Rendus, v. 393.)

Menispermae are usually bitter and tonic plants; the species of Cocculus called Bakis, Biaureas, cinerasceae, and others, are used in their native countries as a remedy for intermittent fevers. Cocculus palmasius furnishes the Columbus root of the shops, a valuable bitter. Perentini media is used for the same reason in Ceylon, as is Clypeus Burmanni in Malabar, and various sorts of Cissampelos in Brazil. But the bitter principle, which in its diluted state is thus valuable, becomes a dangerous poison if concentrated, as in the seeds of Anamiria Cocculus, the Cocculus Indicus of the shops.

Menispermae, a vegetable alkali extracted by Pelletier and Couperie from the menispernum cocculus, or cocculus indicus, in the shells of the fruit of which it occurs. 

Menispernum (so called from μειν, the moon, and εἰδος, seed, from the crescent-like form of its fruit), a genus of the natural family of Menispermaceae, which formerly contained numerous species, many of them valuable for their medicinal and other qualities, such as the Columbus root, and the berries called Cocculus Indicus, which are now referred to the genus Cocculus. Menispernum, as at present constituted, contains but few species; and these are climbing shrubs which have their sepals and petals in terminal order, arranged in two or three whorls. Male, stamens 16 to 20; female, ovaries 2 to 4; Drapesc: baccate, round, kidney-shaped, single-seeded. M. candens and M. altissinum are found in the United States of America, and M. Dauricum in the wooded hills of Da-ura.

Mennonites, a religious sect which sprung up in Holland and Germany about the time of the Reformation, and which is identified by many writers with the sect of the Anabaptists, with whom the Mennonites held several leading doctrines in common. [Anabaptists.] They received their denomination from Simon Menno, who was born at Witmarsum, a village in Friesland, in the year 1505. In 1536 he left the Roman Catholic church, in which he was a priest, and joined the Anabaptists, among whom he became a teacher in the next year. During the remainder of his life, Menno travelled with his family and preached his doctrines throughout a great part of Germany and Holland, where he gained many proselytes, chiefly from among the Anabaptists. He died in the year 1561, in the duchy of Holstein. His works were published in one volume folio, at Amsterdam, in 1651. Though he is said to have been a notorious prodigate when young, his character after he came forward as a religious teacher was unimpeachable; and he was possessed of considerable genius, some learning, and a polished eloquence. His doctrines were free from the anti-social and licentious tenets and the pretensions to inspiration which are ascribed to the Anabaptists; but he agreed with them in condemning the baptism of infants, in expecting a personal reign of Christ on earth for a thousand years at the Millennium, in excluding magistrates from the Christian church, and in maintaining that all war was unlawful, that the taking of oaths was prohibited by Christ, and that human science is useless and pernicious to the Christian. But these tenets were improved and modified by Menno, so as to differ very little from the doctrines generally held by the reformed churches. He insisted upon the strictest attention to moral duties, and exercised a most severe discipline upon offenders.

The followers of Menno very soon split into two sects, the Flemings and the Waterlanders, so called from the countries in which they arose. The latter somewhat relaxed the severe discipline of Menno towards offending members, which the former maintained in all its rigour. The Flemings divided again, on the subject of the treatment of excommunicated persons, into Flandriani and Frieslanders, and there also arose a third division called Germans. In process of time the greater part of these sects joined the Waterlanders.

The Mennonites put forth several confessions in the seventeenth century, the earliest of which is one drawn up by the Waterlanders. Of these confessions it appears that their doctrines were nearly the same with those mentioned above as held by Menno. According to these, the fundamental principle was that 'the kingdom which Christ established upon earth is a visible church or community, into which the holy and the just are alone to be admitted, and which is consequently exempt from all those institutions and rules of discipline that have been invented by human wisdom for the correction and reformation of the wicked.'

In the seventeenth century the Mennonites obtained toleration in Holland, Germany, and England. In the year 1630, a considerable part of them arranged their differences in a conference at Amsterdam, and formed a union, which was renewed in 1649.

Further information respecting this sect may be found in Herman Schon's Historia Mennonitarum plicem De ducto, which is a defence of the Mennonites, and in which the author protests against their being confounded with the Anabaptists; and also in Mosheim's Eccles. Hist. cent. xvii. sect. iii. part ii. c. 3; and cent. xviii. sect. ii. part ii., the work being written in a spirit of greater candour.

Menopraci. [Nectarine.]

Menopoema. [Salamandrops.]

Menorca, or Minorca, is the second in size ('the minor') of the Balearic Islands. It is situated in the Mediterranean, off the eastern coast of Spain, between 37° 47' and 40° 5' N. lat., and between 3° 50' and 4° 23' E. long. It lies 24 miles to the east-north-east of Mallorca, about 122 miles south-east of the coast of Catalonia, 162 miles east by south from the mouth of the Ebro, the nearest part of Valencia, and about 190 miles north from the territory of Algiers in Africa. It has a circumference of 62 miles, and an area of about 300 square miles. In form it is irregular; bome in length 23 miles, and in the broadest part 15 miles. The coast is indented on every side by small bays or deep creeks, and is surrounded with inlets, rocks, and shoals.

Menorca was successively possessed by the Phoenicians, Carthaginians, Romans, Vandals, and Arabs. On the conquest of Mallorca, in A.D. 1229, by Don Jaime the Conqueror, Minorca, which was still held by the Moors, became tributary to that prince. In A.D. 1276 the island was conquered by Alfonso, grandson of Don Jaime the Conqueror, who burned and enslaved the Moorish inhabitants. In the reign of Alfonso XI., it was recon- sciented, but soon evacuated, by Barbarossa. It remained subject to the crown of Spain till the year 1708, when the earl of Stanhope, with 3000 British troops, attacked Mahon. The town was taken without much opposition, but the town and castle were afterwards attached to the town, and which were attacked paper threatening the garrison with the same with consequences as if they immediately surrendered, he induced them to capitulate. The conquest of the island followed that of its capital, and was confirmed by the treaty of Utrecht; the English retained possession of Minorca till the year 1716, when
Mahon was attacked by the French under Marshal de Richelieu, and Admiral Byng having failed in relieving it, the island was reoccupied; but in 1782, when it was restored to the English, from whom it was wrested by the Spaniards in 1782; it was retaken in 1798, and finally ceded to Spain at the peaco of Amiens in 1802.

The spring of the year is generally clear, mild, and temperate; but the summer is hot; the autumn is the season of the annual rains, which are exceedingly heavy; the winter is often cold, though snow and ice are rare. On the whole the climate is less agreeable than that of Spain, and much more humid; and the summer heats more oppressive, which arises from the comparatively level character of Menorca. The only eminence deserving the name of mountain is Monte Toro in the centre of the island, the greater part of which is unsheltered from the violent north winds in the Gulf of Lions, while the beats of summer are untempered by mountain breezes. The surface of the country is a gently undulating plain, rocky and barren, or partially covered with wild olive shrubs. The southern shore is the most level. The soil is for the most part poor and sandy; that on the slopes is much richer than that of the low grounds.

The mineral productions of Menorca are numerous: free-stone, marble of various colours (little used by the natives), slate, of which a quarry is worked at Cape Mola on the east side of the island, gypsum, used for cement, and potters' clay. There are a few lead-mines, very unproductive, and iron-ore is found in small quantities.

The vegetable productions of Menorca are largely that of Mallorca, though it is much less abundant, and the trees seldom attain to so large a size. Aromatic plants and herbs, many with medicinal qualities, grow in profusion. Wheat, barley, and a little barley, though not enough for the consumption of the island; they return on an average six or seven for one. Olive-trees grow almost without culture; little oil is made from their fruit, which is generally preserved for eating. Vines are plentiful, and produce both white and red wine: lemons, pomegranates, figs, apples, pears, and almonds; the melons are of superior flavour. Date-palms will grow in sheltered spots, but yield so fruit. Capers grow spontaneously in all parts of the island. Flax, hemp, saffron, and the cotton-rose are cultivated, but are little attended to.

Vegetables are no less abundant than fruit, and consist chiefly of peas, beans, onions, cauliflowers, broccoli, tomatoes, endive, cucumbers, and gourds, all excellent in quality.

The principal domestic animals are sheep, goats, cattle, and pigs; and also in game, partridges, quails, and rabbits; woodcocks, snipes, and teal are plentiful in winter. Fish, especially anchovies, with oysters, lobsters, and other crustaceans, abound on the coasts. Lizards swarm, and there are a few venomous reptiles but no toads or frogs.

The natives are engaged either in agriculture, fishing, or commerce. The imports consist of corn, oil, brandy, tobacco, coffee, sugar, spices, hardware, and cutlery, linen and woollen goods, wines, onions, garlic, and ginseng. The exports are wines, wines, cheese, salt, honey, and wax. The possession of Menorca by the English during the last century did much to promote its trade and commerce; a spirit of activity and enterprise was awakened, and the natives, besides engaging in mercantile pursuits, fitted out vessels as privateers, and enriched themselves at the expense of France and Spain. But since the island has reverted to the Spaniards, trade and commerce have greatly declined.

The island is divided into four tercios, or districts, Ciudadela, Mahon, Fornells, and Mercadal. In each is a town of the same name, the capital of the district. The population of the whole island is about 35,000, of which the termino of Ciudadela contains 7000, Mahon 10,000, and Fornells and Mercadal 4000. Ciudadela, the present metropolis of Menorca, is situated on the north-west coast, on a port small, shallow and difficult of entrance. The city is fortified, and its walls are partly of Moorish, partly of modern masonry. Its population is about 7000. The streets are narrow, crooked, and wretchedly paved; many of the houses are neat, and some handsome. A cathedral, two parish churches, several convents, an hospital, a barrack, with a government-house, are amongst its buildings. The nobility of Menorca, is inferior in importance to Mahon, or Port Mahon, on the opposite or south-eastern shore of the island, and 24 miles from the capital. This town communicates by a carriage-road. Menorca is said to have been founded and called after Mago, a distinguished Carthaginian commander. It is picturesquely situated at the bottom of a deep and narrow bay, on rocks much elevated above the sea, and in many spots, the sea is within a few feet of the houses, which are formerly surrounded with walls, the only relic of which is a square of Arabian architecture. The streets are steep, narrow, crooked, and badly paved; the governor's house, town-hall, hospital, barracks, and other public buildings are scarcely worthy of notice; the private houses are neat and clean, built with taste, but often without regard to comfort, for many being on the English model, they are ill adapted to the sultry climate. Some of their roofs are tiled, and some of mathematical style. The port of Mahon is one of the best in the Mediterranean, or it has been so in the world, as a large fleet of line-of-battle ships may ride within it, in seven or eight fathoms water, perfectly sheltered from very wind. The Spaniards have a saying, 'The ports of the Mediterranean are June, July, August, and Port Mahon.'

Port Mahon alone made the possession of Menorca an object of contention among the maritime nations of Europe during the past century. In the harbour are four rocky islets; on one stands an hospital, on another a quarantine establishment, and on a third a lighthouse, which is maintained by the arsenal with naval storehouses—all erected by the English. At a short distance from Mahon stood Fort St. Philip, famed in the military annals of the last century, and once a principal entrance to the port; it is now a heap of ruins, having been blown up by the Spaniards in 1803, to prevent its being used by the English, in case they should again seize the island.

The other ports of Menorca are, Fornells, a well sheltered bay, capable of holding a large fleet, and Adaya, a small harbour, full of rocks and shalloes, and only entered by fishing-craft.

Allhaur, Mercadal, and Fornells, the other district-capita of Menorca, are little more than villages, and contain nothing worthy of notice.

Monte Toro is in the form of a cone, with a flat summit which is occupied by an Augustin convent, to which pilgrimages are often made by the natives with bare foot. Mount St. Agatha, the sea dye in importance, is supposed to have been a military post in the time of the Romans, and traces of a Moorish fortification are still visible on its summit. Two miles south of Ciudadela is a curious cataract, called 'El Cauro,' a full of stalactites and stalagmites; and in the same vicinity is another cavern containing a pool or lake of salt-water.

Menorca is not rich in antiquities. About two miles from Allhaur is a rude pyramidal ruin of Drusidal character, ascribed to the Phoenicians, the earliest colonists of the island; but whether it be temple, tomb, or watch-tower is yet disputed. Punic, Greek, Roman, Gothic, and Arab coins have been discovered; together with small statues of bronze, vases, lamps, urns, &c., chiefly of Roman origin. In character and manners, the Mallorquines resemble the natives of Mallorca. They are equally attached to their native soil, and to their customs and religion, but they are less indolent and more enterprising. Like the Mallorquines they are industrious, and industrious, yet, on a whole, mild and peaceable. The same dress and language are common to both.

(Dameto and Mut, History of the Balearic Kingdom, and Armstrong's History of the Island of Menorca; Laborte, Descriptfde de l'Espagne; St. Sauveur, Travels through the Balearic and Pithugian Islands.)

MENSURATION. [SOLVENT.]

MENSURATION is the name given to a branch of the application of mathematics to geometry, which shows how to find any dimension of a figure, or its area, or surface, or solidity, &c., by means of the most simple measurements which the case will admit of. We need hardly say that a complete treatise on this sciences would occupy many volumes. We shall in this article collect together the most important rules, the method of using which will be obvious to all who can employ the trigono-

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metrical tables. By the length of a line we mean the number of linear units contained in it, and by its square the cube of the number of units multiplied by itself once and twice.

The measurement of lengths and directions resolves itself for the most part into the determination of a side or angle of a triangle, when other sides or angles are given. The triangle may be either on a plane or on a sphere; but we refer the latter to Spheres, since the use of spherical trigonometry can only be well explained in connection with astronomy. Let a, b, c be the sides of a triangle, and A, B, C the opposite angles. If the triangle be right angled at C, we have the following formulae:

\[ a = \sin A = \cos B = c \tan b = a \cot B \]
\[ b = \sin B = \cos C = a \tan A = b \cot A \]
\[ c = \sqrt{a^2 + b^2} \]

The preceding formulae contain the solution of every case of right angled triangles.

We now pass to oblique angled triangles, of which there are four cases.

1. Given the three sides, a, b, and c, to find the angles.

Let the perpendicular let fall from C upon the longest side c divide it into two segments a and b adjacent to a and b, and let \( \theta \neq a \). Then the equations

\[ \beta + \alpha = \frac{(b-a)}{a} (b-a) \]

(in which \( \beta - \alpha \) is easily found by logarithms), will give \( \beta \) and \( \alpha \). Then

\[ \cos B = \frac{a}{b} \cos A = \frac{b}{c} = \cos C \]

Another method is as follows. Compute \( M \) from the formula

\[ s = \sqrt{\frac{s-a}{s-b} \cdot s-c} \]; then

\[ \tan \frac{A}{2} = \frac{M}{s-a} \tan \frac{B}{2} = \frac{M}{s-b} \tan \frac{C}{2} = \frac{M}{s-c} \]

2. Given two sides a and b, and the remaining angle C, required a, A, and B. Firstly, to find the angles, determine

\[ (B-A) \text{ from } (B-A) = \frac{180° - C}{2} \]

(B-A) from \( \tan \frac{1}{2} (B-A) = \frac{a-b}{b+a}, \cot \frac{1}{2} (B-A) = \frac{a+b}{b-a} \)

A = \( \frac{1}{2} (B-A) - \frac{1}{2} (B-A) = \frac{1}{2} (B+\frac{A}{B} - \frac{A}{B}) \text{ or } \frac{1}{2} (B+\frac{A}{B} - \frac{A}{B}) \text{ or } \frac{1}{2} (B+\frac{A}{B} - \frac{A}{B}) \text{ or } \frac{1}{2} (B+\frac{A}{B} - \frac{A}{B}) \text{ or } \frac{1}{2} (B+\frac{A}{B} - \frac{A}{B}) \text{ or } \frac{1}{2} (B+\frac{A}{B} - \frac{A}{B}) \text{ or } \frac{1}{2} (B+\frac{A}{B} - \frac{A}{B}) \text{ or } \frac{1}{2} (B+\frac{A}{B} - \frac{A}{B}) \text{ or } \frac{1}{2} (B+\frac{A}{B} - \frac{A}{B}) \text{ or } \frac{1}{2} (B+\frac{A}{B} - \frac{A}{B}) \]

The determination is only necessary to distinguish the angles given, as the two equations determine the third.

\[ \sin B = \sin A = \cos C \]

The area of the triangle is

\[ \frac{1}{2} \cdot \sin A \cdot \sin C \cdot b \cdot c \]

The perpendicular let fall from the vertices A, B, and C, upon the opposite sides, are severally \( \frac{1}{2} \cdot \sin A \cdot \sin C \) divided by a, b, and c.

Diam. of inscribed circle \( 2 \sqrt{\frac{a+b-c}{b+c}} \)

Do. of circumscribed circle \( \frac{a+b-c}{a+b+c} \sin C \)

This convenient adaptation of a well known formula is found, we believe, for the first time, to Professor Wallis's lately published work on Mathematical Theorem and Treatise (Longman, Longman).

or \( \frac{a+b-c}{a+b+c} = \frac{2}{\sqrt{a+b+c}} \)

Segments of c made by perpendicular C,

Adjacent to a, \( \frac{c+a-b}{2c} \)

Segments of c, by line bisecting C,

Adjacent to a, \( \frac{c+b-a}{2c} \)

Line bisecting \( C = \frac{2 \sqrt{(a+b+c)}}{2} = \frac{a+b}{a+b} \)

The area of a triangle (in square units), and that of a parallelogram, is the product of the units in the base and perpendicular distance of the opposite sides. But if two sides only be parallel, half the square of the parallelogram must be multiplied by the perpendicular distance between them. In other cases, the figure must be measured by dividing it into triangles, except when it is either a four-sided figure capable of inscription in a circle, or a regular polygon. Every triangle is half of the rectangle contained by any one of its sides, and the perpendicular let fall from the opposite vertex.

If a, b, c, and d be the sides of a four-sided figure inscribed in a circle, and e their half-sum, the area is

\[ e \cdot (e-a)(e-b)(e-c)(e-d) \]

If one be one of the sides of a regular polygon, the area of the figure and the diameters of the circumscribed and inscribed circles are

\[ a \cdot \cos \left( \frac{180°}{n} \right) \]

\[ a \cdot \tan \left( \frac{180°}{n} \right) \]

Tables connected with this subject are given in the article POLYGONS, REGULAR, and corresponding tables for the solids in SOLIDS, REGULAR. For the method of measuring irregular areas, see QUADRATURES, METHOD OF.

The whole of the measurement of the circle depends upon the ratio of the circumference to the diameter, which is called \( \pi \), and is \( 3.1415927 \) very nearly, or \( \frac{22}{7} \) roughly, or \( \frac{99}{31} \) nearly. [ANGLE] So many simple derivations from this number are practically useful, that we shall give a table of them, accompanied by their logarithms, first giving a method of multiplying and dividing by \( \pi \), which is a correction of the use of \( \pi \).

To multiply by \( \pi \), multiply by 22 and divide by 7; from the result take one-eighth of the hundredth part of the multiplicant as a correction; the result is too great only by about its 200,000th part. To divide by \( \pi \), multiply by 7, divide by 11 and 2, and to the result add the eighth part of the thousandth part of the dividend; the result is too small by very nearly its 100,000th part.

The table just referred to is as follows:

<table>
<thead>
<tr>
<th>Number</th>
<th>Logarithm</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \pi )</td>
<td>3.1415927</td>
</tr>
<tr>
<td>1</td>
<td>0.0000000</td>
</tr>
<tr>
<td>2</td>
<td>0.0000000</td>
</tr>
<tr>
<td>3</td>
<td>0.0000000</td>
</tr>
<tr>
<td>4</td>
<td>0.0000000</td>
</tr>
<tr>
<td>5</td>
<td>0.0000000</td>
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<tr>
<td>6</td>
<td>0.0000000</td>
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<td>0.0000000</td>
</tr>
<tr>
<td>8</td>
<td>0.0000000</td>
</tr>
<tr>
<td>9</td>
<td>0.0000000</td>
</tr>
<tr>
<td>10</td>
<td>0.0000000</td>
</tr>
<tr>
<td>11</td>
<td>0.0000000</td>
</tr>
<tr>
<td>12</td>
<td>0.0000000</td>
</tr>
</tbody>
</table>

To find the circumference from the diameter, multiply by \( \pi \); to find the diameter from the circumference, multiply by \( \frac{1}{\pi} \); to find the area from the diameter, multiply the square of the diameter by \( \frac{\pi}{4} \); to find the area from the radius, multiply the square of the radius by \( \pi \); to find the diameter from the area, multiply the square root of the area by \( \sqrt{4 \cdot \pi} \); to find the area from the circumference.
multiply the square of the circumference by $1 + 4 \times \pi$; to find the circumference from the area, multiply twice the square root of the area by $\sqrt{\pi}$; to find the ordinate perpendicular to a diameter, take the square root of the product of the segments into which it divides the diameter.

To find the area contained between two concentric circles, multiply the product of the sum and difference of the radii by $\pi$.

The arc of a circle and its subtended central angle are connected as follows: the arc which is equal to the radius subtends an angle of $57^\circ$ 3' nearly; or it may be easily remembered as 57 degrees and three-tenths of a degree, divided by the radius; the result is too great by about three-quarters of its 10,000th part, and is in degrees and decimals of a degree. To find the arc from its angle, turn the angle into degrees and decimals, multiply by the radius, and divide by $57^\circ$ 3'; the result is now too small by about three-quarters of its 10,000th part.

To find its several faces. The surface of a common cylinder (if only the angle be given), and multiply it by half the radius. To find the area of a segment contained between an arc and a chord, find the sector, and from it subtract the triangle formed by the terminal radii and the chord. (Segment.)

The value of the ratio of the circumference to the diameter is not known, measure the chord of the arc, and the chord of its half; from eight times the chord of the half subtract the chord of the whole, and take one-third of the remainder. For an arc not exceeding 60 degrees, the error is less than the fourth part of the chord.

The preceding are the principal rules of mensuration, of which the necessity occurs in the elementary parts of the subject: those which remain are connected with solid geometry, and the most essential are as follows:

The number of cubic inches in the content of a rectangular solid (or parallelopiped); there is no shorter term for this most elementary form of solid figures is the product of the number of linear units in its three adjacent sides. The content of a barytes, or any other similar substance, is the product of square units in its base and the number of linear units in its altitude. The content of a pyramid or cone is one-third of the base multiplied by the altitude. The surfaces of a prism or pyramid must be found by computing those of the respective bases, and adding to them the surfaces of the sides.

The following formulae relate to the sphere. To find the surface from the radius, multiply the square of the radius by $4 \pi$, or the square of the diameter by $\pi$; to find the content from the radius, multiply the cube of the radius by $4\pi \times 3$; or the cube of the diameter by $\pi \times 6$. To find the surface of a sphere multiply the square root of the surface by $\sqrt{3} / (1 + 4 \pi)$; to find the diameter, multiply the square root of the surface of the sphere by $\sqrt{3} \pi$; to find the radius from the content, multiply the cube root of the content by $\sqrt{3}/(4 \pi)$; to find the diameter, multiply the cube root of the content of the sphere by $\sqrt{3}/(6 \times \pi)$; to find the surface from the content, multiply the cube root of the square of six times the content by $\sqrt{3} / \pi$; to find the content from the surface, multiply the square root of the cube of the surface of the sphere by $\pi / \sqrt{3}$.

MENZA PLEGIUM (Pennyroyal), an indigenous species of mint, smaller than most, with roundish opposite leaves, and of which there is a peculiarly aromatic oil, which is used for distillations to be added to or on grapes, and in other cases. It proved of considerable utility in bringing about reaction in the collapsed stage of Asiatic cholera.

MENTHA VYRIDIS (Spearmint), a plant of Britain, very much resembling M. piperita, of which the colour however is of a deep green. It is also frequently confounded with M. crispa, than which it has a stronger and more agreeable odour, but weaker than peppermint. It has not the aromatic odour of the plant, nor does it have the sense of coolness in the mouth from it, and is much less agreeable. It is a spirit, and a volatile oil, which are used as the former.

MENZ. [MAIN.]

MENU. [MENSA.]

MENURA. [MENTRA.]

MENYANTHES TRIFOLIATA (official part, the leaves), a plant common in our bogs, and hence called bogbean, as its leaves resemble the common bean. The leaves and aerial stems, petioles and principal veins, those of the lower leaf, and the flowers are, or at least are a variable, translucent, and, when highly dried, pulvissive mass of an intense degree of bitterness. Troommdorff says he obtained a yellowish brown, clear, very viscid, not pulvissive, bitter extract.

It is a tonic and febrifuge medicine of undoubted efficacy, but greatly neglected in the treatment of disease. The chief use said to be made of the large quantity annually collected is to substitute it for hops in brewing, a proceeding which is both harmless and conducive to health, even though bitter, it does not possess the aromatic quality of the hop.

MENZAL'LRH, LAKE. [EGYPT.]

MENZIKOF, PRINCE. [PETERSBURG.]

MERMITHES. [BIOL. vol. iii. p. 526; SCIENT.]

MEPHITIC AIR. [CARBONIC ACID.]

MEQUINEZ. [MAROCO.]

MER. [LOIR ET CHER.]

MERCAPTA, a compound of hydrogen, carbon, and sulphur, discovered by Ziese, and so called from its energetic action on binoxide of mercury (corpus mercarium capsans). It is prepared by distilling a mixture of sulphovinace of barytes and a strong solution of protosulphuret of baryum. A volatile liquid and water pass over into the receiver, while sulphate of barytes remains in the retort; the ethereal portion floats on the water, and when removed and carefully distilled, it separates into thionic ethereal and mercurian, the properties of which are, that it is a colourless liquid, which has a penetrating aromatic smell, and a peculiar sweatsick taste; its specific gravity is 0.482, it boils at 144°, and remains fluid at 80°. Water dissolves it sparingly, but niter and alcohol unite with it in all proportions; it has no action on litmus paper. Acetate of lead, or the like, is often used in the solutions of mercaptan. When added to binoxide of mercury, energetic action ensues, water is generated, and a colourless crystalline compound is formed; with bichloride of mercury a similar product is obtained, attended with the formation of hydrochloric acid.

According to Zeise, the ultimate composition of mercaptan is—
Six equivalents of hydrogen  
Four equivalents of carbon  
Two equivalents of sulphur  
Equivalent  

He however considers it as a hydruret of a compound base which he represents in 1660 to consist of 6 equivalents of hydrogen, 4 equivalents of carbon 24, and 2 equivalents of sulphur 32 = 61.

When mercurian is made to act upon potassium, mercuricide of potassium is formed, and one equivalent of hydrogen is evolved; so the constitution therefore of mercuric and mercurian is analogous to that of cyanogen and hydrocyanic acid.

MERCIATOR, GERARD (whose real name was Kauffman, of which Mercator is the Latin equivalent), was born at Rupelmonde in East Flanders, in the year 1512. He applied himself with great industry to the sciences of geography and mathematics, and was patronised by the emperor Charles V., and appointed, in 1559, cosmographer to the duke of Jutland. He gave his name to the method of geographical projection now usually employed in the construction of nautical maps, in consequence of his having first represented the meridians by equidistant parallel lines, and the parallels of latitude by straight lines at right angles to the meridians, but he did not know the precise which ought to separate these parallels. Nicholas Mercator is said to have discovered the law which regulates these distances; but the English mathematicians having refused to pay for the promulgation of his discovery by accepting a pension from him, he is said to have sold them to them, he died without communicating it even to his friends.

The credit of first investigating the principles of that projection, and applying them to the purposes of navigation, appears to be due to Edward Wallis. Gerard Mercator died at Doesburg, Dec. 2, 1594. His published works are entitled 'De Usu Annuli Astronomici,' Louvain, 1552; 'Chronologia, Cologne, 1668, fol.; 'Tabulie Geographicae,' Cologne, 1578, fol.; 'Harmoniae Evangelistarum,' Doesburg, 1592, 4to; another edition was published in 1632, containing 156 maps. [Hutton's Mathematical Dictionary; Montucla, Histoire des Mathématiques; Robertson's Dissertation on the Rise and Progress of Navigation.]

MERCIATOR, NICHOLAS (whose real name was Nicholas Kaufman), was born at Holstein, in Denmark, in 1640. At an early age he was engaged in a correspondence with some of the principal geometericians of Denmark, Italy, and England. In 1660 he came to England, and shortly after the formation of the Royal Society, he was elected a member of that body. The date of his death is uncertain. According to Dr. Hutton, it took place in England in the year 1667 (Mathematical Tracts, etc., of Mercator); but, according to Weis, (Biog. Univers.); he died at Paris, February, 1667. The reputation of Mercator rests principally upon a method, of which he was the author, whereby the area of the spaces comprised between the hyperbola and its asymptote may be determined arithmetically to any degree of approximation required; and upon the application of this method to the construction of logarithmic tables. It had been shown, as early as the year 1647, by Gregory St. Vincent, and subsequently by Mercenne, that these areas, if they could be computed, would give the logarithms of the corresponding abscissae measured along the asymptote. [Logarithmica.] It was also known that in the equilateral hyperbola whose semi-axis = a, the relation between the ordinate and abscissa was expressed by the equation \[ y = \frac{1}{y^1-x^2}; \]

Wallis however, although his attention had been particularly directed to the subject, did not observe the almost obvious analogy between the equations \[ y = 1 + x + x^2 + \cdots; \]

Wallis however, as he could not have failed to do, had he been charged to perform the simple division indicated by the fraction \[ \frac{1}{1+x^2}; \]

for he would then have seen that the latter equation was identical with \[ y = 1 - x + x^2 - \cdots; \]

...
whereas by hypothesis it is always sailing north-east. The fact is, that a curve which makes equal angles with all meridians must be a spiral which approaches the pole, encircling it with an infinite number of folds, but never actually reaching it, as in the following diagram, in which the curve 1, C, 2, 3, 4, &c., is that on which a ship would sail from 1 towards the north pole on a course east-north-east, and the curve 1, 5, 6, 7, 8, &c., is that of a course west-south-west towards the south pole. The dotted part of the figure is supposed to be on the other, or the invisible, side of the sphere. A ship sailing from A to B over A C B, keeps one course; but were it to sail over the great circle A D B, the course must be perpetually altering.

The spiral A C B is the only one on which a ship should sail directly from A to B, though there is an infinite number of such curves which pass through both A and B, the reason being, that in every other spiral except A B one or more complete circuits in longitude must be made, and the ship would come again to the meridian passing through A before it reaches B. In the same manner a spiral might be found, passing through A and B, which cuts the meridian of A five hundred times before it passes through B. Of course the shortest course is always preferred; and it is the object of Mercator’s projection to lay down such a map of the world that the straight line joining two points shall be the map of the course which must be followed in order to sail from one to the other in the most direct manner, consistently with always keeping the same point of the compass. The spirals above described are called loxodromic spirals, or rhumb lines, and under the latter term their mathematical properties are explained. Our present object is to turn the globe into one of Mercator’s maps, in a manner which will give the unmathematical reader some idea of its construction. For this purpose suppose the map of the world to be painted on the globe, and let the globe be made of a thin and very elastic material. Let the elasticity of this material increase as we go towards either pole, and so rapidly that it becomes as great as we please at and near the poles. Let the equator E Q be immovably connected with the internal centre (supposed fixed) of the globe. If then the north and south poles be pulled away from the equator, the thin membrane of the sphere will be extended; and if the pull be continued until the poles are sufficiently distant, a large portion of the sphere on each side of the equator will assume a cylindrical form, or one nearly cylindrical; and the greater elasticity of the upper parts will cause the small folds of the different spirals to be much more extended than the larger ones, so as to become equal to them. Let the mathematical hypothesis implied in the preceding be carried to its extreme limit, that is, let the poles be pulled to an infinite distance; and let the law of the elasticity be such that the several loxodromic spirals shall have precisely similar successive folds on the resulting cylinder, that is, let them take a regular screw-like form. The meridians will then all become straight lines parallel to one another; and if the membrane be then fixed in its cylindrical shape, that is, if it lose its elasticity, and if one of the meridians be slit all the way down, and the cylinder unrolled into a plane, we shall have before us Mercator’s projection, as shown in the following diagram. The degrees of longitude remain everywhere the same, those of latitude increase sensibly. The map goes up to 80° of latitude, and any part of the remaining 10° might be drawn; but no space would be sufficient for the whole of the remainder. Any two points, A and B, being given, the line A B joining them points out, on the supposition that all the meridians look towards the north, the most direct course on which a ship can sail from one to the other: if a compass were placed
at A, then A B would show, A K being the north direction, the point of the compass on which to steer. Again, from C to D the most direct course is on the dark line C D; but C E D, is another way of coming to the same point. It must be remembered that the extreme lines on the right and left represent the same meridian, as they coincided before the cylinder was divided for the purpose of being unrolled.

It thus appears that we have a map on which the sailing course can be runged before it is unrolled. The purpose is Mercator's projection of the whole spherical surface of the globe, by which the distance sailed can be determined. This is pointed out in **Rhumb-Line**. The line B C, is Mercator's projection of the whole spherical surface of the globe, by which the distance sailed can be determined. This is pointed out in **Rhumb-Line**.

**MERCAPARIA**, Schumacher's name for the *Venus mercatoria* of authors, which passes current as money, under the name of Wampum, among the Indians of North America. [**VENERIDAE.**]

**MERCA.** [**ENGLAND.**]

**MERCURY, or QUICKSILVER.** This metal, which possesses the remarkable property of being fluid at usual temperatures, has been known from the remotest ages. Although it is met with in very large quantity, yet the mines occur in comparatively few places; those of Almaden in Spain, and Idria, in Carniola, are the most important. There are however mines of this metal in Hungary, Transylvania, and the district of Deux Ponts in Germany. Mercury has been obtained for a very long time in China and Japan, and although the amount of the produce is unknown, there is little doubt to think it is considerable; it is also found at Huancavelica in Peru.

Mercury is always obtained from cinnabar, which is a bitulphuret of the metal; it is found in the red-sandstone associated with coal, at Idria, in Carniola, and in the district of Deux Ponts, the cinnabar occurs in the subordinated porphyries; and at Idria it is found in the subordinated bituminous schist, but rarely in limestone itself.

The cinnabar which is found in coal-sandstone is often accompanied with argillaceous and bituminous schist, and imprinted with shells and plants; often with combustible fossils, and sometimes even intimately mixed with coal.

Pliny states (xxiii. 7) that Callius, an Athenian, discovered the preparation of vermilion, or cinnabar, B.C. 565. He also mentions the mines of Almaden (Almaden) as producing in his time 10,000 Roman pounds annually; but this was not the amount which the mines could have produced, for the supply was purposely limited. Le Play, a French geologist, visited Almaden in 1853, described the operations as richer than at any former period, furnishing annually nearly 2,244,000 pounds of mercury. About 700 workmen are employed underground, and 200 in the operations connected with the extraction of the metal from the cinnabar.

Formerly mercury was imported in packages of fifty or sixty pounds weight; the metal was poured into a fresh sheep-skin, from which the wool was taken off, the ends were tied tight, and the sort of bag thus made was enclosed in a second skin, and this in a third, and three or four layers were packed in close barrels. Of late years mercury has been brought to this country in wrought-iron bottles.

Various processes are adopted for the purpose of separating the mercury from the ore, all of which depend upon the volatility of the metal, its conversion into vapour in the distilling vessels or retorts, and its condensation by cold. In order to separate the sulphur from the metal, either iron or lime may be employed; the first forms sulphuret of iron, and the latter of calcium, with the sulphur, and the metal is thus set free, volatilized, and condensed. The retorts employed are made of cast or sheet iron, or earthenware.

According to Dumas the following mines yield annually the annexed number of quintals of mercury (a quintal is 106 lbs.):—

<table>
<thead>
<tr>
<th>Location</th>
<th>Annual Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almaden</td>
<td>25,000 to 32,000</td>
</tr>
<tr>
<td>Idria</td>
<td>6,000</td>
</tr>
<tr>
<td>Hungary</td>
<td>7,000</td>
</tr>
<tr>
<td>Transylvania</td>
<td>400</td>
</tr>
<tr>
<td>Deux Ponts</td>
<td>200</td>
</tr>
<tr>
<td>Palatinic</td>
<td>300</td>
</tr>
<tr>
<td>Huancavelica</td>
<td>3,000</td>
</tr>
</tbody>
</table>

We may perhaps reckon the average at about 2000 tons.

The properties of mercury are, that it is fluid, of a silvery white colour, and possesses a high degree of lustre; it is insipid, tasteless, unacted upon or very slightly by exposure to air at common temperatures, and not at all by water at any temperature. The specific gravity of mercury is about 13:658. It boils at 670°; the density of its vapour is 6:976; and yet, as shown by Freytag, it vaporizes at common temperatures, and Faraday has confirmed the observation. At 40° below zero, mercury becomes solid, crystallizes in octahedrons, and gives a dull sound like lead; at the moment of congelation it contracts considerably; for while its density at 47° is 13:945, that of frozen mercury is 13:618; when in this state it is malleable, and may be cut with a knife.

Mercury is a good conductor of electricity and of heat, but its capacity for heat is extremely small; it expands uniformly at all temperatures between its boiling and freezing points. When mercury is pure it assumes the spherical form in small portions, but when it contains other metals, it forms into long strings; a very minute admixture is sufficient to produce this effect; when thus impure it must be subjected to distillation, by which the mercury is volatilized, and the metals mixed with it remain; or it may be purified to a considerable extent from the more oxidizable metals by agitation with dilute nitric acid.

**OARS OF mercury.—Native Mercury.**—This occurs in but few places, and is met with in small crannies or clefts of the rocks in which the common ore occurs, and is frequently accompanied by red silver.

The principal localities in Spain are Almaden and Idria, in Carniola, and there is also a mine in the Palatinate.

**Chloride of Mercury (Horn Mercury; Baumiezer; Murieide of Mercury)** occurs crystallized and in tubular crusts. Primary form a square prism. Cleavage parallel to the lateral faces and the diagonal planes of the primary form; the latter are the more brilliant. Fracture conchoidal. Hardness 10 to 20. Readily scratched with the knife. Colour pearl grey, or yellowish grey. Lustre adamantine. Transparent. Specific gravity 6:88.

Heated by the blow-pipe, it is entirely volatilized, and yields by analysis Chlorine 14:89
Mercury 85:11

Occurs principally at Moscholandsberg in Deux Ponts, but is also met with in Spain, Bohemia, and the Palatinate.

**Cinnabar; Fermition; Bisulphuret of Mercury.**—The cinnabar occurs at Idria and Almaden; it is crystallized and massive. Primary form of the crystal-sizes as a coarse rhombohedron. Cleavage easy, parallel to the lateral faces of a regular bexedal prism. Fracture conchoidal; Hardness 2 to 3. Colour carmine red. Lustre adamantine, approaching metallic. Opal, translucent, transparent. Specific gravity 9:98.

Heated by the blow-pipe, whitens a piece of copper held over it. Unacted upon by nitric or hydrochloric acid, but readily by a mixture of them.

It occurs in the places which have been mentioned; as Almaden, Idria, &c.


Analysis by Klaproth.

<table>
<thead>
<tr>
<th>Component</th>
<th>Specific Gravity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capurph</td>
<td>14:25</td>
</tr>
<tr>
<td>Mercury</td>
<td>65:94</td>
</tr>
</tbody>
</table>

Analysis by Klaproth.

<table>
<thead>
<tr>
<th>Component</th>
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<tbody>
<tr>
<td>Mercury</td>
<td>64:64</td>
</tr>
<tr>
<td>Silver</td>
<td>72:75</td>
</tr>
</tbody>
</table>


When heated by the blow-pipe, the mercury is volatilized, and the silver remains in the metallic state.

Analysis by Klaproth.

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When heated by the blow-pipe, the mercury is volatilized, and the silver remains in the metallic state.
M E R
Massive Variety.—Amorphous. Structure compact. Sometimes semi-fluid by mixture with excess of mercury. Found in France, Spain, Sweden, Hungary, the Palatinate, &c.

Iodide of Mercury occurs in spots of a fine lemon-yellow colour in the variegated sandstone of Casas Viejas, Mexico. When exposed either to the air or ammonia it becomes black.

Gaseous Combinations.—We now proceed to consider the action of the elementary gaseous bodies upon this metal.

Oxygen and Mercury combine to form two compounds, the protoxide and binoxide; they have however but little affinity for each other, and it is doubtful whether any combination takes place between them, even when the metal is exposed to long continued action with moist air at low temperatures. The protoxide of mercury may be formed in several modes: when, for example, potash, soda, or lime-water is added to a solution of protontitate of mercury, or to protontohloride of mercury, protoxide of mercury is separated. Its properties are, that it is very black, insoluble in water and the alkalis, but dissolves readily in nitric acid; it decomposes and is decomposed by hydrochloric acid, water and protontohloride of mercury being formed. With sulphuric acid it is at first formed, but it is totally dissolved by heat; and even by being kept out of the action of light is apt to separate into mercury and peroxide. It is directed to be prepared in the London Pharmacopoeia under the name of hydrargyri oxysum.

Protoxide of mercury is composed of—
One equivalent of oxygen 8
One equivalent of mercury 202

Binoxide or Peroxide of Mercury.—This may be prepared by several processes; the simplest is that of exposing the metal nearly at its boiling point to the action of atmospheric air; it then absorbs oxygen, and is converted into a dark red crystalline substance, formerly used in medicine, under the name of Mercurius praeclatus per se. It is inodorous, arid to the taste, and is said to be slightly soluble in water. At a red heat it is decomposed, the mercury returns to the metallic state, and oxygen gas is evolved; the nitric, hydrochloric, and some other acids readily dissolve it, and the solutions formed are decomposed by potash, hydrated binoxide of mercury of an orange colour being precipitated.

This oxide may also be procured by dissolving mercury in nitric acid, and decomposing the nitrate formed, by the action of heat; and also by decomposing the bichloride of mercury by the addition of potash to the solution. As procured by the former of these modes it is called in the London Pharmacopoeia hydrargyrum Binoxidum, and in the British Pharmacopoeia, under which title it is also called binoxide of mercury. When obtained by decomposing the bichloride of mercury it is less brilliant, and is more of an orange colour, and is the hydrargyrum bromoidum of the Pharmacopoeia.

Binoxide of mercury is composed of—
Two equivalents of oxygen 16
One equivalent of mercury 202

Azote and Mercury, and Hydrogen and Mercury, do not combine.

Chloride and Mercury form two compounds of very great importance in a medicinal point of view, the chloride or protochloride being the substance usually called calomel, and the perchloride or bichloride that which is commonly termed corrosive sublimate.

Chloride or Protorthloride of Mercury (Calomel) may be obtained in several ways: 1st, by heating the metal in the gas; the residue, after washing, is the protorthloride; 2nd, by adding a chloride, as common salt, to a solution of protontinate of mercury, in which case the chloride of mercury is precipitated; 3rd, by adding the protorthloide of mercury to hydrochloric acid, when the protorthloride is precipitated; 4th, there is the process of the Pharmacopoeia, which is the best, and this consists in heating together common salt, mercury, and its biphosphat; the results are, that when submitted to sublimation sulphate of soda remains, and the chloride of mercury formed is tarsipated and condensed. It is the hydrargyrum chloridum of the Pharmacopoeia. The properties of chloride or proto-

chloride of mercury are, that when procured by precipitation it is a white pulvulent substance, whereas that obtained by sublimation is crystalline, hard, and dense; its specific gravity is 7·175; it is colourless, inodorous, insipid, and sometimes regular crystals are observed, the primary form of which is a square prism; by long exposure to light it becomes of a rather dark colour, owing to the decomposition. It is quite insoluble in water, not readily acted upon by dilute acids, and is decomposed by lime-water, potash, and soda, protoxide of mercury being separated. It is totally volatile by heat.

Protorthloride of mercury is composed of—
One equivalent of chloride 36
One equivalent of mercury 202

Bichloride or Perchloride of Mercury (Corrosive Sublimate) may also be formed by several processes. When, for example, the metal is heated in the gas, the soluble portion resulting from their action is bichloride of mercury; it may be formed by dissolving the binoxide in hydrochloric acid, the results being water, and the bichloride, which crystallizes when the solution is sufficiently evaporated; lastly, it is best formed by the process of the Pharmacopoeia, which consists in heating a mixture of chloride of sodium and biper sulphate of mercury, by which sulphate of soda and bichloride of mercury is formed; it is volatile at the latter stages in vapour, and is condensed in the upper and cool part of the apparatus.

The properties of bichloride of mercury, the hydrargyrum bichloridum of the Pharmacopoeia or corrosive sublimate, a semi-transparent crystalline mass, and perfect crystals are occasionally obtainable, the primary form of which appears to be a right rhombic prism. This substance is inodorous, its taste is nauseous and acid, and it is a violent poison. Its specific gravity is 2·200; water does not mix with more than one-twentieth, and boiling water one-third of its weight. Light has no action upon this salt, but it partially decomposes the aqueous solution, chloride of mercury being precipitated. It is yellow, soluble in alcohol, its yellow-brown crystalline acid, and solution of hydrochlorate of ammonia, in water. It is totally volatile by heat. Lime-water, potash, and soda, added to a solution of this salt, precipitate yellow hydrated binoxide of mercury; but carbonate of lime decomposes it only partially, a deep red-coloured crystalline substance being thrown down, which is oxychloride of mercury. Ammonia throws down a white precipitate, which is called in the Pharmacopoeia hydrargyrum ammonio-chloridum.

Cyano and Mercury combine to form one compound, which is a bica
cyanide; it is prepared by boiling together in water, Prussian-blue and binoxide of mercury, which act upon each other though neither is soluble. By evaporating the solution thus obtained, the cyanide is obtained in colours

all the crystals, the primary form of which is a right square prism; this salt has a metallic taste, is poisonous, much more soluble in hot than cold water, and but sparingly taken up by alcohol. By heat it is decomposed, and cyano gas is obtained. Nitric acid dissolves it without decomposition, but it is decomposed by sulphuric acid, and also by hydrochloric acid, which evolves hydrocyanic acid, with the formation of bichloride of mercury. The affinity between cyano and mercury is so strong that its solution, unlike that of any other mercurial compound, is not decomposed by the alkalies; but hydrosulphuric acid and the hydrosulphates readily produce this effect. It is contained in the London Pharmacopoeia.

Bicyanide of mercury is composed of—
Two equivalents of cyanogen 52
One equivalent of mercury 202

Fluorine and Mercury.—When hydrofluoric acid is added to a solution of protontinate of mercury, no precipitation takes place, and at a sufficient strength that a protorthloride of the metal has been yet obtained. If however the acid be added to binoxide of mercury, an orange-coloured compound is formed, which is soluble in water, and the solution by evaporation yields a yellowish prismatic crystals, which appear to be perfluoride of mercury.

Bromine, the only elementary fluid known except mercury, unites with it to form two compounds.
Bromide or Protobromide of Mercury is procured by
mixing solutions of bromide of potassium and protoprotin
of mercury; a white curdy precipitate is obtained, which is
insoluble in water.

Bibromide of Mercury is prepared by treating the metal
with bromine and water. This salt is soluble in water, and
the solution yields colourless crystals, which are dissolved
by alcohol; this salt is decomposed by nitric and sulphuric
acids. Neither of these salts is applied to any particular
use.

**Solid Combinations.**—Non-metallic elements, acids and
Mercury mostly combine, but—

<table>
<thead>
<tr>
<th>Substance</th>
<th>Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon and Mercury</td>
<td>form no compound.</td>
</tr>
</tbody>
</table>
| Sulphur and Mercury | unite in two proportions, forming the sulphuret or protosulphuret and the bi-sulphuret or per-
sulphuret of mercury. When sulphur and mercury are
triturated together they form a black mixture, which is
used in medicine, and was formerly called *Athiops mineral*; |
| Protosulphuret of Mercury is easily obtained by passing a
current of hydrogen sulphide gas into a solution of protoprot-
nitrate of mercury; a black powder is precipitated, which is
insoluble in water, totally volatilised at a high temperature,
and is by nitric acid converted into a sulphate. It consists of |
| One equivalent of sulphur | 16 |
| One equivalent of mercury | 202 |
| **Equivalent** | **218** |
| Binasulphuret of Mercury is readily obtained by adding
two equivalents of sulphuric acid to a solution of protoprot-
nitrate of mercury; it is insoluble in water, and is decom-
based with some of the metals, and also by distillation with lime, potash, or soda. |
| When heated with sulphuric acid, sulphuric acid is
evolved, and a sulphate of mercury is formed; it is insolu-
ble either in nitric or hydrochloric acid, but when they are
mixed the nascent chlorine which is evolved decomposes
and dissolves the binasulphuret, even without the assistance of
heat. |
| Binasulphuret of mercury is composed of |
| Two equivalents of sulphur | 32 |
| One equivalent of mercury | 202 |
| **Equivalent** | **234** |
| Phosphorus and Mercury may be made to combine by
heating phosphorus with the oxide or protosulphuret of
mercury, by passing it in vapour over the protochloride, or
phosphოreд hydrogen, into a solution of protoprotin
of mercury. It is an insoluble substance, and has a black or
brown appearance, which is modified by the mode of
its preparation. |
| Iodine and Mercury form two compounds, and they may
be formed in two modes: first, by the mere trituration
of the equivalents with a little spirit of wine in a mortar; and
secondly, by adding a solution of iodide of potassium to
one of protoprotin of mercury to obtain the protiodide,
and of protoprotin of mercury to prepare the bimidoide. The
former method is adopted in the Pharmacopoeia. |
| Protiodide of Mercury is a greenish-yellow powder, devoid
of smell, and insoluble in water. By the agency of light or
of heat it is apt to be resolved into mercury and bimidoide,
but when quickly heated it sublimes unchanged. |
| iodine or protiodide of mercury is composed of |
| One equivalent of iodine | 126 |
| One equivalent of mercury | 202 |
| **Equivalent** | **328** |
| Bimidoide of Mercury, especially when prepared by pre-
cipitation, is of a fine red colour, approaching to scarlet; it
fuses readily, and sublimes in rhombic scaly crystals, which
are at first yellow, but become red on cooling. Water does
not act upon it, but it is soluble in alcohol when heated,
and also in some acids. |
| It is composed of |

**Two equivalents of iodine** | **252** |
| One equivalent of mercury | **202** |
| **Equivalent** | **454** |

Selenium and Mercury. The protoseleniuret is a tin-coloured
compound, which sublimes in shining scales: the basic
seleniuret is obtained by fusing the protoseleniuret with sele-
nite; it is a red crystalline mass.

**Metals and Mercury, or the greater number of them,**
readily combine; other metallic compounds are termed
alloys, but those which contain mercury are called amalgams. [Amalgam]

**Acids and Mercury.**—The action of acids on this metal,
like that which they exert on others, is various, and of
course depends upon the nature of the acid and the power
of the metal in attracting oxygen.

**Nitric Acid and Mercury.**—It is a well-known fact that
concentrated nitric acid acts upon very few metals, and it is
curious that although the affinity between mercury and
oxygen is extremely weak, yet this metal decomposes nitric
acid and attracts its oxygen, even at common temperatures:
the fluidity of the metal is probably the cause of this faculty
of action. A solution of permanganate of mercury is thus
obtained, which, if it crystallise at all, does so with great
difficulty; for the solution may be evaporated to the sp. gr. 2·00
without yielding crystals.

Protonitrate of Mercury, that is, nitrate of the protoxide,
is readily obtained by adding excess of the metal to the
dilute acid. Action readily takes place, and crystals are
formed with great readiness. There is no protoxide of any
metal which forms so many nitrates as that of mercury;
they are at present very imperfectly known, and require
analysis.

The crystallised protonitrites of mercury are mostly de-
composed by water, subprotionate being precipitated in an
insoluble state.

It has already been observed that the permanganate of
mercury can scarcely be obtained in a crystalline form.

Hydrogen and Mercury do not set upon each other under any circumstances; when however the prot-
oxide is added to the acid, protochloride of mercury and
water are formed; while with the binoxide of mercury water
and the bichloride are procured.

**Sulphuric Acid and Mercury** do not set on each other
without the assistance of heat; with it, the acid is decom-
pored, and the metal converted into binoxide, and bipers-
phosphate of mercury is formed.

**Protoprotin of Mercury** is procured by adding sulphur-
phosphate or sulphate to protoprotin of mercury; a white insolu-
able compound is precipitated, which is not applied to any
use, and which consists of

<table>
<thead>
<tr>
<th>Substance</th>
<th>Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>One equivalent of sulphuric acid</td>
<td><strong>40</strong></td>
</tr>
<tr>
<td>One equivalent of protoprotin of mercury</td>
<td><strong>210</strong></td>
</tr>
<tr>
<td><strong>Equivalent</strong></td>
<td><strong>259</strong></td>
</tr>
</tbody>
</table>

**Bipersulphate of Mercury** is obtained, as just described,
by heating together the acid and metal, is a colourless salt,
which, when mixed with water, is decomposed, and sul-
phuric acid remains in solution, while a yellow precipitate
is obtained, formerly called turpeth mineral.

The bipersulphate of mercury is composed of

<table>
<thead>
<tr>
<th>Substance</th>
<th>Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two equivalents of sulphuric acid</td>
<td><strong>60</strong></td>
</tr>
<tr>
<td>One equivalent of binoxide of mercury</td>
<td><strong>210</strong></td>
</tr>
<tr>
<td><strong>Equivalent</strong></td>
<td><strong>299</strong></td>
</tr>
</tbody>
</table>

**Turpeth mineral** is a subsulphate of the binoxide of
mercury, composed of

<table>
<thead>
<tr>
<th>Substance</th>
<th>Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three equivalents of sulphuric acid</td>
<td><strong>120</strong></td>
</tr>
<tr>
<td>Four equivalents of binoxide of mercury</td>
<td><strong>672</strong></td>
</tr>
<tr>
<td><strong>Equivalent</strong></td>
<td><strong>928</strong></td>
</tr>
</tbody>
</table>

Bipersulphate of mercury is not directly applied to any
purpose, but the formation of it is one of the steps in the
process of preparing calomel and corrosive sublimate in the
Pharmacopoeia.

Carbonic Acid and Mercury do not, under any circum-
stances, combine with each other, and carbonate is added to a solution of protoprotin of mercury, a precipitate
is obtained, which, on drying, does not appear to contain
any carbonic acid, so that a carbonate of mercury does
not appear to be capable of being formed.

**Percarbonate of Mercury** may however be obtained by

---
mixing solutions of carbonate of soda and nitrate of mercury; the precipitate, when dry, is of a ochre-yellow colour, and is a white crystalline precipitate; it is insoluble in water, and in excess of phosphoric acid; it is decomposed by heat, which expels the mercury and leaves the acid.

Perchlorate of Mercury is thrown down by phosphates of soda from the pernitrate; in appearance it does not differ much from the phosphates, but, unlike it, is dissolved by excess of acid.

Fuminate of Mercury is a detonating compound, which was discovered by Mr. Howard; it is prepared in an indirect mode by dissolving mercury in nitric acid, and adding alcohol to the solution; when the effervescence is over, a greyish crystalline precipitate is obtained, which is to be washed with a small quantity of distilled water, and dried at a gentle heat.

The properties of fuminate of mercury are, that it explodes with considerable violence when heated to about 300°; and the explosion is accompanied with a bright flame; friction, the electric spark, sulphuric and nitric acids, also cause it to explode; the results of it are, azote gas, toxic acid gas, and a little ammonia. It appears to consist of

- One equivalent of fulminic acid
- One equivalent of protoxide of mercury

Equivalent 458

Phosphoric Acid and Mercury.—The phosphoplatine is formed when phosphates of soda is added to a solution of protinate of mercury, a white crystalline precipitate falls, which is insoluble in water, or in excess of phosphoric acid; it is decomposed by heat, which expels the mercury and leaves the acid.

Perchlorate of Mercury is thrown down by phosphates of soda from the pernitrate; in appearance it does not differ much from the phosphates, but, unlike it, is dissolved by excess of acid.

Fuminate of Mercury is a detonating compound, which was discovered by Mr. Howard; it is prepared in an indirect mode by dissolving mercury in nitric acid, and adding alcohol to the solution; when the effervescence is over, a greyish crystalline precipitate is obtained, which is to be washed with a small quantity of distilled water, and dried at a gentle heat.

The properties of fuminate of mercury are, that it explodes with considerable violence when heated to about 300°; and the explosion is accompanied with a bright flame; friction, the electric spark, sulphuric and nitric acids, also cause it to explode; the results of it are, azote gas, toxic acid gas, and a little ammonia. It appears to consist of

- One equivalent of fulminic acid
- One equivalent of protoxide of mercury

Equivalent 458

Acetate of Mercury.—The protocacetate is the only one which has been employed, and it is not in the least affected into diazote. It is prepared either by dissolving protocate of mercury in acetic acid, or by mixing solutions of acetate of soda and protinate of mercury. This salt has a pearly lustre, is formed in crystalline flakes, dissolves sparingly in water, and is insoluble in alcohol. Its taste is acrid.

It is composed of

- One equivalent of acetic acid
- One equivalent of protoxide of mercury

Equivalent 244

MERCURY.-The uses of mercury in the arts are numerous and important. It is used in the extraction of gold and silver from their ores, in gilding (gilding), the silvering of mirrors, and in filling thermometers and barometers. Bichloride of mercury has been lately extensively used for the prevention of dry-rot; and lastly this metal is extensively employed in various forms for medicinal purposes.

MEDICAL PROPERTIES OF MERCURY.—In a purely metallic state, mercury, when taken into the human stomach, produces no effects except such as are owing to its mechanical properties. Nevertheless it may become oxidized, and, by combining with some of the acids of the stomach, occasion various disorders. Even its external application leads to similar results, from the metal first becoming oxidized, then absorbed, and producing the same effects as if taken by the mouth. The preparations of mercury differ very much in the degree of their action, both according to the nature of the combination, and also of the dose employed or the mode of administration. The milder preparations seem only to increase the natural and healthy actions of the organs of the body, particularly the secreting and exhalating organs; while the more active, if not given in the remote distance of very minute doses, may very materially affect the function of many organs, both those with which they are brought into immediate contact, and others which they affect by sympathy or other means.

No medicinal substance is capable of producing so much benefit, none is so frequently abused, and is so often a source of injury, as mercury.

Its mode of action is little understood, but its effects are often sufficiently obvious. A brief statement of the most important of these effects is all that can be given here.

When mercury is triturated with chalk or magnesia, or with confection of roses (which is the case when it is made into blue pill), is taken in moderate dose into the stomach, it does not seem to make any immediate sensible impression, unless that organ be in a state of morbid sensibility, when it is apt to assume either aDiazoic or ovicidal action. The function of the bowels. It may be repeated at proper intervals, and the individual, especially if robust, appears only to have an increased appetite and more ready digestion. This is more particularly the case when corrosive sublimate (bichloride of mercury) is given in very minute doses. When the introduction of mercury into the body by friction over parts where the skin is thin, would seem to increase, for a time, the activity of the whole system. To whatever surface applied, the absorbents would appear to lay hold of it, and cause it to enter into the blood, which is quickly distributed throughout the whole system, or in other words, it is conveyed through the system by the blood. It is quite distinct from the effects of an overdose of some of the more active forms, which produces actual poisoning, or from the effects of the too long continued administration of some of the mild preparations. Children, owing to the irritability of their bowels, are not so apt to be salvaged as adults, and more mercury can be borne in warm than in cold countries.

When a single dose of mercury is given, it is generally one of the preparations which act on the stomach, bowels alone, or in combination, with other purgative medicines; and little permanent effect is observed; but repeated small doses, especially if hindered from passing off by the bowels, by combination with opium, excite increasal convulsions, and end by producing an emaciation. The pulse is full and more frequent, the animal heat augmented, the secretion from the skin abundant; at last followed by thirst, restlessness, and sleeplessness. This disturbance frequently lasts some time, even after the medicament has been long continued. It is accompanied with derangement or congestion of blood either towards the lungs, abdomen, or brain, followed sometimes by hemorhage from various organs. Blood drawn during a mercurial course is generally found covered with a bulky, thick, lumpy appearance. On the valves, the choroids and the aorta, the blood in these is not perfectly clear, but contains a large number of flakes or drops. On the intestinal mucous coats, the effects are most conspicuous: they become irritated, more sensible, turgid, and pour out abundant
salts, which, on standing, deposit flakes of coagulated albumen. The breath at the same time acquires a peculiar fetor (called mercurial), the gums are swollen, but pale and tender, the teeth become loose, and the tongue and lining membrane of the mouth are covered with ulcers.

The general commotion of the system often provokes a powerful agent in the cure of many acute diseases, but occasionally it becomes too great, and requires to be moderated. Not only must the exhibition of the mercury be suspended for a time, in such cases, but very plentiful persons must be blud, and put on the antiphlogistic plan even before blood can become the case. The water, bath, diluent drinks, and a milk or farinaeous diet, with cool air, are proper means of lessening the violence of its action.

The effects just mentioned show the necessity of abstaining from its administration whenever there is pronounced tension of the lungs, or a disposition to consumption, or if there exist a scrophulous constitution, or the person be affected with sea scurvy: also during certain states of the female system, and during pregnancy or suckling.

When the use of mercury is too long continued, or it is given in too strong doses, its stimulating action appears to fatigue the system, and to pervert the function of assimilation, both immediately in the blood, and also in the different fluids of the system. Hence, the muscular power, becomes pale, timid, and puffy, or else greatly emaciated. The brain and spinal chord are irritated; the limbs exhibit involuntary trembling, and all the tissues acquire a morbid susceptibility. The blood is found to be rare in the capillary vessels, and contains a large proportion of albumen, and the person appears to be affected with scurvy or consumption. The indiscriminate use of mercurial preparations, especially of corrosive sublimate, often occasions chronic inflammation of the stomach, causing indigestion, and alteration or thinning of the coats of the stomach.

Diseases of the brain not unfrequently result from an improper use of mercury. Lastly, a peculiar affection of the skin often occurs from the abuse of this substance.

In the treatment of diseases, four distinct effects may be obtained by the employment of mercury in its different preparations.

1st. By some of them the intestinal canal is irritated, and the expulsion of its contents occasioned. 2nd. Others are used to create a general commotion of the system, torouse the lymphatics, and excite both the secreting and excreting glands. 3rd. To control or altogether change the action of the capillary vessels, when that is extreme, and tending to the effusion of serum, and more especially of coagulable lymph. With this may perhaps be joined the action of the mercurial purgatives. 4th. To produce a peculiar specific effect in bringing about the cure of many peculiar diseases.

Calomel, or the chlorohydric of mercury, is the preparation most employed as a purgative; it influences the intestines in its whole extent to excite, and excite the liver and other glands to secretion. It is of very great utility, not only at the commencement of fevers, but even during their course, either when given alone or in conjunction with other purgatives. It is not advisable if the tongue be very red and sensible, and a similar state of stomach be presumed to exist. In many eruptive fevers, especially scarlet fever, its early and even free employment is productive of the best results. In the yellow and many other fevers the operation of calomel is indispensable. In these diseases mercury is introduced chiefly as a purgative; its means; and whenever the patient is salivated, recovery may be expected. In many of the less rapid fevers of Europe, the like benefit follows its use. Calomel in the early and turgid stage of hydrocephalus acutus, or water on the brain, calomel, alone or with digitalis, is frequently efficacious in saving the patient; at the same time other forms of mercury, especially the liniment, may be used. In the wasting or atrophy of children, the steady daily use of calomel and rubarb produces the best results, if proper dietetical means be adopted. These measures should at no time be resorted to, except under the direction of responsible medical attendants. The unnecessary use of mercury, when some other purgative would have answered as well, is much to be deprecated, and not only injures the constitution of children, but if they are teething at the time, it leads to the early decay of their teeth. (Bell On the Teeth.)

Persons under the influence of mercury, even when a single dose has been taken as a purgative, are very liable to take cold, especially from wet. This must be carefully guarded against. The bichloride of mercury (or corrosive sublimate) seems not to dispose the system so much to be hurtfully impressed by cold, and is therefore well suited to camp and army practice. But if given in excess, it is perhaps the best of all the preparations to use as an alterative, especially in cases of chronic inflammation or thickening of the tissues, such as the heart.

Mercury has a great power in bringing the deposition of coagulable lymph, both in the mouth and throat, and the tongue. It thickens the lymph, and usually produces slight abscess, or effuse coagulable lymph. In some inflammations the action of the vessels is so violent as to pour out their contents, and this leads to obstructions or changes of structure which derange the functions, or even specifically occasion the necessity of a new formation of lymph. Mercury will usually prevent the windpipe, obstructing respiration; in peritonitis, or inflammation of the outer lining of the intestines, lymph is poured out, agglutinating the folds of the intestines; in iritis the same happens, closing the pupil of the eye and destroying the vision. Hence, when the inflamed part is localized without it, calomel given very freely will hinder further effusion, and even cause the absorption of what has already escaped from the vessels; as may often be seen when the iris of the eye is inflamed.

Many pathologic diseases are removed by a judicious and persevering use of mercury, but these can neither be enumerated here, nor can even the most general rules be attempted to be laid down. (Hollond, Medical Notes: On Mercurial Medicines; and Teale On Nutritive Diseases.)

The specific action of mercury is only well understood in the case of the proclivity to exfoliation. In general, mercury is still less suitable for the discussion here. It may be remarked however that the opinion for the necessity of giving mercury in any quantity is now altogether exploded.

It is not necessary to dwell on any of the other preparations of mercury, for many of which are valuable, either alone or as additions to other substances. Calomel frequently greatly assists in promoting the action of other medicines, particularly diuretic medicaments. How far calomel, either in small frequently repeated doses or in very large ones, was really useful in Astatis cannot be ascertained. The employment of corrosive sublimate in the arts depends in some cases on principles explained above. Thus it checks fermentation, and opposes the formation of new compounds; but the uses of calomel are far more widely extended than those of calomel, which prevents the dry rot from occurring, by solidifying the albumen of the wood. [Antiseptic.] In cases of poising by it, the antidotes most proper are those substances which contain albumen, such as white of egg, milk, flour, &c. [Ad.]

**MER**

**MERCURY, the planet nearest to the sun.** Its orbit being entirely within that of the earth, it never recedes to the point of the heavens opposite to the sun, but is always found within 29° of the sun. Hence it is only visible to the naked eye in the evening, when it is to the east of the sun, and near to its greatest distance (or elongation) from the sun; so that the sun can descend sufficiently below the horizon to allow the planet to be seen just before its setting: similarly, it is only visible in the morning (before sunrise). Hence Mercury is called the morning star, or the evening star. The phases of Mercury are not visible without a telescope. The apparent diameter of Mercury varies from 5 to 12 seconds; the real diameter is 398 of that of the earth, or about 3140 miles. Its bulk is to that of the earth as 63 to 100000; its mass is reckoned at 40 per cent of that of the earth. It revolves on an axis, the inclination of which to the ecliptic is not determined, in 24 5th 29 3. It has seven times the light and heat of the earth.

The transits of Mercury, or passages of the planet over the sun's disc, take place when the conjunction (the inferior conjunction, as it is called, Mercury being between the earth and the sun) happens at the time that the planet is near its node. These transits are not so useful in the determination of the sun's parallax or the longitude of the place of observation as those of Venus: we shall therefore refer the account of such transits in general to the latter planet. The following are, according to Delambre, the times of the
transits which will yet take place in the present century (civil time at Paris):—

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Day</th>
<th>Hour</th>
<th>Year</th>
<th>Month</th>
<th>Day</th>
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<td>1844</td>
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<td>31</td>
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Elements of the Orbit of Mercury.

Epoch, 1799, December 31, 12th mean astronomical time at Seeburg.

Semidiameter major = 3370933, that of the earth being assumed as the unit.

Excentricity = 0.004704; its secular increase (or increase in 100 years) = 0'0000039.

Inclination of the orbit to the ecliptic 7° 0' 49''-9; its secular increase 18''-4.

Longitudes from the mean equinox of the epoch: (1.) of the ascending node, 45° 57' 9'' - 0; its secular increase (combined with the precession), 4215''-1; (2.) of the perihelion, 74° 20' 6'' - 0; its secular increase (combined with the precession), 5602''-9; (3.) of the planet of the mean, 108° 4' 45''.

Mid side-meridian motion in one mean solar day, 4° 2' 32''-558; in 365.25 it is 53° 42' 47''-65 more than 4 complete revolutions; sidereal motion, 87° 99' 256 mean solar days.

MERCURY, TRANSIT OF. [MERCURY; VENUS, TRANSIT OF.]

Mergan’INE (Mergina, Bonap.), a subfamily of Anatidae, consisting of the genus Mergus, Linn., the Goosanders and Mergansers of the British. The Prince of Musignano makes it include two subgenera, Mergus (Sneu) and Merganser, Leach (The Goosanders), and places the subfamily next to the Fuligulinae, and immediately preceding the Pelaenatidae. The Linnean genus Mergus is placed between the last section (Cristata) of the great genus Anas and the genus Alca in the Systema Naturae, and the position assigned to it by various authors will be found in various articles in the following volumes. In the second volume of Mr. Swainson’s Classification of Birds, the subfamily is placed after the Fuligulinae, and immediately preceding the family Colymbidae.

Merganser, Serrator, abellus, and acutellatus are found in Europe. We select M. Mergus and M. abellus as examples.

Merganser. (Leach.)

Example, Mergus Merganser Castor (Mergus Merganser and Castor of Linnaeus).

Description.—Very Old Male. Tufted head (the tuft large and thick), and part of the neck greenish black, the reflection varying in different lights; lower part of the neck, breast, belly, abdomen, covert of the wings and scapulars farthest from the body, tinged of a yellowish rose colour (which soon fades in stuffed specimens to white) on the under parts; upper part of the back and scapulars nearest to the body deep black; quills blackish; great coverts bordered with black; rest of the back and tail ash-coloured; beauty-spot on the wing white, without transverse bands; bill deep red, black above and on the terminal nail; iris reddish brown, sometimes red; feet vermillion red.

Length 26 to 28 inches. (Tennm.)

Ucc. This plumage is the bird in the Mergus Merganser of Linnaeus and others; Le Harle of Buffon and the French; the Goosander or Merganser of Latham and Pennant; Ganssen-sager and Tauger-gans of Bechstein and the Germans; Mergo, Ora marina e Mergo dominicano of the ‘Stor. degl. Ucc.’, and Dublett’s Zaagbek of Sepp, and the Netherlands.

Female.—Tuft long and loose; head and part of the neck reddish brown; throat pure white; lower part of the neck, breast, sides, and thighs whitish ash; all the upper parts deep ash; beauty-spot of the wing white without any transverse bands; bill faded red; iris brown; feet yellowish ash, webs ash-red.

Young Male of the Year: Similar to the females.

The Young at the age of one year are distinguished by blackish spots deep greyish on the white of the neck; the ruddy colour of the neck is then terminated by a deeper colour; blackish plumes begin to show themselves on the top of the head, and white feathers appear on the coverts of the wings.

In this state the bird is the Mergus Castor of Linnaeus and others; Mergus rubripennis of Gmelin; the Harle femelle of Buffon; the Dun Diver or Sparring Fowl of Latham and others; and the Mergo ou of the ‘Stor. degl. Ucc.’

This species is the Sugherone of the Italians; the Meer-rack and See-Rack of the Germans; Wurzfogel, Kerkfogel, Ard, and Skraka of the ‘Fauna Sueciae’; Skallelusger of the Danes; Skior-and of the Icelanders; Pehok of the Greenlanders; Seek of the Cree Indians; Hunjad dhabn-dog of the ancient British; and Goossander and (provincial) Jack-saw of the modern British. It is supposed to be the Xenorps npic of the Greeks, the Riber and Castor Ales of the Latins, and is the Bieure of the old French.

Food; Reproduction; Utility of Merganser.—The food of the Goosander consists of small fish, amphipod animals, small crustaceans and mollusks. Temminck says that its nest is placed among rolled pebbles on the banks of waters, in bushes or in hollow trees, and that it lays twelve or fourteen whitish eggs, which are nearly equally pointed at each end. The flesh is very rank and bad. Graves, who tasted one, pronounces it to have been offensive in the highest degree. The old French quatrains, in the Portraits des Oiseaux, gives the following description of its habits and its quality as food:—

Le Bieure sealt aux estangs se plonge
Pour le poisson, auquel est dommageable.
Mas qui ove cesteste fiseur est douille,
Pautrit un Bieure avile pour son manger.

Geographical Distribution.—Mr. Gould (Birds of Europe) states that * its native locality appears to be the northern regions of the continents of Europe and America, where, among large and unfrequented lakes, it finds an asylum and breeding-place: from these, its summer haunts, it emigrates southwards on the approach of the severities of winter, seldom appearing in our latitudes unless the season indicates an exceedingly low temperature in the Arctic circle: at such times it frequents our short, cold and unfrozen lakes, either in pairs or in small flocks of seven or eight: but the extensive inland waters of Holland and Germany appear to

* The under plumage of the specimen described by Dr. Richardson had the under plumage rich buff orange, which faded to white.

Foot of Merganser.

Generic Character.—Bill straight, narrow, and slender, subcylindrical anteriorly, wide at the base, and abruptly hooked at the tip; margins of both mandibles serrated, the serrations or teeth directed backwards. Tongue slender. Feet slender, with the toes fully palmed, and placed behind the point of equilibrium.

The species are not numerous, and of these, Mergi

Bill of Merganser.
be its favourite resort.' This species was shot at Fulham in the severe winter of 1837. It appears in Dr. Richardson's list of birds, that they merely winter in Pennsylvania and migrate in summer to rear their young in the fur countries; the specimen described by him was killed on the Saskatchewan. It also occurs in Major Sabine's list of Greenland Birds. The Prince of Musignano notes it as rather rare in winter at Rome, and as not common, at the same season, in Philadelphia (Spechio Comparativo), and as occurring in Europe generally, and in America generally, in his Geographical and Comparative List of the Birds of Europe and North America. It was seen in Japan by Dr. Von Siebold and M. Bürger.

Mergus

Example, Mergus albellus.

Description.—Old Male. A great spot of greenish black on each side of the bill, a similar coloured but longitudinal one on the occiput; the tufted crest, neck, scapulars, small coverts of the wings, and all the lower parts very pure white; upper part of the back, the two crescents which are directed under the sides of the breast, and the edges of the scapulars, deep black; tail ash-coloured; sides and thighs varied with ash-coloured zig-zags; bill, legs (tarsi), and toes bluish-black; webs black; iris brown. Length 15 to 16 inches.

In this state the bird is Mergus albellus of Linnaeus and others; Le petit Harle happe ou la Petite de Buffon; the Weiser Büger of Bechstein and others; the Witte non Ducker of Sepp.; the Mergo Oca minore of the 'Stor. degl. Uec.,' and the Smew or White Nun of the English ornithologists.

Female.—Summit of the head, cheeks, and occiput reddish brown; throat, upper part of the neck, belly, and abdomen white; lower part of the neck, breast, sides, and rump bright ash; upper parts and tail deep ash; wings variegated with white, ash, and black. Length 15 inches.

Young of the year, similar to the female. Males at the Age of One Year.—These are distinguished by the small blackish feathers which form the great spot at the side of the bill; by some whitish and white feathers scattered on the head; by the upper part of the back, which is variegated with black and ash-coloured feathers; and by indications of the two black crescents on the side of the breast. The young of both sexes have the great coverts of the wings terminated by a large white space, while the old ones have no white there except at the point. The females and young of the year are the Mergus minutus, Linn.; Mergus Asiticus, Gun.; Mergus stellatus, Brunn.; Mergus Pannonicus, Scop.; La Petite femelle, Buff.; Le Harle étoilé (young male), Buff.; Mergo Oca minore (female), and Mergo Oca croneiro (young male of the year), 'Stor. degl. Uec.; De Kleine Zaagbek (young of the year), Sepp.; and Red-headed Smew (young male in mouth), Penn., 'Brit. Zool.'

This species is the Kreutz-Ente of Frisch and the Germans; the Hirvid Side of the Danes; Saltmerone ochalino of the Italians; Tadahv of the Japanese; and (provincial) White Nun, Vare Wilgones and Smoke of the modern British.

Food.—Reproduction.—Utility to Man.—The food of the Smew consists of small crustaceans, water-insects, mollusks, little fish, and water-plants. The nest, according to M. Temminck, is placed on the borders of rivers and lakes, and the number of eggs amounts to twelve; they are whitish. The bird is in no request for the table.

Geographical Distribution.—The countries of the Arctic circle in both worlds; migratory in autumn, but especially in winter, in England, Holland, France, and as far as Italy; rather abundant in Holland on the lakes and marshes (Temm.). It is seldom seen in Britain except in inclement winters. The species was not observed by Dr. Richardson, but it is noted from him in the tables compiled from the Spechio Comparativo as one of the birds that migrate northwards from or through Pennsylvania in spring, and may therefore be considered as returning to the fur countries to breed. The Prince of Musignano notices it as rather common in winter, particularly the young, near Rome, and as very rare and adventitious at Philadelphia (Spechio Comparativo). The same author, in his Geographical and Comparative List, notes it as occurring in Europe generally and on the northern and central coasts of America. Dr. Von Siebold and M. Bürger found it in Japan.

The Goosander (Mergus Merganser, Linn.).

Mergus minitus, Linn.; Mergus Asiticus, Gun.; Mergus stellatus, Brunn.; Mergus Pannonicus, Scop.; La Petite femelle, Buff.; Le Harle étoilé (young male), Buff.; Mergo Oca minore (female), and Mergo Oca croneiro (young male of the year), 'Stor. degl. Uec.; De Kleine Zaagbek (young of the year), Sepp.; and Red-headed Smew (young male in mouth), Penn., 'Brit. Zool.'

Mergus albellus; upper figure, male; lower figure, female. (Gould.)

M. Temminck remarks that the Harles, or birds of this subfamily, live upon the waters, where they swim, having generally the whole of the body submerged, and only the head out of the water. They dive easily and often, swim with extreme agility entre deux eaux, and use their wings to assist them in this sort of natation. They remain long on wing, and fly very swiftly. Their walk is very vacillating and embarrassed, their legs or feet, as well as those of the sea-ducks, being more withdrawn within the abdomen than those of the ducks which have the posterior toe smooth. Their food consists principally of fish and amphibious animals, and of the first they make great destruction. In temperate climates they are only seen in winter; their habitual dwelling place is the country; the young are also much larger than the different species of ducks, and have not been domesticated. They moult once a year; but the old males, like those of the ducks, moult in the spring, whilst the old females and the young moult in the autumn. Their young moult before their first or second moult, hardly differ at all from the females.

MERGER. It is somewhat difficult to give an exact definition of this legal term. In order to form an accurate notion of what is meant by it, the notion of the legal term estates [Estates] is a necessary preliminary. 'The accession of one estate to another, or more accurately speaking, the circumstance that two estates immediately expectant on each other, meet or are united in the same person, is the cause of the merger.' (Preston.) These words express in

* The text does not align with the body of text and only the head out of the water; but with a very fine part of the body above the water.
general terms the conditions necessary in order that merger may follow as a consequence. This consequence, called merger, is that the preceding estate ceases to exist, and the estate in which this preceding estate is said to be merged continues to be exactly the same as it was before that union which was the cause of merger.

It is necessary to add to this general description of the cause of merger, that the estate which is prior in point of time, and that is charged by having a great deal of property in the estate which immediately follows: it may be either equal or less, but not greater. Also, the estates must both be vested estates, and both must be legal or both equitable estates.

When, if A is tenant for life, with reversion to B in fee, and A surrenders his estate to B, or B releases his estate to A, in either case the life-estate is merged, the consequence of which is that the estate in reversion immediately becomes a fee in possession. It seems that one term of years will merge in another, and a larger term in a less; at least this is the case when the second term is a term in reversion. Thus, if A is tenant for years, with reversion to B for years, and A surrenders or assigns his term to B, the term which belonged to A is merged. There is one exception to this rule. If the estate of A is derived from the estate of B as an underlease, the original term of B is not abridged by such merger. In fact, merger, in the proper sense of the term, can never apply to a surrender or assignment of an estate in land. If the case of a term of years, or a larger estate, that smaller estate was granted. But if A, who is seised in fee, leases first to B for five hundred years, and then to C for ten years, by way of immediate reversion, and C assigns his term to B, the estate of B is merged in that of C, which becomes an estate in possession, and can have no longer duration than ten years. Opinions vary as to the question whether a term can merge in a term in remainder.

Estates tail are not subject to merger: an exception which is a necessary consequence of the form of the gift to the heirs in tail, so long as there are any. Formerly, if an estate tail had become a base fee by the tenant in tail levying a fine, such base fee would merge by union with the immediate reversion in fee. But by a recent statute (3 and 4 Wm IV, c. 74), a base fee will not merge by the reversion in fee, but shall be 'enlarged into as large an estate as the tenant in tail, with the consent of the protector, if any, might have created by any disposition under this act, if such remainder or reversion had vested in any other person.

If the two estates, the union of which in one person might otherwise cause merger, do not unite in him in the same right, there is no merger.

The various exceptions to the general principles of merger are so numerous, that it is hard to form the subject of an entire treatise. The whole subject is discussed at great length in the third volume of Mr. Preston's 'Treatise on Conveyancing.'

The origin of the doctrine of merger is uncertain, and no hypothesis seems fully to explain all the cases of merger as now settled. In the case put by Bracton (fol. 12), the termor for years who had become the feoffor of the land, is considered as having, by the acceptance of the freehold, renounced the term (ex quo idem B tenuit ad feoffo assiduavit). The origin of merger is discussed in Preston's third volume, chap. iii., &c.

MERCUI. [Tenasserim.]

MERGULUS. [Aux., vol. iii., p. 100.] The Prince of Merkulou, entrusted with the government of (Maghelic, and magistrates in the northern and central parts of Europe, and on the northern shores of America. (Geographical and Comparative List.)

MERCUS. [Mergamene.] This little island, called SYBILLA, the daughter of Matthew Merian, an eminent Dutch engraver, was born at Frankfurt-on-the-Main, April 12, 1647. Her instructor in drawing was Abraham Mignon. In 1665 she married John Andre Graff, a painter of Nuremberg, but the celebrity which attached to her own name as an artist prevented that of her husband from being adopted. They had two children, both daughters, who were also skilled in drawing. In consequence of liberal offers Madame Merian and her husband settled in Holland, but Maria Sybilla, whose great object was the study of nature, travelled for the sake of delineating insects, flowers, and other natural objects. In 1699 she went to Surinam, for the express purpose of making the drawings which have since added so considerably to her fame. She died in the month of June, 1701.

She published 1, 'The Origin of Caterpillars, their Nourishment and Changes,' in Dutch, 2 vols. 4to., the first published at Nuremberg in 1679, the second in 1683, published in Amsterdam in Latin, 4to., 1717. This work, much amplified by her daughter, is also published in French by John Marret, fol., Amst., 1730, under the title of 'Histoire Generale des Insectes de l'Europe.' 2, 'Disertatio de Generatione et Metamorphosibus Insectorum Surinamensium,' fol., Amst., 1755, separately in Dutch and in Latin. These are followed by a large volume of engravings, the subject of which was the succession of the other and silver plate was annexed by her daughters Jane Helen and Dorothea Maria Henrietta. There is an edition of this work in folio, French and Dutch, printed at Amsterdam in 1719; another in French and Latin, Hauge, 1725; and another Dutch, 1730. There have been also editions of the two works united, under the title of 'Histoire des Insectes de l'Europe et de l'Amerique,' fol., Par., 1768 and 1771.

Madame Merian died at Amsterdam, January 13, 1717. Many of the original drawings of this artist are preserved in the department of drawings and prints in the British Museum, in two volumes, purchased by Sir Hans Sloane at a large price. One contains the insects of Surinam, the other the insects of the 'Hypostix,' also a volume of Dutch, though elegantly finished, appear, upon examination, not to be entirely drawings, but to have been coloured upon outline proofs of the engravings. Those of Europe are entirely original delineations. All are upon vellum. Other drawings of her preserved at the British Museum are in numerous collections in Holland, and at Frankfort. A portrait of Madame Merian, formerly Sir Hans Sloane's, is still preserved in the British Museum.

An engraving portrait of her, by Houbraken, is prefixed to the Latin edition of the 'Treatise on Conveyancing.'

MERIDA, a town of Extremadura in Spain, in 38° 48' lat. and 6° 19' W. of Greenwich. It is situated on a high road, and most magnificent city in Roman Spain. From the hands of the Romans it passed into those of the Goths, who made it an archbishopric see. In the year 587 it was the focus of a plot formed by King Pipinus to kidnap the reigning monarch of the Visigoths and extirpate the Catholic religion from that country. It was also the seat of several provincial councils, of which that of A.D. 666 is the most known. On the invasion of the Arabs in 711 it offered a stout resistance, but was eventually obliged to capitulate to them, who, on entering the city, amazed at its vast size and the grandeur of its buildings.

According to a Moslem chronicler it was then eight miles in circumference, and was Garrisoned by 90,000 men. By the Arabs its original name was corrupted into Merida. In 1230 it opened its gates to the Christian king Alonzo XI. of Castile and Leon, after a great battle, in which, aided by the apostle James and other saints in white robes (as tradition has it), he routed a greatly superior force of Moors, headed by their king Ibn Hul. Alonso, to his gratification of the object of St. James, in whose hands it has till recently remained.

Modern Mérida is one of the most decayed and poverty-stricken towns in the Peninsula. In extent it is but a motte, and the population is only 3,500 souls, and the trade in merino wool, of which it has long been the depot, is rapidly declining. It is situated on the right bank of the Guadiana, on a rising ground, in the midst of an open and gently undulating country, mostly unoccupied, and in summer rendered very unhealthy by malaria. The sole interest of modern Mérida lies in its numerous remains of Roman magnificence. The houses, churches, walls, and pavements, are abundant in Roman fragments, statues, and bas-reliefs. In the fields, gardens,
and roads without the town, similar remains are found. But the principal remains are an amphitheatre almost entire, which by letting in the waters of the Guadiana could at pleasure be turned into a naumachia; a circus, said to equal in size the Circus Maximus at Rome; a theatre, where in modern times bull-fights have been held; the shell of a lofty and umphal arch, now stripped of its ornaments; some baths in excellent preservation, and a gateway defaced by Arabic inscriptions. Encased in a private house is a small periphreral temple of Mars; the capitas as well as shafts of the columns are also being used in the house. There are also two Roman bridges; one of enormous length and curious construction, with a fortress at one end. Near the town are the ruins of two grand aqueducts built of brick and granite mixed. Of the latter material are constructed all the ancient edifices of Mérida, with their surrounding enclosures.

At the distance from Mérida of one and two leagues respectively are two remarkable reservoirs, by some considered of Roman, by others of Moorish architecture. The first, called A., is about 100 feet in length by nearly 60 feet in depth, enclosed by thick walls, with two fine towers. The other, called Albuerà, is smaller, but its walls and the single tower which surmounts them are much finer.

(Mariana, Historia General de España; Conde, Historia de los Arabes; Pous, Viaje de España; Laborde, Itinerario Descriptivo de España; Semple's Journey through Spain and Italy; Captain Cook's Sketches in Spain.)

MERIDIAN. (meridies, mid-day). In the heavens the meridian is that point which passes through the zenith of the spectator; on the earth it is the circle which passes through the pole and the spectator's position; consequently the terrestrial meridian is the section of the earth made by the plane of the celestial meridian.

The name of the line of the earth on which the centre of the sun is found at mid-day, or real noon. In the case of a fixed star, the time at which its altitude is greatest is the moment of its coming on the meridian; but in that of the sun or a planet, the orbital motion prevents the moment of its being over the upright direction for several years, from being exactly that of its attaining its highest point; though the difference is not worth noting for ordinary purposes. [SPHERE, DOCTRINE OF THE]

MERIONES. [Meridw.]

MERIONETHSHIRE. (Montgomery.)

A county of North Wales, bounded on the north by Caernarvonshire and Denbighshire, on the north-east by Denbighshire, on the east and south-east by Montgomeryshire, on the south-west by Cardiganshire, and on the south-west and west by Cardigan Bay, an inlet of the Irish Sea. Its form approximates to that of a right angled triangle, having two sides facing the north and west respectively, and the hypotenuse facing the south-east.

The area of the county is estimated at 666 square miles; it is the sixth of the Welsh counties in respect of size, being a little smaller than Cardiganshire, but larger than Denbighshire. The population in 1821 was 34,362; in 1861 it was 33,932, showing an increase of 118 persons only, and giving 53 inhabitants to a square mile. In absolute population it is inferior to all the Welsh counties except Radnorshire; and in density of population is inferior even to that. Bala and Dolgelly are the asize towns: the county election for 1819 was held at Bala, and the county court takes place at Bala. The nearest of these places to London, is in 52° 3' 55" lat. and 3° 34' W. long., about 180 miles in a direct line north-west of London, or 194 miles by the Holyhead parliamentary road to Dunoon. The coast here is formed through Llaugynog.

Coast Line.—The northern part of the coast is formed by the estuary of which the Træth Mawr and the Træth Bach are portions. The Træth Mawr (of which a considerable part has been recovered from the sea by an embankment) extends from the south-west (reaching across this branch of the estuary from side to side) forms the boundary between Caernarvonshire and Merionethshire. The Træth Bach or Blycan belongs entirely to the latter: it comprehends many thousand acres, and receives the rivers Felinbryn, or Blycan, and Dywyn. This arm of the estuary penetrates several miles inland, becoming narrower as it proceeds. It is dry at low water, except a narrow channel in the centre, through which the united streams find their way into the sea, and is crossed by a ferry.

From the Træth Bach the coast runs south about six miles past Harlech to the little headland on which stands the village of Mochraes or Mochras. From the Træth Bach to the town of Harlech the immediate neighbourhood of the sea is low and marshy. Between Harlech and Mochras it rises immediately to a cliff skirted by sand-dunes at low water, and at some distance out to sea are three sand-banks, the 'Dutch Bank,' the 'Pontigal Bank,' and the 'Sarn Badrig' ('St. Patrick's Causeway' or 'Sarn Badrigwyr') ('Shipbank'). This remarkable shelf runs from the immediate neighbourhood of the coast to the northern end of the sea in a south-west direction; it is composed of sand and gravel. It is dry at the ebb in spring tides, and in storms is marked by fearful breakers. Tradition says that this shelf of the beach was once inhabited by a race called Caeor Gwaelod, or the Lowland hundred, and that it was overthrown by the sea about the close of the fifth century. (Pennaent.) The name, St. Patrick's Causeway, is said to have originated from a monkish legend, that it was formed by St. Patrick in order that he might pass from Ireland to Britain.

From Mochraes the coast runs south-south-east eight miles to the river Maw, at the mouth of which stands the town of Aber-Maw, contracted into Ber-Maw or Barmouth. At the mouth of the river Maw, the coast suddenly rises, being skirted by sands of greater of less breadth. From the Maw the coast runs southward 14 miles to the wide estuary of the Dovey, taking a circuit convex to the sea, and rising into cliffs midway between the rivers. At the southern extremity of this peninsula is Barmouth; it is skirted by easterly cliffs from the sea. Between the Towy and the Dovey the coast is again skirted by sands. The whole extent of the Merionethshire coast is about 38 miles, following its principal bends.

Surface and Geological Character.—Merionethshire is the most mountainous of all the Welsh counties, and contains some of the loftiest peaks in North Wales; there are however no peaks so high nor precipices so abrupt as those of Caernarvonshire. The principal mountain-chain is that which runs from Aber-Archenyll, and meets the Dovey, and which traverses the county from north-east to south-west, skirting the valleys of the Dee, the Wnion, and the Maw. The principal summits of this chain are, Cadar Berwyn or Ferwen, on the border of this county and Montgomeryshire, seven miles south of Corwen, 2563 feet above the level of the sea; Arran Fowddy, near the Wnion, above Dolgelly, 2553 feet; Pen-y-Gadair (summit of Cader Idris), three miles south-west of Dolgelly, 2914 feet; and Pen-y-garn, at the mouth of the Dovey, near the centre of the county, is a group of mountains, of which Arrenog Mawr is the highest point, 2809 feet above the level of the sea. From this central group branches run westward to the sea in the neighbourhood of Cardiganshire, and north-westward to join the group of Snowdon. There are no plains.

The county is almost entirely occupied with the slate rocks which predominate in North Wales. Along the valley of the Dee, as far up as Bala and the valley of the Alwen, a bluish-grey limestone is found, which is quarried for lime, the principal manure employed in the county. Great quantities of white limestone are quarried and burnt for lime near Corwen. This limestone is surrounded on every side by primitive argillaceous slate, which occupies all the eastern side of the county, and extends three miles north-west along the vale of the Treweryn, and southward along the Trwch and the Dovey to Dinas-y-Mowddwy. The slates of this formation are quarried in the neighbourhood of Corwen.

The eastern coast of the line described the rocks are chiefly slate, forming abrupt and rugged mountains of decolate appearance. Lead and copper mines are worked near Towy at the mouth of the Dywyny, and copper-mines in the neighbourhood of Barmouth. Copper ore has been produced from the peat at the mouth of the river Burdon, 2 miles north of Barmouth, in the Berwyn mountains; and there are quarries producing slates of excellent quality at Festiniog near the Caernarvonshire border. The slates are shipped in the estuary of the Træth Blycan, near the place where they are raised.

It was the opinion of some former observers that Cader Idris and some other mountains presented traces of volcanism. 'The steeper part of this mountain, says Mr. Pen-
from the highest peak, or Pen-y-Gadair, grows more and more rocky; the approach to the summit extremely so, and covered with huge fragments of discoloured rocks, very rugged, and crowned by a semi-vitrified matter, which gives them a very volcanic look, added to their disjointed adventitious appearance. I met with, on my ascent, quantities of pumice of the same cellular kind with the toadstone of Derbishire, but of a green colour. The day proved so wet and misty, that I could not trace the valley from the summit. I could only see that the spot I was on was a rude aggregate of strangely disordered masses. I could at intervals perceive a stupendous precipice on one side where the hill recedes inward, forming a sort of theatre, with a lake at the bottom, and the three next streams separated by its rising enclosures to the mountain. On the other side, at a nearer distance, I saw Craig Cay, a great rock, with a lake beneath, lodged in a deep hollow, possibly the crater of an antient volcano.

**Hydrography.** The principal rivers belonging to the county are the Dee, the Maw, and the Dovey, with their respective affluents.

The Dee rises in the valley skirted by the Berwyn mountains, very near the road leading from Bala to Dolgelley; from its source it flows north-east four miles (receiving by the way the Lwyd and the Trench, each considerably longer than itself) into the lake of Bala, called Llyn Tegid, i.e. "the fair lake," by the Welsh, but by the English, Pimble Meer. [Bala.] From the lower end of the lake the Dee flows 15 miles in a wide course, which follows the course of the number of mountain streams: from Corwen it flows five miles east to the border of the county, which it divides from Denbighshire for two or three miles farther, before finally quitting the town. It is divided at Glittwr, a feeder of the Dee, and receives from the south and west, four miles to the junction of the Dee (twelve miles long), which rises close to the source of the Dee, and flows along the same valley, but in an opposite direction. For the remainder of its course, which is about eight miles in a straight line, it runs into the Dee or one of its affluents. The Maw, otherwise called Mawddach, rises near the centre of the county, and has a southern course of eight miles to its junction with the Lysiauaduon, which lies more to the westward, and is of about equal length. From the junction of the Lysiauaduon the Mawddach flows south-west, four miles to the junction of the Wnion (twelve miles long), which rises close to the source of the Dee, and flows along the same valley, but in an opposite direction. For the remainder of its course, which is about eight miles in a straight line, it runs into the Dee or one of its affluents. The Dovey, or Dyfi, rises just within the border of the county, east of the mountain Arran Fawr, which has a very large extent. Its source is divided into two branches: one flows south-west nearly thirty miles through a winding vale into the bay of Cardigan. It receives a number of small mountain streams, of which the Tafallog, the Afon, the Dulas, and the Cwmcowel are the principal. A part of the course of the Dovey itself, and of the Tafallog, and the whole course of the Afon and the Dulas, belong to Montgomeryshire. The lower part of the course of the Dovey is on the border of Merionethshire, which it separates first from Montgomeryshire, and then from Cardiganshire. Near the mouth it expands into a wide estuary, the greater part of which is dry at low water. The Dovey is not mentioned in Priestley's "History of Navigable Rivers" as navigable, but is marked in the map which accompanies that work as navigable up to Machynlleth. This division of the course of the Dovey is divided into two branches: one flows south-east, twelve or thirteen miles from the mouth of the river.

The Dywyn rises in the Berwyn mountains, a little to the north-east of Cadar Idris, and flows south-west nearly thirteen miles to the Maw and Dulas. Another three miles from its source it expands into a small lake, called Llyn-y-Mygil, which in width nearly fills the valley of Tal-y-Llyn, leaving only a narrow road on one side, and extends in length about a mile. The Dywyn, above its mouth expands into an estuary of about a mile wide, but just at the mouth is contracted into a very narrow channel.

None of these streams, except the Dovey, are navigable: the estuary at the mouth of the Mowddy forms the harbour of Barmouth.

There are many lakes, most of them small. The largest are Llyn-Tegid, or Bala Lake, and Llyn-y-Mygil, already noticed.

The principal roads are those from London by Shrewsbury to Corwen and Bangor, or Dolgelley and Caernarvon, and to Dolgelley, or Dolgellee, and Barmouth, with branches to Towyn. The first of these enters the county on the east from Denbighshire, a little beyond Llangollen, and runs along the valley of the Dee to Corwen, from which place its declivity is east to the summit of the county, is two Bala roads, both branching off from this to the left, one at Corwen, which follows the right bank of the Dee up the valley to Bala, the other a little beyond Corwen, which follows a valley parallel to that of the Dee, from which it is separated by the Mount Edernion. Another road runs up the valley of the Treweryn, to Festingon and Tan-y-Bwlch to Beddgelert, with a branch from Tan-y-Bwlch to the coast at Harlech and Barmouth. Another road from Bala follows the valley of the Dee and then the Wnion to Dolgelley and Barmouth, but there is a nearer road from London to Bala by Shrewsbury and Llangynog.

Dolgelley and Barmouth road runs from Shrewsbury, through Welshpool and Llanfair (Montgomeryshire), enters the county by the valley of the Tafallog, and follows that valley and the vale of the Dovey to Dinas-y-Mowddy, or Mowddw, from which place it runs west to Dolgelley and Barmouth. Two branches from this road run to Towyn; one a little before reaching Dinas-y-Mowddy, which is a separate valley, the other a little before reaching Dolgelley, which follows the vale of the Disynwy. This first branch to Towyn is partly in Montgomery and Cardigan shires, and communicates with Machynlleth and Aberystwyth.

**directions.** Towyn, Dec.—This early district, named by the Welsh Meironydd, or Meironydd, is the only one in Wales that, with the addition merely of the word "shire," retains its antient designation. This name is supposed to be derived from Meiron, grandson of a chiefman to whom a separate territory in this part of Wales was assigned in the fifth century. If however the district was known to the Romans, as some think, by the name Mervinia, which evidently contains the same root (Mervin, or Merin) as Meiron-ydd, the name must be of the same or a later origin.

Writers are not agreed as to the antient division of the county; but its limits appear to have undergone considerable change. One cantref, that of Arudwy or Arwysgl, south of the river Dovey or Dyfi, was by Henry VIII. added to Montgomeryshire; one cantref or parish of Arwystli, and Glyndyfrdwy were detached from Powys-land, and added to this county.

The present divisions, with their relative situation and their population in 1831, are as follows—

<table>
<thead>
<tr>
<th>Name</th>
<th>N.W.</th>
<th>E.</th>
<th>S. &amp; E.</th>
<th>S. E.</th>
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<td>5,847</td>
</tr>
</tbody>
</table>

There are five ancient market-towns, namely—Bala and Dolgelley, the assize-town; Harlech, the place of county sessions; Corwen and Dinas-y-Mowddy; and two, and markets have been established of late years, viz. Towyn and Barmouth. [Barmouth.]

Bala is in the parish of Llanynfi or Llanyci, in the hundred of Penllyn, near the outlet by which the Dee enters the sea, and has a market and fair, and is the seat of the bishop of St. Asaph.

There were in the whole parish, in 1833, two day-schools with 139 children; one of these, a grammar-school, with
75 boys, was partly supported by an endowment. There were seven Sunday-schools, with 1088 scholars.

Dolgelley, Dolgelieu, Dolgelau, or Dolgellau (from del, dalle, and gell, gellen, or celi, a grove of hazels), is in the hundred of Talbont and Mowddwy, on the south bank of the Wnion, a mile or two short of, and on an embankment with the Mowddwy, a mile and a half, and on the road from Llanfair, about 208 miles from London by Shrewsbury, Welspool, Llanfair, and Dinas-y-Mowddwy. This town came into possession of Owain Glyndwr during his rebellion, and from here (A.D. 1400) he despatched ambassadors to France. The town was taken by the English in the civil wars of Charles I., in which the parliamentarians were victorious. The town is in a delightful valley: the streets are narrow and irregularly laid out; and the houses are for the most part small and ill built. In the last few years however some handsome dwellings have been erected, and the general appearance of the town materially improved. The church is a neat structure, capable of accommodating a thousand persons, but destitute of any architectural pretensions. The county hall and county gaol were both erected in the present century; the former is a neat stone building, near the river Wniun. The hall is scarcely distinguishable from the ordinary houses, and the market-house is a low square edifice. There is a neat grammar school in the archdeaconry of Wnion.

The population of the parish (which is very extensive) was, in 1831, 4087; less than a fourth of which was agricultural. Dolgelley is the most populous and most commercial town in the county. The Population Returns give 7238 males and 7531 females in the town, and at least 30,000 persons are employed in the manufacture of "webs," or coarse woollen cloths and flannels. They are made in the houses and cottages of the weavers. Fulling-mills and bleaching-grounds have been established in the neighbourhood of the town, and the cloths, which formerly were brought up by the other (Retort) to Liverpool for exportation to America, or to Shrewsbury, from whence they are sent to different parts of England. There is a good deal of business done in tanning and dressing lamb-skins, the distillery of Mowddwy, and of the woollen manufacture. The town is near the great road of the London and Holyhead road to Dublin; and a half round, still remaining, on the summit of a steep hill, and of a circular habituation, now in ruins, within this enclosure. In the invasion of Wales by Henry II., A.D. 1106, the progress of that monarch was stopped by the inhabitants of the town, under Owain Gwyned and. There are said to be some traces of the Welsh encampment near the town. Corwen is a small place, but neat; it stands on a rising ground just above the river. There is a church of which nothing is known, and accommodating about seven hundred persons, in a romantic situation, immediately at the foot of a rocky precipice belonging to the Berwyn mountains. On the south side of the church is a stone shaft or cross, called by the common people "the Welsh fortress and to Berwyn." On the same side of the churchyard is a neat almshouse for six widows of clerks. There is another almshouse for eight poor women. One of the county bridewells is at Corwen. "It is a small house, inhabited by the keeper (who is a shoemaker), his family, and the very few prisoners who are usually to be found here."

The population of the parish, which is extensive, was, in 1831, 9960, about half agricultural. There are no manufactures. The markets are on Tuesday and Wednesday, and in the name of the shopkeepers. There are four Sunday national-schools, with 496 scholars. There is a school for poor children.

Harlech is in the parish of Llanddwlg, in the hundred of Arduwly, near the shore of Cardigan bay, 2342 miles from London by Doololly and Barmouth. It has been supposed that Harlech was a Roman port, but for this opinion there is no just ground. An ancient British fortress, called originally Twr Bronwen, and, at an after-period, Caer Collwyn, occupied the site of the present castle erected by Edward I. This strong fortress was held in the civil war of the Roses by Dafydd ap Erych an Ewion, a stout partizan of the house of Lancaster. Dafydd, after a valiant defence, was obliged to surrender to Sir Richard Herbert, on an engagement that his life should be spared. Edward IV. was in such haste to death in the event of this engagement, that Sir Richard declared that if the king persisted in his purpose, he would replace Dafydd in the castle, and the king might send whom he would to take him out. In the civil war of Charles I. the castle changed masters several times, and was almost entirely destroyed under General Myton, March, 1647. The town of Harlech is little more than a village of small size and insignificant appearance, situated on a wild and desolate mountain country and the sea. The most striking object in the town is a mountain, a lofty eminence which is situated on a lofty eminence facing the bay, and rising above an extensive marsh once occupied by the sea. Its walls are tolerably perfect; they form a square of about seventy yards each way, with a round tower at each corner. From these corner towers formerly rose elegant turrets, but these are in great part destroyed. There are round towers on each side of the entrance. The apartments, now open to the sky, are of large dimensions. There are traces of the ancient British fortress in the foundations of the present structure. Toward the sea, the castle was protected by the inaccessible precipice on which it stood; on the land, it was strengthened by a deep ditch cut with enormous labour in the solid rock. The assizes and county court, once held at Harlech, have been long removed; the market, held on Saturday, has fallen into a most curious disuse; and the county elections and the poll for the district are now transferred to Talsarnau. There are several fairs, chiefly for live stock. The population of the parish, in 1831, was 658, about one-third agricultural.

The town of Llanddwlg is a rectory, united with the chapelry of Llanbed, in the archdeaconry of Merioneth and diocese of Bangor, of the clear yearly value of 19\(\text{d}\).

There were, in 1835, one boarding-school, with six scholars; one day-school, partly supported by endowment, with 36 scholars; and two Sunday-schools, with 153 scholars.

Corwen is in the hundred of Edernion, on the south bank of the Dee, just below the junction of the Alwen, 194 miles from London on the Holyhead parliamentary road. There was on the eastern or Welsh post near this town, a post office, called Wnion, and a neat almshouse for six widows.

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diocese of St. Asaph. The church is a large building, capable of accommodating a thousand people, but very thinly attended, most of the parishioners being dissenters. There were in the parish in 1833 one day-school, with 30 children, and nine Sunday-schools, with 339 scholars.

Towny, or Tywyn, is in the hundred of Estimarer, near the coast, between the estuaries of the Dysnwyn and Dovey, but much nearer to the former, 227 miles from London by Diocesan road. It is well watered, and contains some good-looking houses, built chiefly of a coarse grey stone quarried in the neighbourhood. It is frequented in the bathing season by visitors attracted by the pleasantness of the situation in a quiet vale commanding a view of the sea of the Bristol Channel. There is an artificial new building of considerable antiquity: it contains some venerable monuments; and in the churchyard are two rude pillars, one of them seven feet high, adorned with figures wholly or chiefly of living characters. In a field near the church is a spring, called St. Cadfan’s Well, the waters of which are considered beneficial in scrofulous, rheumatic, and cutaneous disorders. The spring is now enclosed, and two baths have been fitted up, with dressing rooms attached.

The population of the parish in 1831 was 2694, about half agricultural. Some weibs and flannels are manufactured. Races are held near the town, and are well attended. A customary market is held on Friday, and there is a sale of hay or oats, yowes, &c. In the parish are 1223 acres of arable land, 4400 of meadow and marsh, 400 of pasture, 29 of wood, and 100 of water. The value in 1837 of the land, house, and personal estate, was £3084.

Division for Ecclesiastical and Legal purposes.—The county of Merioneth is partly in the diocese of St. Asaph and partly in that of Bangor, both in the ecclesiastical province of Canterbury. It is divided into five rural deaneries, which have, in the names of the hundred, and nearly or quite conterminous with them. The deaneries of Arddurwy, Estimarer, and Tal-y-bont are in the archdeaconry of Merioneth and the diocese of Bangor; the deaneries of Mouthwyth or Mowldy, Pontlyn or Penllyn, and Padarn (probably the whole of the diocese of Beddau in the diocese of St. Asaph. The map subjoined to the Third Report of the Church Commissioners represents all that part of the county which is in the diocese of Bangor as forming the single deanery of Arddurwy. There are in all thirty-four parishes, one churchyard in the county, besides a portion of one parish (Beddgelert), which is chiefly in Caernarvonshire. Four of these parishes are for ecclesiastical purposes, united with others; but there are three sinecure rectories, so that the number of benefices is thirty-three, of which nine are in the diocese of Bangor, nine of them in the patronage of the diocesan, and sixteen in that of St. Asaph, of which fourteen are in the bishop’s own gift. The benefices are, some of them, tolerably rich; the wealthiest in the history of the diocese of Bangor and Beddau, and the most valuable in the diocese of St. Asaph, most of them are under 100l. a year, and eight under 100l. a year.

The county is in the North Wales circuit: the Lent assizes and the Epiphany and Midsummer quarter sessions are held at Caernarvon, and the Michaelmas quarter-sessions, at Dolgelley. The county jail is at Dolgelley; it is well situated, but badly arranged and deficient in many requisites. The number of prisoners is happily small. The county became the scene of two important events in the average of the years 1829 to 1835, were only about 28 annually. There are bridewells or houses of correction at Caernarvon, described above, and at Bala. The latter is a small building, part of a large old building, insecure, out of repair, and dilapidated, and visited by the inspectors of prisons (in 1836) there were no prisoners.

The court of election for the county, which returns one member to parliament, is held at Harlech: the polling-stations are Harlech, Bala, Dolgelley, Corwen, and Towny. There are no parliamentary boroughs in the county.

History, Antiquities, &c.—In the earliest period of the authentic history of the island of Britain, there was included in the territory of the Ordovices, who occupied nearly the whole of North Wales, a considerable part of Shropshire, and a part of Cheshire. [Britannia.] In the Roman division of the island, it was included in the province of Britannia Secunda. It is said to have been called Merivnia by the Romans.

There are several traces of Roman works in this county. There are remains of camps near Bala [Bala]; and in the immediate neighbourhood of that town is Tomtenn-y-Bala, a Roman fort, and to have had a small fort on its summit. Tommen-y-Môr, "the mount within the wall," a station, of which the ditch and bank, with vestiges of a wall, remain, near Pefstiniog, is supposed to be the Henrio Mons of Richard of Cirencester, though Stukeley places it near Bala. Castell Prytoc, a hilly fort about three miles east of Trawsfynydd, is considered by Pennant to have been originally Roman. The Dovey river is considered to be the Stucia (Zeriona) of Ptolemy. A Roman road runs from Maridunum, or Meridian (Caer Marthen) to Segontium (Caer Seinti, near Caernarvon) led through the county. It may be traced in the neighbourhood of Trawsfynydd through Tommen-y-Môr, where it is called Sarn-Helen, a name which is interpreted by some as "the road of Helen," by others as "a firm sandstone." The Romans made artificial watercourses. The drawer of Maximus, who assumed the purple (A.D. 381) in the time of the emperors Gratian and Theodosius; and by others, 'the road of the legion.' From this road, at or near Tommen-y-Môr, roads are supposed to have led in one direction to Conovium (Caernarvon, near Aber-Conway), and in another direction to Bala.

The Sarn-Helen is now entirely covered with turf, and is to be distinguished only by its elevation above the rest of the surface; but on digging, the layers of stone of which it was made are discernible through the whole of its visible course: the aggregate breadth of these layers is about twenty-four feet. There are several tumuli or barrows near the road. There is a group of other monuments, probably sepulchral, near Rhyd-ar-Helen, a quarter of a mile from the Sarn-Helen, of considerable but undetermined antiquity. In the neighbourhood of Rhiiw Goch, not far from Trawsfynydd, is a grave, called the grave of Porus, covered with an inscribed stone, evidently Roman; and near it is a great upright monument of stone, of a kind frequent in Wales and in northern Europe. Roman coins, sepulchral urns, and other antiquities have been dug up in various places, particularly near Castell Prytoc and Tommen-y-Môr; at Caer Gai, near the south-west end of Llyn Tegid, or Bala, and near Penmawr, near Pennal, where was the site of another Roman fort.

There are a stone enclosure or fort and several other British antiquities near Llanddeu, between Barmouth and Aberdovey; and near the coast, between Barmouth and Aberdovey; and near the coast, between Aberdovey and Aber-y-Creg, and other Druidical remains. Other Druidical remains are found near Rhyd-ar-Helen, not far from Pefstiniog. They are called Beddawau Gwy ar Ardduwy, 'the graves of the men of Ardduwy.'

During the Saxon period and the reigns of the earlier English kings of the Norman dynasty, Merionethshire does not appear to have been the scene of events of historical interest. One battle took place between the Saxons and the Britons under the royal bard Llywarch Hen, between the lords of Meirion and Brycheiniog, the former having this battle, a bereavement which he has commemorated in one of his elegies. Merionethshire was afterwards the scene of many of those bloody feuds which disfigure the annals of Wales; but the situation of the country secured it from any serious foreign invasion. In proportion however as the consolidation of the Anglo-Norman power enabled the English to press the Welsh more closely, these previously unsatisfied fastnesses were reduced. TheWelsh, in the year 1147, under the leadership of Owain Gwynedd (A.D. 1165), advanced into this territory, and the hand of Conwy, and the stop put to his progress there by the Welsh under Owain Gwynedd (A.D. 1165), have been noticed. Henry retreated into England after sustaining a great loss in men and stores.

This county, after the death of Edward I, a little before the final conquest of Wales; as Harlech Castle was completed before 1283, in which year Hugh de Luskeles was constable of it, Merionethshire was the scene of the
rebellion of Owain Glyndwyr. [Glyndwr, Owain] Harlech Castle was one of his conquests.

In the war of the Roses, Harlech was held for the Lancasterians, but taken, as mentioned above, by Sir Richard Herbert. After the war was concluded, the county became and long continued to be the scene of great confusion. A multitude of outlaws and felons established themselves in the neighbourhood of Dinas-y-Mynydd, and perpetrated a variety of thefts, burning, robbing, and murdering in large bands, and driving cattle in open day with the greatest impunity. To quell these outrages, a commission was granted by Queen Mary to two gentlemen of the county: one of them, Lewis Owen, vice-chamberlain and baron of the exchequer of North Wales. In pursuance of this commission, eighty of the band were seized and punished. To revenge this severity, Mr. Owen was waylaid and murdered when returning from the Montgomeryshire assizes (a.d. 1555), at a place now called, from the deed, Llydiart-y-Baru, 'the baron's gate.' The vigorous measures to which this outrage gave rise led to the extirpation of the banditti, some of whom were executed, and the rest fled. The traditions of the county are the terror which these ruffians excited. Travellers forsook the common road to Shrewsbury to avoid their haunts. In the civil war of Charles I., Harlech Castle was the object of contention. The repeated captures of this place, and a skirmish near Dolgelley, which had been garrisoned for the parliament, were the only incidents of the contest which occurred within the county.

The principal remains of the middle ages are Harlech Castle, already described, and the ruins of Gwynedd Abbey, near Dolgelley, with two or three smaller cottelled build-

<table>
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<tr>
<th>HUNDREDS, CITIES, or BOUGOUGHS</th>
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<th>OCCUPATIONS</th>
<th>PERSONS</th>
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|                                | Inhabited Families Building | Uninhabited Families | Families chiefly employed in Agriculture | All other Families not con-
|                                | |

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</table>

showing an increase between the first and last periods of £183, or about 25% per cent. on the whole population, being 17% per cent. below the whole rate of increase throughout England.

County Expenses, Crime, &c.—The sums expended for the relief of the poor at the three following periods of—

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<th>Female</th>
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<td>2246</td>
<td>2246</td>
<td>4492</td>
<td>100</td>
</tr>
<tr>
<td>1821</td>
<td>2531</td>
<td>2531</td>
<td>5062</td>
<td>100</td>
</tr>
<tr>
<td>1831</td>
<td>2812</td>
<td>2812</td>
<td>5624</td>
<td>100</td>
</tr>
</tbody>
</table>

The sum expended for the same purpose for the year ending March, 1833, was 18,403£. 11s., and was levied upon the various descriptions of property as follows:

- On land
- Dwelling-houses
- Mills, factories, &c.
- Manorial profits, navigation, &c.

<table>
<thead>
<tr>
<th>Description</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
<th>Increase per cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>On land</td>
<td>17149</td>
<td>17149</td>
<td>34298</td>
<td>100</td>
</tr>
<tr>
<td>Dwelling-houses</td>
<td>793</td>
<td>793</td>
<td>1586</td>
<td>100</td>
</tr>
<tr>
<td>Mills, factories, &amp;c.</td>
<td>99</td>
<td>99</td>
<td>198</td>
<td>100</td>
</tr>
<tr>
<td>Manorial profits, navigation, &amp;c.</td>
<td>76</td>
<td>76</td>
<td>152</td>
<td>100</td>
</tr>
</tbody>
</table>

| Total | 18,466 | 11 |

The amount expended was—

- For the relief of the poor: £15,247 6s.
- In suits of law, removal of paupers: 375 5
- For other purposes: 2,412 16

| Total | 18,069 | 1 |

In the returns made up for the subsequent years, the descriptions of property assessed are not specified. In the years 1834, 1835, 1836, 1837, and 1838, there were raised: 18,633£. 14s. 17½d. in 1834, 18,633£. 14s. 17½d. in 1835, 18,633£. 14s. 17½d. in 1836, and 18,633£. 14s. 17½d. in 1837, but given for 18,633£. 14s. 17½d. respectively; and the expenditure for each year was as follows:

- For the relief of the poor: 14,771 6s. 12d.
- In suits of law, removal of paupers: 747 7s.
- For other purposes: 1,328 12d.

| Total | 16,176 10s. 11d. |

Total money expended £16,957 5s. 10d. 16,111 0s. 0d. 11,694 11s.
M E R

115

re is one savings' bank in this county; the number
sitors and amount of deposits on the 20th of Novem-
each of the following years, were as under:

<table>
<thead>
<tr>
<th>Year</th>
<th>Depositors</th>
<th>Deposits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1832</td>
<td>620</td>
<td>£470</td>
</tr>
<tr>
<td>1833</td>
<td>841</td>
<td>£685</td>
</tr>
<tr>
<td>1834</td>
<td>1,006</td>
<td>£1,200</td>
</tr>
<tr>
<td>1835</td>
<td>1,360</td>
<td>£2,634</td>
</tr>
<tr>
<td>1836</td>
<td>1,900</td>
<td>£2,634</td>
</tr>
<tr>
<td>1837</td>
<td>2,324</td>
<td>£3,224</td>
</tr>
</tbody>
</table>

Various sums placed in the savings' bank in 1835,
and 1837, were distributed as under:

<table>
<thead>
<tr>
<th>Year</th>
<th>Depositors</th>
<th>Deposits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1835</td>
<td>1,360</td>
<td>£1,200</td>
</tr>
<tr>
<td>1836</td>
<td>1,900</td>
<td>£2,634</td>
</tr>
</tbody>
</table>

The following summary is taken from the is on Education laid before parliament in the

1835:

Schools. Scholars. Total.

<table>
<thead>
<tr>
<th>Type</th>
<th>Males</th>
<th>Females</th>
<th>Sex not specified</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girls</td>
<td>3,462</td>
<td>3,224</td>
<td>7,114</td>
<td>13,800</td>
</tr>
</tbody>
</table>

It is not clear what the meaning is of the statement: "The population had increased between
and 1833 (the period when the educational inquiry
ade) in the same ratio as in the ten preceding years,
at the number of children between the ages of 2 and
e the same proportion to the whole population as it
1821, then we find 11,753 as the approximate number
dren living in Merionethshire in 1833. Ten Sunday-
as returned from places where no other school
and the persons who attend them (615 in number)
be supposed to attend any other school. At all other
Sunday-school children have opportunity of resorting
other schools also; but in what number or in what pro-
a duplicate entry of the same children is thus pro-
must remain uncertain. Four schools, containing
children, which are both daily and Sunday schools, are
ed from various places, and duplicate entry is known
been thus far created. In some of the Sunday-
s there are adults and aged persons as well as chil-
Making full allowance, even for these two causes,
accuracy, it may perhaps be fairly estimated that
all the children are receiving instruction in this

Maintenance of Schools.

<table>
<thead>
<tr>
<th>Region of Schools</th>
<th>Be endowed</th>
<th>Be subscription</th>
<th>By parishioners</th>
<th>By subscribers, &amp;c.</th>
<th>Subsidy, and supplements of county</th>
<th>Subsidy and supplements of parish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schools</td>
<td>17</td>
<td>445</td>
<td>3</td>
<td>249</td>
<td>26</td>
<td>1,000</td>
</tr>
<tr>
<td>13 Schools</td>
<td>1</td>
<td>65</td>
<td>169</td>
<td>1,360</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>510</td>
<td>172</td>
<td>1,360</td>
<td>26</td>
<td>1,000</td>
</tr>
</tbody>
</table>
disclaim in almost every instance, especially in schools established by Dissenters, with whom are here included Wesleyan Methodists.

MERLIN, the English name for the Falco Lestor of Linnaeus; Ermelin, Rocheiter, and Fouon de Roche of the French; Stein Falke of the Germans; Smerlin, Smirgelto, and Falchetto of the Italians; and Conradlsh and Lzystamen of the antient British.

Description.—Male.—Bill bluish-horn colour, palest at the base, becoming more and more reddish towards the tip; cere yellow, irides dark brown; top of the head blue-grey, with dark lines passing backward; the cheeks and thence round the back of the neck pale reddish brown, also marked with dark streaks, forming a collar; the sides of the neck and wing-covers fine blue-grey; the shaft of each feather forming a dark central line; wing primaries pitch black; upper surface of the tail-feathers bluish grey over two-thirds of their length, with slight indications of three dark bands, the distal third having uniform black, the tips of all the feathers white; breast, belly, thighs, and under tail-coverts rufous, with brown central patches, and darker brown streaks; under surface of the tail-feathers barred with two shades of grey, a broad, dark, terminal band, and white tips; legs and toes yellow, claws black.

Female.—Top of the head, back, wing-covers, and secondaries dark liver brown, the shaft of each feather darker, the edge tipped with red; the tail-feathers brown, with fine narrow transverse bars of wool-grey; under surface of the body pale brownish white, with darker brown longitudinal patches; bill, cere, eyes, legs, toes and claws, as in the male.

Young Male.—Resembling the females.

Birds of the Male. — The wings do not reach so far towards the end of the tail as those in the adult. (Yarrell, Hist. of British Birds.)

The length of this, the smallest of the British hawks, is from ten to twelve inches, according to sex.

Habits, &c.—As the author of the Book of Falconry, d diverses of these Merlinys become passing good hawke and verie skilful; their property by nature is to kill thrushes, larks, and partridges. They flee with greater fierceness and more hotly than any other hawks of prey. They are very fast, and full of courage, but a man must make great care, and take good heed to them, for they are such busie and unruly things with their beakes, as divers times they eate off their own feet and talons very unnaturally, so as they die of it. And this is the reason, that so few numbers shall ye see a mowed or enternewed Merlin. For that in the Mew they do spoyle themselves, as I have before declared.' Sir John Sebright says that the Merlin will take blackbirds and thrushes, and that he may be made to work on. this is, love not till all the bird be pursused and started again; and though a Merlin will kill a partridge, they are not strong enough to be effective in the field. (Observations on Hawking.)

The nest is placed on the ground, and but poorly made. The eggs (one inch and a half long) are more than three, and four. There is a broad variation in number from four to five, and are dotted with reddish-brown of two shades of colour.

Geographical Distribution.—Europe, as high as Denmark, and as low as the shores of the Mediterranean; Smyrna (Strickland), Cape of Good Hope (Smith), grove of Amur; North America, according to Dr. Richardson, who says that a single pair were seen in the neighbourhood of Carlton House in May, 1827, and the female was shot. In the oviduct there were several full-sized white eggs, clouded at one end with a few bronze-coloured spots. Another specimen, probably also a female, was killed at Sault St. Marie, between Lakes Huron and Superior, but it could not be preserved.' Dr. Richardson was unable to ascertain the extent of its migration on the American continent; mention was made of the Prince of Musgnano notices it as occurring in the United States; but the latter (Spezzio Comparadore) mentions it as very rare at Rome, and he only 'observed the young, and that in winter. It' was formerly considered that the Merlin was only a winter visitor to this country; but it is now very well ascertained that this species breeds on the moors of some northern countries. Mr. Selby has found the nest several times in Northumberland; and Dr. Haysom mentions three instances that came to his knowledge of Merlin's nests in Cumberland, where, he says, this bird remains all the year. Mr. Eton tells me that it breeds on Cadar Idra; and Mr. Duson sent a notice to his friend Mr. Bewick, 'on the authority of the gamekeeper at Wynstan Park, North Wales, that he had often seen the nest of the Merlin, and that it built and bred there in the summer of 1826.' In the more southern counties of Cornwall and Devonshire the Merlin is considered to be rare, and only seen in winter. On our eastern coast it is killed, but not very often, in Kent, Essex, and Norfolk. The specimens obtained are generally young birds, and these occur most frequently in autumn, or at the beginning of winter. In Ireland, according to Mr. Thompson, the Merlin is indigenous in several northern counties. It breeds also in Scotland, in Oxney, and in Shetland. In North Wales the young birds are called Stone Falcons; but among ornithologists the Stone Falcon is considered to be an adult bird. It is not however improbable that the habit of sitting on a bare stone or portion of rock, by which this species has acquired the name of Stone Falcon, is common to it at all ages and in other countries. (Yarrell, loc. cit.)

The character of the Merlin is thus summed up in the old French quatrains—:

"L'Esmorl'lon beau par extremite
A le cer a guy, et fort hardy courage;
Et bien qu'il soit petit, il faut l'ayre.
A peu saurir se pruyve en gayere."

MERLIN, or, more properly, MERDHN. Some of the Welsh antiquaries speak of three Merlins: Merlin Enry, or Merlinus Ambrosius; Merlin Wyllyt, or Merlinus Cambulos, or Merlinus Sylvestris; and Merdhn ap Morwyn, otherwise called Merlinus Avelanos, from a poem ascribed to him, entitled 'Avalenaum,' or the Orchard, and also known by the Latin names of Melichms, Melichins, and Merlus, (Nicholson's Eng. Hist. Lib. i.) It is generally agreed however that the second and third are the same person; and it is far from improbable that all the three Merlins are but one individual. Of Merlin Ambrosius the principal account we have is in Geoffrey of Monmouth's 'Historia Britonum,' where he is represented as a great prophet and enchanter, who flourished in the time of King Vortigern, or about the middle of the fifth century. This is the Merlin who is celebrated by many of our old poets, especially by Spenser, in the 'Fairy Queen,' book iii., and elsewhere; and he is also the subject of the English metrical romance of Merlin, of the first part of which there is a copy in the library of Lincoln's Inn, and a more antient one, containing also a second part, in the Aubrey MS. in the Advocates' Library, and of which Mr. Ellis has given an analysis, with extracts, in the first volume of his 'Specimens of Early English Metrical Romances.'
Of the Caledonian Merlin there is a life in Latin hexameters, extending to 1528 lines, by Geoffrey of Monmouth, who professes to have compiled it from an Armoric original; it is extant in one of the Cotton MSS. (Vesp. Z. iv.), and has never been printed, but there is an account of it in the same volume of Mr. Ellis's work. (See also Pinkerton's Inquiry into the Early History of Scotland, ii. 275.)

Ferdun, in the third book of his 'Scotchchronicon,' has a long account of Merlin the Thirld, and especially of an incident in the Welsh kingdom of Reged, or Strathclyde, which extended over the south-west of Scotland. That district, it may be added, still retains several traditional recollections of the name of Merlin; his grave, in particular, is yet shown near the village of Drimnin, on the Tweed. (See Sir W. Scott's Introduction to Romance of Sir Tristram, p. 38; and Note to Vision of Don Roderick, p. 367, ed. of 1834.)

Collections of the Prophecies of Merlin have appeared in French, at Paris, 1498; in English, at London, 1529 and 1530; and there is finally (Sir W. Scott's) a translation of them, in French and English, in the Cotton and other libraries. (See Warton, Hist. of Eng. Poets, iii. 430, ed. of 1824.) We find some of them applied by the poet Laurence Minot, who wrote about 1560, to the victories of Elizabeth slightly foretold by the Grail. Thanks to the paper of pp. 100-104.)

It is said that the two anterior dorsal fins are placed in advance of the pectoral; the rays are unequal in length; the pectoral fins commence in a line under the posterior edge of the operculum, the rays ending with the first dorsal fin: the first dorsal fin itself short and triangular in shape; the second dorsal fin beginning immediately behind the vent; the anal fin begins immediately behind the vent; the second dorsal fin and the anal fin terminate on the same plane, near the tail; the rays strong and stiff; the caudal rays about three inches long, and nearly even.

The head is depressed; the inside of the mouth and gill-covers black; the lower jaw the longest; teeth slender and sharp, in a single row in each jaw; the iris yellow, the nictitating membrane forms a white line in a line over the vent; the lateral line of the body runs straight throughout the posterior half, then gradually rising to the upper edge of the operculum; the appearance of the lateral line is that of one white line between two dark ones; the scales large; colour of the body dusky brown above, lighter below, dorsal and caudal fins dark; ventral and anal fins pale brown.

The Gadus Magellanicus of Forster and the G. Maraldi of Risso are mentioned by Cuvier as species belonging to the present genus.

MÉROE (Malakology), Schumacher's name for certain crown-shells, Odontostroma sulcata, scripta, hiscaris, &c.

MÉROIDE. (N.l.e.)

MEROPOIDE., a family of fissionostal birds which, in the opinion of Mr. Vigors, is most nearly connected with the conterminous tribe of Tenuirostrae by the length, slenderer form, and downy nature of the tail; it is, however, not so well defined as to the Cisticlae, and there is a manifest distinction between them. Independently however of the general characters in which both families approach each other, such as the breadth of the rictus of the bill, the short and feeble legs, the strength of the wing, and the consequent habit of ending, that remark is chiefly in seeking their support, a gradual approximation is found to take place even in their bills; that some of the extreme species of Meropoides becoming shorter as they approach Hirundo; while some of those of the latter group have a more elongated and broader rictus. The tail of Meropoides is equal to the tail of the fissionostal birds in general, the length of the two middle feathers, in order to become even in some species, the lengthened form of the tail, and the fully forked tail of Hirundo. Mr. Vigors is further of opinion that among the Tenuirostrae the genus Promeropodes approaches nearest to the fissionostal group by means of Meropoides, the curved bird of which approaches the structure of its own. (Vit. Or. On. Birds, pt. ii. C. Linn. Trans, vol. vi.)

Mr. Swainson (Classification of Birds, vol. ii.) is of opinion that the Meropidae, or Bee-eaters, succeed the Hirundinidae in the family, and are of an advanced and natural origin. It is evident that it is in Italy that it annually visits in flocks of twenty or thirty, and may be seen skimming over the vineyards and olive plantations with a flight much resembling the swallow, though more direct and less rapid. He observes that their bill is pointed considerably longer and more acute, that it is much softer, that the difference is softened down by the intervention of the genus Eurytus, containing the Swallow Rollers of India, Africa, and Australia, which have this organ very short. To these, he thinks, succeed the true Rollers, Coruscus, (Linn.), which is more elongated in the tail than the Bee-eaters, and associate also in small flocks. 'Two of these genera of Rollers,' continues Mr. Swainson, 'are so indissolubly united, that nothing but the strongest prejudice in favour of a preconceived theory could ever have induced certain naturalists (who have been of much advantage to science) to have placed them in two different orders. The whole structure of the Rollers, their lengthened pointed wings, and their firm and often granting tail, at once induces the idea that they feed upon the wings; while their very short legs, scarcely longer than their hind toe, might have shown their incapacity to alight and walk, like the crows, upon the ground; but this question is at once decided by a knowledge of their economy, which, from personal observation, we have every reason to believe, is much like that of the Bee-eaters. The intervention of the Rollers at once lessens the abrupt transition, which would otherwise be apparent, from the perfect-footed Swallows to the Spigolacrie Bee-eaters; and we are thus prepared for all those birds whose toes, as it were, are soldered together like those of the Meropidae. Here perhaps we may notice that most beautiful and rare genus Nyctittomis, or Night-feeder, as being in all probability that particular link by which nature connects this family; but in order to separate the Bee-eaters from the Rollers, into one primary circle. Mr. Temminck, overlooking its particular structure, placed this genus with Meropis, to which indeed it has a close resemblance; while its connection to the Promeropodes was no less obvious. Its precise situation in short requires further investigation.' See also Kingfisher and Meri-phage.

Mr. Swainson gives the following character as distinct from the family:—

'Wings long, pointed; the first quill as long, or nearly so, as any of the others.'
And he arranges the following genera under it:—

Merops. (Linn.)

Bill very long, slender, slightly curved, compressed; the culmen rarinated; the tip entire, sharp, and not bent downward. Wings long, pointed; the tips of the lesser quills emarginate. Tail lengthened. Feet gressorial. (Sw.)

Example, Merops apiaster. [Bee-eater.]

Nychitornis. (Sw.)

Bill considerably curved, very long; the culmen with a parallel groove on each side. Wings rounded, convex. Plumage lax. Feet short, insensorial, resembling those of Priorites. (Sw.)

Example, Nychitornis anicitus.

Description.—Green; crown (in the adult) lilac; front of the throat and breast bright red. (Sw.) Total length about 13 inches, wings 4½, tail (beyond) 3, tarsi hardly half an inch. (Sw.)

Locality, India.

**Nyctitornis anicitus. (Sw.)**

**Coracias. (Linn.)**

Bill moderate, straight; the sides broad, but much compressed. The tip of the upper mandible bent over that of the lower, which is obliquely truncate. Nostrils basal, oblique, linear. Gape very wide, extending beneath the eye; the sides bristled. Feet insensorial, very short. All the toes close to their base; inner toe much the shortest. Wings moderate, pointed. (Sw.)

Example, Coracias Abystrina.

**Description.**—White round the bill; body aquamarine green; back and wing-coverts cinnamon colour; shoulders, rump, and quills blue; tail green, the two middle feathers blue; two long loose processes terminating the two external quills.

**Subgenus, Eurytornis, Vieill.**

**Subgeneric Character.**—Resembling Coracias, but the bill shorter and wider, and the wings longer. Nostrils very long. Rictus smooth. (Sw.)

Example, Eurytornis Orientalus.

**Description.**—Colour aquamarine green; throat and point of the wing (fouet de l'âile) azure; quills and tail-feathers black; a white stripe upon the wing.

**Locality.**—Java, the south of New Holland, and all the Polynesian Islands. It is the Nasty-in of the natives of the neighbourhood of Sydney, Dollar-lard of the colonists, and Tong ha tu of the inhabitants of Sumatra.—Coracias Orientalis, Linn.

**Eurytornis Orientalis.**

**Chloropygina. (Sw.)**

General form between Tumavia and Coracias. Bill short; the tip not abruptly bent. Rictus bristled. Nostrils basal, linear, oblique. Wings short, convex, reaching only to the rump. The two first quills much graduated; the four next nearly equal and longest. Tail elongated, rounded, and broad. Feet as in Coracias. Madagascar. (Swainson.)

Example, Chloropygina Leptosomus. (Lesson; Ill., Zoö., pl. 22.)

**Leptosomus. (Vieill.)**

Bill about the length of the head, robust. The upper mandible curved and notched near the tip. Gonya straight. Nostrils oblong, oblique; the margins elevated, naked, and placed towards the middle of the upper mandible. Feet short. Toes in pairs, as in Tumavia. Wings lengthened, pointed; the first and second quills longest. Tail moderate, even. (Sw.)

Example, Leptosomus viridis.

**Locality.**—The country of the Kaffirs and the coast of Zanzibar, where it is said to live in the forests on insects and fruits. The form is arranged by Lesson and others under the family Cambulidae. [Leptosomus.]

Mr. Swainson makes the family of Meropidae the first of the Fisstracces. It immediately succeeds the Paradinidae and precedes the Halyornithidae in his arrangement.

M. Lesson, in his 'Table Méthodique,' gives the following genera as constituting the family of the Meropidae:—Merops, Alcedo, Dacelo, Ceyd, Symm. Thalurania, Mecysta, and Ruceru. See the articles Kingfishers and Horn BILLS.
SERBIUS, of the Albine line: at present it is used for the government offices; 3, the cathedral, founded in the eleventh century, in which the dukes of Saxe-Merseburg were interred; it has a fine altar-piece by Lucas Cranach, and one of the largest organs in Germany; 3, the cathedral school; 4, the monastery of St. Peter, in the suburb of Altenburg; 5, the palace of Count Zechi; 6, the military hospital; 7, the new town-hall. Several of the schools are likewise in the same buildings. There are manufactories of various kinds, and extensive breweries and distilleries. The trade of the place is considerable, and with the advantages derived from it is being the seat of the government, it is a very flourishing town.

(E. Müller, *Wörterbuch der preussischen Staaten*, 4 vols., 1856.)

MEREKSS, or MERESSEN, a very learned philosopher and mathematician, one of the religious order of Minimes, was born in 1688 at Osye, in the present department of Maine, and received his education at the convent of La Fliche, where he was a fellow-student of Descartes, with whom he formed an intimacy which a similarity of pursuits ripened into a friendship that lasted only dissolved. He afterwards studied at the university of Paris, and subsequently at the Sorbonne. In 1615 he took the vows at the convent of Minimes, in the neighbourhood of Paris, and the year following received ordination as priest, when he deemed it incumbent on him to study the Hebrew language, a subject that he acquired with such rapidity that in 1616 he succeeded the chair of philosophy at Nevers, and there taught till the year 1619, when he was chosen superior of the convent, and on completing the term of his office he travelled into Germany, Italy, and the Netherlands. He finally settled in Paris, where his eminence and benevolence of spirit procured him a number of distinguished friends. Of these the chief was the founder of the Cartesian philosophy, who entertained the highest opinion of his abilities, and consulted him upon all occasions.

It has been noted that the story seems highly improbable—that Descartes, by the advice of Mercenne, at once changed his intention of founding his system on the principle of a vacuum, and adopted that of a plenum. The discovery of the principle was ascribed to him also and to Descartes, but it now seems very clear that neither we are indebted for the first notice of this curve. [Cycloid.] Mesenne died at Paris in 1648, in consequence of drinking cold water when over-heated. The result of this indiscretion was an internal abscess in the side, which he desired should be opened. The surgeon made the incision two inches below the right place, and the patient expired under the operation.

The Père Mercenne was undoubtedly a man of great learning and unreserved virtue, and deserved the esteem in which he was held by the philosophers and literati of his age; but, except his Harmonie Universelle, his works are now unread and almost unknown. If by some he was overrated, by others he has been undervalued; and when Voltaire mentioned him as le fameux et tres fameux Père Mercenne, he indulged his wit at the expense of one with whose writings, it is to be suspected, he was very little acquainted. His eulogist however, in the Dictionnaire Historique, admits that he very ingeniously converted the thoughts of others to his own use; and the Abbé Le Vayer calls him le bon larron—a skillful pilfer. Nevertheless, the work above named, L'Harmenie Universelle, contenant la Théorie et la Pratique de la Musique, in 2 vols. fol., 1637, has met with the approval of the learned and of all lovers of the subject, and among the number, to the author of the present notice. Dr. Burney says of it, that notwithstanding all his partiality to his country, want of taste and method, there are (in the work) so many curious researches and ingenious philosophical experiments, which have been repeated by subsequent writers, particularly Kircher, as render the book extremely valuable; and Sir John Hawkins remarks, that 'the character of Mercenus as a philosopher and mathematician of which is known in the history of science, and that disposition which led him to the most abstruse studies he joined a nice and judicious ear, and a passionate love of music: these gave a direction to his pursuits, and were productive of numberless experiments and calculations tending to demonstrate the principles of harmony, and to prove that they are independent on habit or fashion, custom or caprice, and, in short, have their foundation in nature, and in the original frame and constitution of the universe.'

The
was, in 1498, translated into Latin and enlarged, by the author, but both the original and translation are now conserved as rare as they are curious to the antiquity and interesting to the musical inquirer.

**MERSEY. [CHESHIRE; LANCASHIRE.]**

MERTHYR TYDYL, or TYDULí, a parliamentary borough and parish in the hundred of Lerpwlly and county of Glamorgann, 18 miles south by east from Cardiff and 141 miles west-north-west from London (direct distances). The parish extends from north to south about 10 miles, and has an average breadth of three miles, comprising the hamlets of Garth, Gelly, Taff-and-Cynon, and Hoech-Wormwood. Part of the hamlet of Forest and part of the hamlet of Taff-and-Cynon are not included within the limits of the parliamentary borough; with this exception, the borough is in parliamentary district. The river Taff runs in a very narrow channel to the left of the Taff river, but the houses are so scattered that it is difficult to say where it either begins or terminates; indeed there is not in the whole parish what can be correctly denominated a street. The houses themselves are for the most part of a very mean description, consisting chiefly of the cottages of labourers, beer and retail shops.

This place is said to take its name from Tydulí, or Tuddli, the daughter of the lord (regulus) of Garthddan, who was married to the daughter of the prince of the Saxons. The church, subsequently erected near the spot, was dedicated to Merthyr Tydyl, or St. Tydyl the Martyr, in commemoration of the event. The present church is a neat edifice of recent erection. It is in the district of Llandaff, and is a living in the patronage of the marquis of Bute, has a net annual revenue of 673L. Besides the parish church there is a chapel-of-ease, called Dowlais Chapel. The assessed taxes of the parish, in the year 1830, amounted ten shillings.

Merthyr Tydyl was not represented in parliament till the passing of the "Reform Act." It now returns one member. The mining operations of this place were comparatively unimportant prior to the year 1735. About this time, experimental works of a most important kind were commenced in the collieries, with the means of pit-coal, Mr. Anthony Bacon, member of parliament for Aylesbury, became the lessee of a considerable tract of land in the neighbourhood, and erected the first smelting furnace at Cyfarthfa. During the American war that gentleman was connected with the government for supplying the several arsenals with cannon, from which and other similar undertakings he ultimately realised a large fortune. At the close of the war the contract was transferred to a Scotchman, but the extensive works had been established at Pendarenne and more particularly at Dowlais, in the hamlet of Hoech-Wormwood. The latter place is now the seat of the immense smelting-furnaces of Messrs. Guest and Co., the largest in the world. These furnaces are in all respects the most perfect, and such has been their success, that in the year 1830 the quantity of iron produced in South Wales was estimated at 377,000 tons, while that made in Staffordshire and the rest of England did not materially exceed 300,000 tons. (M. Colloch.)

The population of the parish, in 1831, was 22,083, but it is extremely fluctuating, a slight improvement or depression of the iron trade causing it to increase or decrease by thousands. A decline in the demand has taken place shortly before the taking of the last census, and it may therefore be presumed that the number above given is less than the average population. The market-days are Wednesday and Friday, and the fairs are held 13th May, 3rd September, 2nd December, and 1st January. (Boundary, Population, and Church Revenue Reports; Beauties of England and Wales; M'Culloch's Statistical Account of the British Empire, &c.)

**MERC, Oxford.** This college was first founded at Maldon, in Surrey, in 1264, by Walter de Merton, bishop of Rochester and chancellor of England, who in 1274 removed it to Oxford.

Elia Longstaff, the owner of Warwick, is recorded to have been born in the year 1230. John William de Merton, D.D., chancellor of Exeter, gave exhibitions in 1380 for the maintenance of twelve portonists, called postmasters, who were afterwards increased to fourteen by John Chamber, fellow of Merton, who directed that his two additional exhibitors should be elected from Merton College. Chalmers says, "On the building of the chapel these postmasters officiated as choristers, and had a salary of six shillings and fourpence per annum for this service; but there was at that time no regular choir." These exhibitors he adds, resided in a hall opposite to the college, which had been given to it by Peter de Abingdon, or Habendon, the first warden, and here they remained until the latter end of Elizabeth's reign, when they were taken into college. Henry Jackson, minor canon of St. Paul's, who died in 1277, and who had received his education at this college, founded four scholarships for natives of Oxford. His benefaction, however, in whatever reason, did not pass into effect until the year 1753.

The foundation, at present, consists of a warden, twenty-four fellows, fourteen postmasters, four scholars, two chaplains, and two clerks. The natives of the following dioceses are admitted:-viz. St. Asaph, Bangor, St. David's, Llandaff, Hereford, Chichester, Exeter, Rochester, Lichfield and Coventry, Chester, and Carlisle. In the election of a warden the fellows choose three of their number, whom they present to the visitor, the archbishop of Canterbury, who appoints one of them.

The preferment in the patronage of this college consists of the rectory of Glamingly, in Cambridge-shire; the vicarage of Diddington, in Huntingdonshire; the vicarage of Eleham, in Kent; the rectories of Kibworth Beauchamp in Leicestershire, and Harby and Thorpe in Nottinghamshire; the rectories of Embleton and Ponteland, in Northumberland; the rectories of Cuxham and Ibstone, in Oxfordshire; with the chapel of St. John the Baptist in Oxford, and the vicarage of St. John the Baptist, in the City of London; the rectories of Holywell; the rectory of Farley, and the vicarage of Maldon, with the chapel of Chesington, in Surrey; the rectory of Lapworth, and the vicarage of Great Woldon, in Warwickshire; and the vicarage of Stratton St. Margaret's, in Wiltshire.

Among the more eminent members of this society may be enumerated Duns Scotus; Bradwardine, and Islip, archbishops of Canterbury; Wicliffe, who was a fellow of Meron; George Owen, physician to Henry VIII.; Jewel, bishop of Salisbury; Hales, archbishop of Canterbury; and many others. Many of the latter were distinguished both in the parliamentary general and cassiery, the Roman Catholic historian, Anthony Wood, the Oxford historian; and Sir Richard Steele. Among the warden's, Dr. Chamber, another of Henry the Eighth's physicians; Sir Henry Savile; and Dr. Harvey, the discoverer of the circulation of the blood, have been the most conspicuous.

The buildings of this college consist of three courts; the outer one toward the street was built in 1385, except the present chapel, which is of the fourteenth century. The most ancient part of the college was built by Senior and Fitzherbert, two of the wardens, afterwards bishops. The chapel, at the west end of the outer court, is also a parish church, dedicated to St. John the Baptist. It contains, among other monuments, two of twenty-four fellows, and a monument of the family of the Shires, from the peculiarity of its tail-coverts, which form themselves into a kind of puff-ed-out cluster on the back.

The family of "Merulius," continues Mr. Vigors, "connected as above with the Laniard, or Shires, and the Sylvias, or Warblers. In the former family, he is of opinion that "Vanga, Curru, and Curru with Protomus, Laniaria, and Thamnochalcis or Vireo," being the four, with the Thrushes, and that the extremes of the family will be found in Cerasuscalus and Celypsyrus of Cuvier, which last has been lately arranged with the Thrushes, and both of which, by their tails, in some degree resemble each other, and which, lead back to Tyrannus, and the other broad-billed group, which commence the family. Mr. Vigors feels inclined rather to leave Celypsyrus in its original station among the Shires, from the peculiarity of its tail-coverts, which form themselves into a kind of puff-ed-out cluster on the back."

The 'family of Merulius,' continues Mr. Vigors, 'connected as above with the Laniard, comprises a considerable number of species, and many natural genera; but which, like most of the Intestrials group, have not been received but partial examination. The general views by which they seem to be allied among themselves, as far as least can be judged from their present unorganised condition, may be stated as follows:—both that expression of doubt which over attends inquiries like the present, where the
assence of accurate information to the economy of the subjects before us, and of extensive knowledge of the forms connected with them, leaves us no better foundation for our inferences than partial conjecture. The genus *Miyiiothera*, Iii., seems to be the first group of the present family which is connected with the *Laniidea*, where it is met by some of the smaller species of *Thamnophilus*. This group seems to be led by *Pitto, Vieill.* and perhaps *Cinclis, Bechst.*, through some intervening forms to the true *Thrushes*, or the genera *Turdus* and *Garrulus*, forming the root of the family. To these we may add that portion of the Linnean Orioles, which, possessing the curved and notched bill of the *Thruses*, constitutes the genus *Oriolus*, or true Orioles, of the present tribe. Here we rest with several genera, generally assigned without order in the Linnean genera *Turdus*, and hitherto entirely uncharacterised, which gradually lead from the typical groups to those which possess a more generally delicate conformation; until the comparatively strong form and robust bill of the *Thruses* is lost in the weaker body and more slender bill of the *Warblers*. Here again the group of *Rock Thruses*, of which the *T. saxatilis* is the type, appear to bring us round, by their general habits and assimilating characters of bill and tarsus, to *Miyiiothera*, where, as already conceived, we arrange the birds which constitute the groups which we denominate *Chatterers*, and which form the genus *Amplus* of Linnaeus, are usually assigned a place near this family; and I must confess that, from the general affinity which they appear to bear to the *Turdus*, I am still feeble to determine whether this be not their natural station. A strong affinity however on the other hand seems to unite them with the wide-gaped *Piprites*, and some of those other groups which, by their bill, being at the hand and compressed at the base, appear to come in contact with the earlier divisions of the present tribe, and the extreme of the *Fissirostras* which precede it. The general rule of placing groups in a conterminous situation, according to what appears to be the predominance of their more important characters, has inclined me to arrange the birds of which I speak, provisionally among the *Piprites*, at the extreme termination of the tribe before us. In my present view of the case, the characters in which they accord with that family and approximate the extreme groups of the preceding tribe, appear to provoke a more accurate knowledge on these subjects will clear away these and similar difficulties. But I cannot too often insist upon the point, that whatever alterations may take place hereafter in our ideas respecting the disposition of these subordinate groups, the principle on which I have now founded this work which is the object of this inquiry to illustrate. Instead of impeding our general views, they will merely remove those doubts on minor points in which our present limited acquaintance involves us.

In Mr. Swainson's "Classification of Birds," the reader will find elaborate details of his views respecting the affinities and analogies of this extensive family, where our limits do not permit us to give. The following is the arrangement in the Synopsis, where the family is placed between the *Laniidea* and the *Sylviidea*.

**MURDILIDÆ**

Subfamily *Brachypodinae*.

- **Feet very short. Hind toe almost as long as tarsus.** Claw short, much curved. Bill distinctly notched. Wings short, rounded. Feathers on the rump very long and thick.
- **Genus: Micropus. (Sw.)**
  - **Bill long as the head, straight, somewhat conic, but the culmen gradually arched.** Tarsi remarkably short, feathered beyond the knees. Lateral toes unequal; hinder as long as the tarsus. Wings moderate, the first quill almost spurious.
  - **Tail even.** (Sw.)
  - **Example: Micropus chalcocophalus. (Pl. Coll., 453.)**
  - **Subgenus: Hypopus. (Sw.)**
  - **Tail forked.** Example: *Hypoptes pseudoricta* (Gould, Cent. Himala Birds).

**Brachypus.** (Sw.)

- **Bill shorter than the head; the base broad; the sides compressed; culmen elevated and curved from the base.** Rictus generally furnished with bristles. Feet very short, strong; tarsal scales entire. Tarsus longer than the hind toe.
  - **Claws curved, broad, acute, wings and tail rounded.** (Sw.)
  - **Subgenus: Brachypus. (Sw.)** Bill short. Rictus bristled. P. C. No. 927.

- **Foot small, weak, lateral toes equal, hinder toe as long as the tarsus.**
  - **Example: Brachypus dispers. (Pl. Col., 137.)**
  - **Chloropis (Jard. and Selb.).** Bill more lengthened: the tip much hooked; the middle and upper mandible forming a small distinct tooth. Rictus of grape smooth. Feet small, lateral toes unequal, the hinder toe shorter than the tarsus. (Sw.)
  - **Example: Chloropis Malaborious. (Pl. Coll., 512, f. 2. Jura, or Jura (Haut.).** Bill nearly as long as the head, lengthened, somewhat conic, and rounded. Rictus smooth.
  - **Tarsus rather lengthened, the anterior scales divided.** Middle and hinder toe of equal length. Tarsus much longer than either. Tail very short, fasciculated; the tips truncate and even.
  - **Example: Jura scapularis, Horst., (Java.)**

**Andropadus.** (Sw.)

- **Bill very short, resembling that of *Brachypus*, but the upper mandible created near the tip.** Neck with serrate hairs. Rictus bristled. Wings, tail, and feet as in *Brachypus*. (Sw.)
  - **Example: Andropalus vociferus, (Ois. d'Afr., 106, f. 2. H. melanotis).** (Sw.) Head crested. Bill short. Rictus bristled. Feet short, lateral toes unequal, hinder toe shorter than the tarsus; equal to the middle toe. Wings and tail rounded. (Sw.)
  - **Example: H. melanotis chrysothoraxs. (Ois. d'Afr., 111, pl. 107, f. 2.)**

**Tricophorus.** (Temm.)

- **Culmen gradually arched.** Nostrils and base of the bill surrounded with lengthened slender hairs. Gape very strongly bristled. Margins of the mandibles white. Feathers of the crown and chin elongated. Nape of the neck with several conspicuous lengthened bristles, considering the exceeding the surrounding feathers. Feet short. Tarsus longer than the hind toe, and feathered beyond the knees. Inner toe shortest. Wings and tail moderate, the former with the three first quills much graduated.
  - **Example: Tricophorus olivaceus.** (Swainson, 'Birds of West Africa,' i., 354.)

**Phyllastrephus.** (Sw.)

- **Bill as long as the head, strong, the tip rather hooked.** Rictus strongly bristled. Frontal feathers small, compact, directed forwards, and compressed on the base of the bill. Wings and tail moderate, rounded. Feet short, strong, robust. Tarsus and middle toe of the same length; lateral toes unequal, the inner shortest; hinder toe shorter than the inner one. Anterior tarsal scales divided. (Sw.)
  - **Example: Phyllastrephus Capenisi, Ois. d'Afr., 112, f. 1. Icterida. (Vieill.)**

- **Bill with the general form of that of *Brachyptus*, but the culmen more elevated and arched, and both mandibles entire.** Wings and tail rounded. Tarsus considerably lengthened and strong; the toe the shortest; middle toe very long. Locality. America.
  - **Example: Icterida polyglotta.** (Wilson, pl. 6, f. 2.)

**Subfamily Myiotherinae (Myiotherinae).—Anti-Thrushes.**

- **Bill straight, somewhat cylindrical; the tip suddenly bent down or hooked.**

**Dasycephala.** (Sw.)

- **Bill as long as the head; straight; tip abruptly hooked, base wide, the rest somewhat cylindrical.** Gonys strong, ascending. Nostrils and front defended by stiff feathers and bristles, pointing in different directions. Rictus strongly bristled. Tarsus lengthened, slender; lateral scales numerous, small, oval. Toes and claws slender; inner toe shortest; outer toe connected to the middle as at the first joint. Hind claw large. Wings and tail rounded.
  - **Example: Dasycephala rufescens. (Birds of Brazil, pl. 76.)**

**Myiothera.** Illi.

- **Feet lengthened, rather stout.** Lateral scales of tarsus in an entire piece. Claws not broad, nor greatly curved.
  - **Bill as in the small *Thamnophilus*.** Wings short. Tail moderate, rounded.
  - **Subgenus Myiothera.** Inner toe longer than the outer and cleft to its base; outer toe with its first joint united to that of the middle toe. The tarsus with the anterior scales divided.

**Drynophilus.** (Sw.)

- **Inner toe shorter than the outer, a palp.**—This name is preoccupied. (Falcune, vol. 5, p. 174.)

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which is only slightly larger than the middle. Tarsus (typically very strong; all the scales entire. (Sw.)

Example, Dryomphala longipes. ('Zool.,' III., ii. 23.)

Brochychiurus (Horsf.). See the article.

Myiornis (Sw.). Legs strong. Inner toe longer than the outer. All the tarsal scales divided. Anterior claws small; hinder claw nearly straight, and as long as the toe. (Sw.)

Example, Myiornis fuliginosus. ('Enl.,' 821.

Pithecus (Vieill.). Feet syndactyl. The inner lateral toe shortest; the outer united by its first and second joint to the middle toe. All the tarsal scales entire.

Example, Pityhecus albifrons. Vieill., 'Gal.,' p. 129.

N.B. Mr. Swainson remarks that Uromtopus, Formicivora, and all the other small Myiornis, having the feet weak and the claws small, and of Thamniophilus, he thinks it better to refer them to that group; but as it has not been analyzed, he does not, in the Classification of Birds, incorporate those two subgenera, although proposed by himself some years ago. See Zoological Journal, vol. i. p. 301; and the paper On the Natural Affinities that connect the Orders and Families of Birds, by Mr. Vigors, who refers to Mr. Swainson's memoir in the Zoological Journal, and observes that the reader may there see the line of connection between Thamniophilus and Myiornis fully established. The present subfamily is obtained by gradually passing into each other, such as Formicivora, Uromtopus, and Dryomphala. (Linn. Trans., vol. xv.)

Pitta. (Temm.)

Bill strong, thrush-like; the culmen gradually curved. Nostrils nearly naked. Wings moderate; the first and second quills but slightly graduated. Tail remarkably short, slightly rounded. Bill very strong, long, pale; the scales nearly entire. Inner toe slightly shorter than the outer. India and Australia. (Sw.)


Bill strongly curved. Chloesoma (Sw.). Bill as in Pitta, but somewhat thicker. Nostrils protuded and nearly covered by incumbent feathers. Rictus bristled. Wings rounded; the four first quills much graduated. Tail moderate or lengthened, graduated. Feet strong, rather lengthened; the inner toe scarcely shorter than the outer.—India. (Sw.)

Example, Chloesoma thalassina. ('Pl. Col.,' 401.

Gularis (Vieill.). Bill thrush-like, as in Pitta. Wings rounded; the two first quills graduated, the first half as long as the second, the three next nearly equal. Tail short and rounded. Legs very long; the tarsus slender, pale; the anterior scales divided, the lateral scales (typically) entire. Lateral toes nearly equal.

Example, Gularis fuliginosus. ('Enl.,' 702.

Mr. Swainson remarks that it appears to him that Chamaeza, Vig., is more an aberrant species of Gularis than a distinct type in the genus Pitta: the only species known differing in having the tail longer and the lateral scales divided.

Cinclis. (Bosc.)

Bill moderate, rather slender, very straight, considerably depressed; tip absolutely notched; gonys ascending. Nostrils naked, membranaceous; the aperture very small and linear. Wings moderate, rounded; the first quill spurious. Tail very short, and formed nearly of the same feather large, very strong, pale; the lateral toes equal; tarsal scales entire and smooth. (Sw.)

Example, Cinclus albicollis. Selby, p. 45.

Subfamily Merulina. True Thrushes.

Wings more lengthened and pointed. Bill notched, with the culmen gradually curved to the tip, which is bent, but not hooked, over the lower mandible. Feet formed both for perching and walking. (Sw.)

Petrocinia. (Vig.) Rock Thrushes.

Bill thrush-like; tip of the upper mandible abruptly bent down and nearly entire. Wings moderate; the first quill spurious; the second shorter than the three next, which are equal and longest. Tail even. Anterior scales divided.

Lateral toes equal. (Sw.)


Subgenus Petrocinia. (Sw.) Bill thrush-like; the culmen and tip of the upper mandible gradually bent and entire. Wings and tail as in the last. Legs pale; anterior scales divided. Lateral toes unequal; inner shortest. Claws moderate and fully curved. (Sw.)

Example, Petrocinia cyanoscopus. (Gould, 'Cent. of Himal. Birds.')

Merula. (Waglubbly.)

See the article Blackbird.

Orpheus. (Sw.)

General structure of Merula. Bill more curved in the culmen; the notch small, or nearly obsolete. Rictal bristles rather strong. Wings rounded; the three first quills graduated. Tail lengthened, graduated, or rounded. Inner toe much shorter than the outer.

Example, Orpheus Polygollotus. Wilson, pl. 10, f. 1.

Subgenus Cosypna, Vig. General structure of Orpheus, but the wings more rounded, and the tail less so. Rictus smooth, as in the Cinclus.

Example, Cosypna leucoceps. (Sw.) 'Birds of West Africa,' 1, pl. 32.)

Chatsops. (Sw.)

Bill moderate, thrush-like, notched. Nostrils basal, large, naked, membranaceous; the aperture lateral and linear. Frontal feathers rigid; the shafts composed of bristles. Chin feathers the same, but weaker. Rictus bristled. Wings very short and rounded. Tail rather lengthened, broad, convex, soft, and slightly rounded. Tarsi very long and strong; anterior scales divided. Lateral toes nearly equal. Claws small, but slightly curved; the three anterior of equal size.—Africa. (Sw.)

Example, Chatsops Burchelli, 'Pl. Col.,' 385.

Subfamily Crateropodinae. Babblers.

Legs remarkably long and strong, with the claws but slightly curved. Wings short and rounded. Tail large, broad, graduated, and very soft. Plumage lax. Bill compressed, straight, and somewhat slender. (Sw.)

Pellorneum. (Sw.)

Bill moderate, straight, somewhat conic; tip notched; gonys ascending. Frontal feathers small, rigid, directed forwards. Rictus bristled. Wings very short, much rounded. Tail moderate, graduated. Tarsus and middle toe of equal length; the hind toes nearly as short, and equal; hinder toe shorter than the tarsus. Anterior claws very small, and but slightly curved. Tarsal scales hardly divided. (Sw.)

Example, Pellorneum rufigenum.

Cranorpus. (Sw.)—(Tanfichincola—part.)

Bill nearly as long as the head; more or less straight from the base; much compressed; obliquely notched. Rictus bristled. Frontal feathers rigid. Wings short, rounded. Tail large, broad, soft, and rounded. Feet very long and strong. Tarsus lengthened; the anterior scales divided. Lateral toes nearly equal; hind toes large, nearly as long as the middle toe. Feet very strong. (Sw.)

Example, Cranorpus Reinwardti. ('Zool.,' Ill., i. 390.

Grallina. (Vieill.)

Bill slender, straight, rather cylindrical above; the sides very little compressed; base broader than high; tips of both mandibles distinctly notched. Nostrils naked, basal. Rictus with a few bristles. Wings very long; first and second quills graduated, four next longest. Tail lengthened, even. Feet strong, formed for walking, black; anterior toes divided, the rest entire. Lateral toes equal; middle toe and claw short, very little longer than the hind-toe.—Australia. (Sw.)

Example, Grallina melanoleuca. Vieill., 'Gal.,' p. 139.

Subgenus Cinclusoma (Horsf. and Vig.). Bill very straight; culmen and gonys equally curved towards the point, which is slightly notched. Wings very short; the two first quills graduated; the three next longest, and of equal length. Tail lengthened, broad, graduated; the feathers narrowed towards their tips. Under-tail covert very long. Feet moderate; inner toe longer than outer. Australia. Analogous to Ascornor among the Sylviae. (Sw.)

Example, Cinclusoma punctata. (Shaw, 'Zool. of N. H.,' pl. 9.)

Malacocebus. (Sw.)

Bill more or less curved, by being elevated at the base, having the sides much compressed, and the culmen high and arched; the tip almost entire, and not suddenly bent over the lower. Feet very large. Tail soft, graduated, generally lengthened. (Sw.)

Example, Malacocebus strigatus. ('Zool.,' Ill., ii., pl.197.

Subgenus, Malacocebus. (Horsf.). Bill slender. Rictus
bristled. Wings very short; the two first quills graduated, the four next all of the same length, and longest. Tail lengthened, graduated; the feathers narrow. Feet very large and strong. Toes lengthened; the inner too rather longer than the outer. Claws slender, and but slightly curved. Anterior scales divided, lateral, entire.

Example, Megallurus palustris.

Pomatorhinus (Horsf.). General structure of Crateropus; but both mandibles of the bill curved and entire, and the wings shorter and much more rounded; four first quills graduated. Tarsal scales entire. Inner toe rather shorter than the outer.

Example, Pomatorhinus montanus.

Timalia (Horsf.). Plumage lax. Bill straight, rather short, much compressed; culmen high and arched gradually. Tip completely divided, the inner toe rather than the hind and claw. Commisures curved. Wings short, rounded. Tail more or less lengthened, graduated. Feet strong. Lateral toes nearly equal. —India, Australia, Africa. (Sw.)

Example, Timalia thoracica. ('Pl. Col.,' 76.)

Pteropuschus. (Kittlitz.)

Feet of extraordinary size and toughness; all the anterior toes nearly equally long; claws long, slender, slightly curved. Tail consisting of fourteen feathers, rounded and carried erect. Wings very short. Representing Menura and Orthonyx. —Western tropical America only. (Sw.)

Example, Pteropuschus megapodus (Kittl., pl. 4. 'Zool.,' III, ii., pl. 117.)

Subfamily Oriolinae. Orioles. Bill thrust-like, as long as the head, broad at the base, compressed beyond; the base and gap devoid of bristles. Nostrils naked; aperture large. Wings lengthened. Rump feathers thick. Lateral toes unequal. (Sw.)

Donacobius. (Sw.)

Habit and general structure of Crateropus. Bill lengthened, slender, the outer toe arched from the base; the tip hooked and notched. Nostrils large, naked, membranous; the aperture large, oval, terminal. Wings remarkably short, and rounded. Tail moderate, broad, cuneate. Feet very large and strong. Lateral toes equal; claws slender, acute, slightly notched. (Sw.)

Example, Donacobius vociferans. ('Zool.,' III, ii., pl. 72.)

Sericulus. (Sw.)

Bill rather stout, resembling that of Oriolus. Nostrils naked. Wings moderate; two first quills equally graduated; third nearly as long as the fourth. Tail moderate, even. Feet strong, robust. Tarsus much longer than hind toe; inner alon. Australia. (h.)

Example, Sericusus chryscephalus (Lewin.'s 'Birds of New South Wales,' pl. 1.)

Oriolus. (Linn.)

Bill as long as the head; broad at the base; tip distinctly notched, and somewhat hooked. Nostrils short, nearly naked; aperture lateral, large, and oval. Wings rather lengthened; first quill very short; second not quite so long as the third, which is generally the longest. Tarsus rather short, longer than the hind toe and claw; anterior scales divided.—Old World. (Sw.)

Example, Oriolus Galbula. ('Enl.,' 56.)

Subgenes. (Horsf.)

Bill of Oriolus; but the culmen much raised and considerably arched from the base, rather hooked at the tip. Nostrils partly defended by short plumes, which cover the membrane. Rictus slightly bisected. Wings and tail as in Sericusus. Feet small. Tarsus very short, not longer than the hind toe and claw; anterior and lateral scales entire. Inner toe rather shorter. Rump feathers very thick, and slightly spinous.—India.

Example, Irena Paella. (Horsf., 'Java.' 'Pl. Col.,' 70.)

Dulius. (Vielli.)

—Bill very short, much compressed, but with the culmen elevated and arched. Commissures curved. Nostrils as in Oriolus. —Western Australia; first quill not half so long as the second; third, fourth, and fifth longest; secondaries with the tips notched; tertials lengthened. Tail moderate, slightly forked. Feet as in Oriolus. Claws strong, broad, much curved.—South Africa.

Example, Dulius palmarum. ('Enl.,' 156, f. 2.)

Sphoecotheres. (Vielli.)

Bill rather short, strong, paraking of the structure both
supernumerary, a process now called Kyriazis; after Mr. Kyan, who invented it.

MERVILLE, [Brou.]--Mercury in the name applied to M. Bojanus to a genus of fossil Mammalia, founded on three fossil teeth, according to the authority of the person who sold them to him. Bojanus records one species under the name of Myrhytherium Sarcoporum.

Cuvier (Geol. Foss.) remarks that if these teeth are really fossil, and from Siberia, this would be the first authentic example of such remains belonging to the genus Camelus. He observes that their size, their form (which is longer than it is wide) and the presence of several teeth in the intervals between the columns, leave no doubt as to their generic character. Those of the Giraffe are more square, and with a small point, as in the stag; while those of the Ox have a cylindrical ‘arête,’ or ridge. Cuvier further states that Bojanus, who, very well remarked this general resemblance, has also noticed some differences which have appeared to him sufficient to justify a new name for the animal; but the French zoologist observes that Bojanus proposes this distinction with doubt, and declares his readiness to renounce it, if it should be established that these teeth belonged to a camel, a gigantic sheep, or an antelope (the only genera in fact which want ridges between the columns).

Cuvier thinks that the differences of which Bojanus speaks are owing to the skulls of the Camels examined by the latter, as points of comparison, being the heads of individuals much older than that to which the teeth in question belonged. A Dromedary only a little older, and whose teeth were nearly in the same state of detritus, appeared to Cuvier to present no difference, save that of individuality. He remarks that they are, as Bojanus truly pointed out, the penultimate and antepenultimate molars of the left side of the upper jaw, and that it remains to show in what beds they were found, and to search for other bones of the animal, in order to verify whether they will furnish any specific character. Cuvier concludes by stating that M. Marcel de Serres, professor of mineralogy at Montpellier, had just communicated to him a drawing of a fossil femur from the environs of that city, which resembled much, in the parts of it which were preserved, that of a Camel. [CAMEL, vol. vii., p. 191.]

Notwithstanding Cuvier’s opinion, which is worthy of all respect, there are those who still think that Myrhytherium is a distinct genus. See Bojan, ‘Nov. Act. Acad. Leop. Nat. Curt.,’ vol. viii., 1796.

MERZLIAKOV, ALEXIUS PHEDOROVITCH, a Russian writer, more distinguished as a critic than as a poet, though not without talent in the latter character, was born at Dalmatov, in the province of Perm (where his father was an merchant), in 1774. In his fourteenth year he recommended himself to Catherine II. by an ode on the peace with Sweden, and the empress ordered him to be sent to the university of Moscow, where he was placed under the charge of Kherasov (KHERASOV), and in 1787 was made professor of eloquence and poetry. In 1805 he quit Moscow for the northern capital, where he held a similar professorship in the university. It was at St. Petersburg that, at the suggestion of Prince Galitzin, he commenced a popular course of lectures on literature, which were numerously attended, and obtained for him a high reputation with the public. These lectures, which were held twice a week during the winter at Galitzin’s house, were then a novelty, and were the more interesting to his auditors because the critic discussed at length the merits of the principal Russian poets and prose-writers.

His own productions consist chiefly of translations, among which are Aristotle’s ‘Poetic,’ Virgil’s ‘Eclogues,’ select scenes from the Greek tragedians, Euphorbus’s ‘Theory of Nature,’ and Tasso’s ‘Jerusalem.’ Among his original poems, his shorter lyric pieces and songs are the best, the latter more especially, for they breathe strong national feeling, and have accordingly acquired more than a transient vogue. Merzliakov died in 1826 or 1827.

MESAPUS. (Zoology.)--Mesabucus, a natural order of Polypteral Exkens, consisting of herbaceous and shrubby plants inhabiting various parts of the world, in very dry temperate climates, but especially the Cape of Good Hope, where the species are extremely numerous. They are succulent plants, with an inferior, many-celled, polyperymous ovary, numerous narrow petals, indefinite stamens, and a fruit splitting into regular stellate valves. The common ice-plant of the gardens, Mesembryanthemum crystallinum, so called because its cuticle is elevated in the form of multitudes of crystalline points, is burnt in the Canaries for the sake of its ashes, which the Spaniards import in large quantities for their glass-works under the name of Bartilla Moradora. Another species, the M. modiferum, is used in Egypt for the same purpose, and also in the manufacture of Morocco leather. This and the other species are chiefly found in sandy, desert, arid places, where they flourish in the absence of other vegetation, and afford a grateful food to cattle, which browse upon them. M. emeriscum, according to Burnett, is favorite by an ‘arête’ or small curve, when it becomes narcotic, and is chewed by those people like tobacco. Only four genera seem admirable into the order; the others referred to it under the name of Ficoides chiefly belonging to Tetragonacae; but Mesembryanthemum, one of the admitted genera, alone comprehends more than 300 species.

Mesembryanthemum altissimum.

MESENTERIPODA. [POLYPHRAN MEMBRANACEA.]

Mesentery is the membrane by which the intestines are attached to the posterior wall of the abdomen. It consists of a double layer of fine cellular and adipose tissue, which is attached to the abdominal wall by a comparatively narrow origin, and becoming gradually wider, spreads out like a fan, to be attached to the whole length of the canal of the small intestines. Between its layers the arteries pass to the intestines, and the veins and lacteals return from them.

The other abdominal organs are attached to the walls of that cavity and to each other by layers of membrane similar to the mesentery. Those which belong to the colon are called the meso-colon; those of the rectum the meso-rectum, &c.; while those which connect the stomach with the spleen and liver are named respectively the gastro-splenic and the gastro-hepatic, or lesser omentum.

MESMER. [ANIMAL MAGNETISM.]

MESODEMA, M. Deshayes’s name for a genus of V. N. N. [EPHYT. LAND.]

Mesolabium, an old name for any geometrical conic section or proportion for finding two mean proportionals between two given lines.

Mesole occurs massive and globular or reniform. Structure radiating from a centre, fibrous, foliated. Hardness 3½. Colour white, greyish, or yellowish white. Translucent. Lustre pearly or silky. Specific gravity 2.35 to 2.4. It is found in Sweden and the Faroe Islands.
Anabasis.

Charrse A Pliny, supposed.

In 10.) the name of Antiochius.

In 104.) xxviii.

Pliny,

supposed.

28*00

21

Chron.,

omental.

Benalius.

while

42*2

2

Pliny,

9-6

2

Pliny,

9-6

2

25

the

common

It

11-77

12-70

100-13

100-36

MESOLITE (Needle-stone) occurs crystallized and mass.


Before the blow-pipe it becomes opaque, swells, and often fuses into a colourless glass; with borax it fuses difficulty. It occurs in Iceland, Greenland, Finland, &c.

Analysis by—

SiO₂ | 47·15 | 39·80
Al₂O₃ | 25·9 | 25·50
CaO | 9·8 | 9·87
MgO | 5·4 | 5·40
K₂O | 12·3 | 12·30

100-4 | 99·87

MESOPHYX. M. Radinseque's name for a genus which he proposes to separate from Helice of another.

MESOPOTAMIA (Mesopotamia, called in the Old Test.

Aram-naharaim, that is, 'Amm,' or 'Syria between the two rivers.') the antient name of the country lying between the Tigris and Euphrates, was bounded on the north by Mount Masis (Karajeh Dagh), a branch of Mount Taurus, and on the south by the Median wall and the canals which connected the Tigris and Euphrates, by which it was separated from Babylonia. (Strabo, xv, p. 746, Casabon; Plut., v. 18; Plin., v. 13, vi. 9.) The name of Mesopotamia, which was never employed to designate any political division, did not come into use till after the time of the Macedonian conquest of Asia. The southern part of Mesopotamia Xenophon calls Arabia (Arab., i, 5, § 1); and other writers included it, especially the northern part, under the general name of Syria. (Strabo, p. 737.) It was considered by the Romans a division of Syria. (Mela, i, 11; Pliny, v. 13.) It is included by the Arabs in the present day Al Jezira, 'the island.'

Mesopotamia may be divided into two parts, the physical features of which differ greatly. The northern part, from Masis north of Mount Ararat to a fertile country watered by the Chaburas and the Mygdon, is a productive part, from the neighbourhood of Cireseus to the Median wall, is a flat and desert country, which Xenophon has described in the 'Anabasis.'

The country, he says, 'was a plain as large as that of the lake of Mysis,' though it was slow and full of wormwood (σπούδαιον); whatever other shrubs or reeds contained here had all a sweet aromatic smell, but there was no timber in it. There were all kinds of wild animals in it: the most numerous were wild asses, and not a few ostriches; there were also in it hares and antelopes.' It was inhabited in the time of Pliny and Strabo by predatory tribes of Arabs called Sceniti, who were afterwards known under the name of Saracens. (Strabo, xvi., p. 747; Pliny, vi. 28, xxiii. 5.)

Little is known of the history of Mesopotamia till it became a province of the Persian empire. Cidian-rishttha-thaim, who is mentioned in Judges (iii. 8, 10) as king of Mesopotamia, appears to have been only a petty prince of a district east of the Euphrates. In the time of Hizkiah the different states of Mesopotamia were subject to the Assyrians (2 Kings, xix., 13), and subsequently belonged in succession to the Chaldaean, Persian, and Syro-Macedonian monarchies.

The northern part of Mesopotamia was divided into two parts by the river Aborras or Chaboras (Khabar), called Araxes by Xenophon (Arab., i, 4, § 19), which rises in Mount Masis, and receiving the Mygdonius (al Hualt) on the east, flows into the Euphrates at Cireseus. Of these streams the western was called Osrene, and the eastern Mygdonia.

The chief town of Mygdonia was Naisbas, also called Antiochus Mygdoniaca (Nisbin), situated on the river Mygdon-

nian, in the midst of a fertile plain at the foot of Mount Masis. It was surrounded by three brick walls, and was very strongly fortified. Sapor was repulsed in three separate attacks upon the town, A.D. 328, 340, and 350; but it was ceded to him by treaty in 363. The Zoba of the Old Testament (1 Sam., iv. 4; 2 Sam., viii. 3) is supposed to be the same town as Naisbas, since the Syriac writer frequently mentioned Naisbas under the former name. To the north of Naisbas was Darasa (Darasa), which was conquered by Anaste-

sian i. (a.d. 506), who gave it to the name of Anastasiopolis.

(Procop., Pers., i. 10.) According to Niebuhr, there are considerable ruins both of Naisbas and Darasa.

The chief town of Osrene was Orfa; it was situated in the north-west of the province, nine geographical miles from the Euphrates. This town, which was also called Antiochia and Callirrho (Plin., v. 21), is supposed to be the Ezech ('VNI) of the Old Testament. (Gen. x., 10.) Eledasa suffered greatly by an earthquake in the time of Justinian, who rebuilt a considerable part of the town, and gave it the name of Justinopolis. Orfa was plundered by the army of Timur in 1393; but it soon recovered its former importance. It contains at present about 40,000 inhabitants; and is about three miles in circumference.

At the distance of two days' journey, according to Niebuhr, south-east of the town of Orfa, was the ancient town of Chars (Harran), the Haran (VNI) of the Scriptures, where Abraham's family dwelt after they had left Ur of the Chaldees. (Gen., xi. 31; xii. 5; xxvii. 43; xxviii. 10; xxix. 4.) In the time of Hezekiah, Harran had been conquered by the Assyrians. (2 Kings, xix. 12; Is., xxxvi. 12.) It is mentioned by Ezekiel as a place of commercial importance (xxvi. 23). Harran is memorable in Roman history for the defeat of Crassus. (Dion. Cassius, xxii. 25; Pliny, v. 21; Lucan, i. 104.)

Cireseus (Kerkeis), at the union of the Euphrates and Aborras, was a very antient town: it is called Carcemi-

 Visch, (Φοινίκης) in the Old Testament. (I.e., x. 9; Jer.

xii. 2; Chron., xxxv. 20.) It was strongly fortified by Dioecletian. (Amniam, xxii. 5.) A little to the north of Cireseus, near Thapsacus, was an antient ford across the Euphrates.

MESOTYPE (Natrolite) occurs crystallized and mass.

Primary form a right rhombic prism. Cleavage parallel to the primary faces. Fracture conchoidal, uneven. Scratches calcareous spar. Some crystals become electrical by friction. Colour white, with shades of grey, yellow, and red; colour of streak white. Lustre vitreous. Translucent, but often somewhat opaque. SPECIFIC VARIETIES globular and rectangular. Structure fibrous, diverging. Lustre pearly.

By the blow-pipe fuses with effulition into a spongy enamel. Gelatinizes in nitric acid.

Found in Ireland, Scotland, Iceland, the Faroe Islands, &c., in trap, basaltic, and porphyritic rocks, and also in the cavities of the more antient lavas of Vesuvius.

Analysis of a specimen from Faro by Smithson:

<table>
<thead>
<tr>
<th>Component</th>
<th>Silica</th>
<th>Alumina</th>
<th>Soda</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount</td>
<td>49°0</td>
<td>17°0</td>
<td>9°6</td>
<td>102°6</td>
</tr>
</tbody>
</table>

MESPLUS is a genus of Pomegranate plants, distinguished from Pyrus by the putamen of the carpels being bony, and their points spread open so as to give the fruit a cup-shaped appearance. In this restricted sense it is confined to those fruit-trees which are vulgarly called Medlars, whose astringent fruit does not become soft till it has begun to arrive at that stage of decomposition which is called bleeting. The word Mesplus has however been sometimes employed as a general name for all Pomaceous plants whose fruit has a hard putamen; it was used in this sense by Proclus, whose δετέρα, or έπιστείξη, was either Cnemis tanacetofolia, as Sibthorp believed, because he found that species still called τρακοκοβίς by the modern Greeks, or C. Artica, as Sprengel conjectures; while his μέκριδος, or ζωγράφικα, was the modern Mesplus germanica, or common medlar.

There are only two species of Mesplus proper, the one Mesplus grandifolius, an ornamental tree common in shrubberies; the other M. germanica, a native of the woods.
and wild places of middle and southern Europe, which furnishes all the varieties of Medlar. These are the Large Dutch, the Nottingham or Common, and the Stoneless. The first is preferred from account of its large size, but the Nottingham possesses the finest acridity; the Stoneless is easily distinguished by its small size and the character implied by its name. The trees may be propagated by either grafting or budding upon their own species, or upon the White Thimblewood. By adopting the graft as a stock, the straightest stems can be obtained. The branches of the Medlar naturally assume so tortuous an appearance, that any attempt to produce uniform regularity by pruning would only produce injurious effects. Pruning should be performed only in the spring, and confining it to the top (which is apt to incline all to one side), and a judicious thinning where the branches are overcrowded. It is necessary to observe that the fruit is produced at the extremities of the branches, and therefore in pruning they must not be shortened.

The fruit, when first gathered, is extremely astruse; but this austerity is changed soon after gathering into an agreeable acridity. When in a soft pulpy state, it is fit for use, and, preserved by the tough skin, will continue so for some time; but a sort of mouldiness generally makes it appear and, as soon as it is observed the fruit may be pronounced unfit for use. Dipping the stalk in brine would doubly prove of advantage in preventing the attack of the fruit by the mould.

Mespilus japonica, the Lognat, is now called Eriobotria japonica, Messp. Amelanchier is Amelanchier vulgaris, and M. Cotoneaster is Cotoneaster vulgaris.

MESSALIA, or Medlar, is a well-known name, MARCUS VALERIUS MESSALLA CORVINUS, was born b.c. 59, in the same year as Livy. It would appear from a passage in Cicero's letters that he went to Athens in his fifteenth year, and a separate account of him is given in the life of Antony and Octavianus (Augustus), and was in consequence included in the proscription of the second triumvirate, b.c. 43 (Dion, xvi. 11; App. Civ., iv. 38); but after the battle of Philippi, he contrived to make his escape from the conquerors, and was subsequently advanced by Augustus to offices of great trust and power. He accompanied Augustus in his campaign against Sextus Pompeius, b.c. 36, and on his return to Rome was made augur for the services he had rendered in that war. The military talents of Messala appear to have been highly valued by Augustus; in b.c. 34, he subdued the Salassi and other warlike tribes which inhabited the Alps; and four years afterwards he conquered the Aquitanii, to which victory he devoted some of his own allusions (b.c. 30). In the following year he was sent by Augustus to Egypt and various parts of Asia on important public business; and on his return, b.c. 27, he obtained the honours of a triumph on account of his conquest of Aquitania. He was afterwards appointed prefect of Rome b.c. 26. He died about a.d. 11.

Messala was one of the most celebrated orators of his time; he is frequently mentioned by Quintilian in terms of the highest praise (Inst. Orat., x. 1; compare Hor. Sat. i. 16, 29; Ars Poet., 357); and the author of the dialogue De Oratoribus considers him even superior to Cicero in grace and elegance of expression (c. 18). Messala also appears to have paid attention to the study of language, as Ciceronianus is one of his works that is not only written on separate words, but even on separate letters, (Inst. Orat., i. 7; compare iv. 4.) He was a great patron of literature in general, and appears to have conferred no small benefits on Tibullus, who frequently characterizes the pleasure the poet received from him as much as the subsequent authorship of the other poets of the Augustan age.

MESSENGER, MESSAGERS, KING'S, certain officers employed under the king, who kept readiness to carry despatches both at home and abroad. They are now so often employed as formerly in serving the secretaries' warrants for the apprehension of persons for high treason or other grave offences against the state. Formerly too it was usual for women to act as secretaries, and they were employed at their own houses. A remarkable instance of this practice is detailed in the 'Post-Boy' newspaper of 1713.

*London, Jan. 10. Yesterday morning the Morocco ambassador was taken into the custody of one of her majesty's messengers, by way of reprisal for his master's oncorting and committing to slavery several of her majesty's subjects.' In the same paper, July 14, 1713, we read, 'The emperor of Morocco having released those of his majesty's subjects that had been carried into slavery, Don Bentura de Zar, his ambassador, who was in custody of Mr. Chapman, the messenger, by way of reprisal, was on Saturday last set at liberty.' So that his excellency must have passed six months in the African dungeon.

MESSENGERIA (MESSENGERS), a country of antient Greece, was bounded on the east by Laconia, on the north by Elis and Arcadia, and was surrounded by the sea on the western and southern sides. It was separated from Elis by the mountains of Taygetus; and from Elis and Arcadia by the river Neda and the high land which runs between the bed of the Neda and the sources of the Pamisos. [ARCADIA.] Its area is calculated by Mr. Clinton at 1162 square miles [296]. It is the area of Staffordshire.

Messenia is described by Pausanias as the most fertile province in Peloponnesus (iv. 15, § 3); and Euripides, in a passage quoted by Strabo (vii. 366), speaks of it as a land well-watered, very fertile and beautiful, and possessing a climate neither too cold in winter nor too hot in summer. The western part of Messenia is drained by the river Pamisos, which rises in the mountains between Arcadia and Messenia, and flows southward into the Messenian bay of Koroni; and the country is divided into two distinct parts, which are separated from each other on the east by some high land which stretches from Taygetus to the Pamisos, and on the western side of the river by Mount Ithome. The upper part, which is rich and produces wine, is called Mesenian; and below, which is extremely low, plain, celebrated in ancient times for its great fertility, whence it was frequently called Macuria, or the 'blessed,' is called the 'Cotoneastri'; it consists mainly of a succession of vineyards, the fig, the mulberry, and 'as rich in cultivation as can well be imagined.' (Travel in the Morea, i. 352.) The western part of Messenia is diversified by hills and valleys, but contains no high mountains.

Mesene is a name derived from Mesene, the wife of Polycaon, the first king of the country, who is described as the younger son of Lelex, king of Laconia (iv. 1, § 1). After the lapse of five generations, the sovereignty was said to have passed to the hands of the Nolia. At the time of the Trojan war Messenia appears to have been subject to Menelaus, with the exception of Pylius and probably part of the western coast, which was under the dominion of his son Neleus (v. 33; ii. 6). The Messenian league was restored under the Neleid princes of Pyle; they were said to have derived its name from Messene, the wife of Polycaon, the first king of the country, who is described as the younger son of Lelex, king of Laconia (iv. 1, § 1). After the lapse of five generations, the sovereignty was said to have passed to the hands of the Nolia. At the time of the Trojan war Messenia appears to have been subject to Menelaus, with the exception of Pylius and probably part of the western coast, which was under the dominion of his son Neleus (v. 33; ii. 6). The Messenian league was restored under the Neleid princes of Pyle; they were said to have derived its name from Messene, the wife of Polycaon, the first king of the country, who is described as the younger son of Lelex, king of Laconia (iv. 1, § 1). After the lapse of five generations, the sovereignty was said to have passed to the hands of the Nolia. At the time of the Trojan war Messenia appears to have been subject to Menelaus, with the exception of Pylius and probably part of the western coast, which was under the dominion of his son Neleus (v. 33; ii. 6). The Messenian league was restored under the Neleid princes of Pyle; they were said to have derived its name from Messene, the wife of Polycaon, the first king of the country, who is described as the younger son of Lelex, king of Laconia (iv. 1, § 1). After the lapse of five generations, the sovereignty was said to have passed to the hands of the Nolia. At the time of the Trojan war Messenia appears to have been subject to Menelaus, with the exception of Pylius and probably part of the western coast, which was under the dominion of his son Neleus (v. 33; ii. 6). The Messenian league was restored under the Neleid princes of Pyle; they were said to have derived its name from Messene, the wife of Polycaon, the first king of the country, who is described as the younger son of Lelex, king of Laconia (iv. 1, § 1). After the lapse of five generations, the sovereignty was said to have passed to the hands of the Nolia. At the time of the Trojan war Messenia appears to have been subject to Menelaus, with the exception of Pylius and probably part of the western coast, which was under the dominion of his son Neleus (v. 33; ii. 6). The Messenian league was restored under the Neleid princes of Pyle; they were said to have derived its name from Messene, the wife of Polycaon, the first king of the country, who is described as the younger son of Lelex, king of Laconia (iv. 1, § 1). After the lapse of five generations, the sovereignty was...
MESSIAH, which has retained its name (Messina) to the present day.

The Messenians again revolted in B.C. 464. This war, usually called the third Messenian war, lasted ten years; at the end of which time, the Messenians, who had occupied the strongly fortified mountain of Ithome, surrendered on condition of being allowed to retire from the Peloponnesus. The Athenians, who were not at that time on good terms with Sparta, gladly allowed them to settle at Naupactus, a town at the entrance of the Corinthian gulf, which they had lately taken from the Locri Equi. (Thucy. iv. 24, § 2; Dio. xi. 70.) This place however the Messenians were obliged to quit, when, at the end of the Peloponnesian war, the Spartans became masters of Greece; but after the supremacy of Sparta had been overthrown by the battle of Leuctra, Epaminondas formed the design of restoring the independence of Messenia, and accordingly sent messengers to Italy, Sicily, and all parts of Greece, to invite the long-exiled Messenians to return to their native country. Numbers obeyed the summons; and a council was held at the foot of Ithome, which they called Messene. The independence of the Messenians was guaranteed by the peace concluded a.C. 361; and Messenia continued to remain an independent state till the dissolution of the Achæan confederacy. In 120 B.C. it became subject to the Roman dominion, and the ancient national manners are said to have been retained, and the dialect remained, up to the time of Pausanias, the purest Doric that was spoken in the Peloponnesus (iv. 27, § 2; Müller's Dorians, ii. p. 421, Eng. Tr.).

The city of Pylos was founded by Apollo and Methone, or Methone. The bay of Pylos (Navarino), which is protected from the swell of the sea by the island of Sphacteria (Spachia), is the best harbour in the Peloponnesus. Pylos was always of great importance, and was the chief city of the Lacedaemonians. (Thucyd., iv. 103, 195, xvi. 3.) The proximity of Pylos, and the conditions which were imposed on the Athenians by the Spartans in their war against Strabo, must not be confounded with the fortifications which were erected by the Athenians in the Peloponnesian war at the northern entrance of the bay, on the spot called Coryphaium by the Lacedaemonians. (Thucyd., iv. 103, 195, xvi. 3.)

The city of Messene, as Asine, was Asine (Paus., iv. 24, § 7), originally inhabited by the Dryopians: following the coast, we come to Colonides, forty stadia north of Asine; and afterwards to Ape, which was called Coree after the restoration of the Messenians. At the head of this bay was founded by Phæra. Phæra, or Phara, which was annexed to Laconica by Augustus (Paus., iv. 30, § 2); and on the eastern coast of the gulf were Abia, which is mentioned by Homer, according to Pausanias (iv. 30, § 1), under the name of Iris, and Leuctra, on the top of which is the town of Leucra in Ithome. (Strabo, p. 361; compare Tac., Ann., iv. 43.) It is difficult to determine the boundaries of Laconica and Messenia, as they differed at various times. Müller makes the river Neda, near Phæra, the ancient frontier line (Dorians, ii. p. 460); but in the time of Pausanias, the boundary was a woody hollow called Charrius, twenty stadia south of Abia (iv. 30, § 1). Strabo blames Euripides for making the river Pamisus the boundary (p. 366); but perhaps Euripides referred to the river of the same name, which Strabo himself tells us was the exit of Leuctra (p. 361).

The only town inland of any importance was Messene, situated, as already mentioned, at the foot of Mount Ithome, on the summit of which was the citadel. Strabo speaks of this as the seat of religious festivals, and in Peloponnesus (p. 361); and the account of Pausanias, who praises the strong fortifications of the town, is confirmed by the solid and beautiful masonry which remains to this day.

MESSIAH (MESSÍA) is a Hebrew word, of the same significance as the Greek Χριστός (Christ) anointed. In the Greek manuscripts it is used to designate any person who was consecrated to the service of God in some sacred office. Thus the Jewish priests, prophets, and kings are called οἰκονομοι (Messian), or the anointed of God. From this general meaning the word has passed into a particular use, referring to the illustrious personage whom the ancient Jews expected, and whom their descendants still expect, to confer some blessings on their nation and the world. Several persons are found in the sense twice in the Old Testament, in Psalms ii. 2, and in Daniel ix. 25, 26.

The expectation of the Messiah, first excited by the promise given to Eve after the fall of man (Genesis, iii. 15), may be traced from the exclamation of Eve at the birth of Cain, 'I have gotten another son of the hand of Jehovah,' or 'a man of Jehovah' (Gen., iv. 1), down through all the patriarchal history, the Mosaic law, and the whole series of the Jewish prophets; and it is very generally admitted that remnants of this early belief upon this subject are plainly seen in the religion and traditions of the Jewish people.

The belief of the ancient Jews respecting the person and office of the Messiah is of course derived from the passages of the Old Testament which are understood as predictions concerning him. An elaborate examination of all such passages occupies the 4th chapter on the 2nd book of Dr. Smith's Scriptural Testimony to the Messiah, and the following is his summary of the results of the inquiry (ibid., ch. v). From these sources we have learned, that the Messiah was to be a real and proper human being (Genesis, iii. 15; Isaiah, lxxii. 19, 22; Psalms, lxxiv., 19, 22); in a peculiar sense the offspring of the woman (Genesis, iii. 15); the perfectly faithful and devoted servant of God (Isa., xlii., i., xiii.); the king, in a sense which comprehends his kingly office in heaven and earth, over all others, of divine authorship and power (Ruth, iv. 14, 17; see David); the servant of Jehovah, taught, and inspired with the fulness of divine gifts and qualifications (Isa., ii., 2); the great and universal lawyer, who should be the author and promulgiator of a new, holy, and holy government, the moral principles, characters, and actions of men (Deuteronomy, xxxiii. 8); the prince, after a new and most exalted model (Psalm, cx., 4); the avenger of the wickest counselors (Isa., ix. 6); the pacificator and reconciler of rebellious men to God, and of men among themselves (Isa., lx., 1); the sceptre, which should not depart from Jesus of Nazareth, and that his beneficent reign should be holy and spiritual in its nature, and in its duration everlasting (Genesis, xlxi., 10; 2 Samuel, xxxii., 1-7; Psalms, lii., xiv., xxxii., xxix., 1; Isa., xi. 5; Daniel, viii., 13, 14). The testimony of heaven likewise describes him as entitled to the appellation of Wonderful (Isa., ix., 5); since he should be, in a sense peculiar to himself, the Son of God (Psalm, vi., 7; Isaiah, ix., 6); as existing and acting during the patriarchal and the Jewish ages, and even before Abraham (Isa., xi., 1-9); as the Deliverer, who should destroy the dragon (Isa., lx., 7); and as the one who should be the salvation and inheritance of all nations (Isa., lviii., 7-9; Psalms, ixxiv., 34; 118, 12-29). Therefore the Messiah is the Christ, the Promised Prophet, the Saviour of the world, and the King of Nations. He is the only person who possesses these divine attributes, and who is called the Son of God in the New Testament as well as in the Old Testament; and the reference of the passages in the New Testament to the Messiah is not only consistent, but is positive and evident. See also Hengstenberg's Christologie des Alten Testamentes.

The expectations of the Messiah among the Jews in the period between the fall of Jerusalem and the return of the captives, as indicated by the Targums, the Apocrypha, the Book of Enoch, and the writings of Philo and Josephus, were confused and often inconsistent. Respecting the doctrines of the Targums on the Memra of Jah, or Word of God, and of Philo on the Logos, see Locum, i.
the Apocrypha the word Messiah or Christ never once occurs, and there are no passages which can be said with any certainty to refer to the Messiah, unless perhaps one in Ecclesiasticus, li. 10, 'I called upon the Lord, the Father of my Lord.' In the Book of Enoch, which was written by a Jew about a.c. 30, we have an account of a vision (evidently imitated from Daniel, vii. 9-14), in which the 'Son of Man' is associated with the 'Antient of Days,' and is described as a person 'to whom righteousness belongeth,' 'who will reveal all the treasures of which this is hidden,' who 'existed and whose name was called upon in the presence of the Lord of the Spirits before the world was created and who will be a support to the righteous and holy' and 'the light of the nations,' before whom 'all who dwell upon the earth will fall down and worship,' who is to be a preserver and ruler, and superior to the kings of the earth, whom he will overthrow 'because they have denied the Lord of Spirits and his Messes.' (Abp. Laurence's Book of Enoch, chaps. xlv., xlvi., lxxxv.) From Josephus we learn nothing on the subject, a fact sufficiently accounted for by his own temporary disposition and the circumstances in which he wrote.

At the time of Christ's advent various expectations respecting the Messiah prevailed among the Jews. It is sufficiently evident from the New Testament, that, while some looked for a human prince who was to deliver them from the Romans, they also longed for a messianic government, with a deity in power who would be freely accessible. The Jews expected a divine teacher who was to confer spiritual blessings not only upon them but also on the Gentiles. (Bertholdi's Christologia Judaearum Jesu Apostolorumque Actae, and Kuinial's Comment. in Lib. Hist. N. T., Prolepsis, xlvii.) It is the opinion of some commentators that the Messiah is John, iv. 42, that the Messiah would be a religious teacher and 'the Saviour of the world,' is worthy of special attention, because the Samaritans received no part of the Scriptures but the Pentateuch, and were cut off from all intercourse with the Jews by national hatred. (Bishop Horsley's Sermons, xxiv.xxiv.)

It is the belief of all Christians that Jesus Christ is the Messiah predicted in the Old Testament. The evidence of this fact is contained in the New Testament, especially in the New Testament itself. In that book we find that the Messiah was a descendant, the place, time, and other circumstances of his birth, the constitution of his person, the history of his life and death, the miracles he performed, and the doctrines he taught agree to the minutest particular with the prophecies respecting the Messiah. (Fuller's Jesus the true Messiah.)

The Jews, having rejected the claims of Jesus Christ, are still looking for the Messiah, whom they almost universally expect to be more marvellous and munificent than any in the temporal blessings. Most of the Rabbinical writers of the middle ages speak of two Messiahs: one, the son of David, the conquering monarch; the other, the suffering Messiah, the son of Joseph, who is to fall in battle, fighting for his countrymen against Gog and Magog, and in this sense to die for them. This opinion may be traced up to the sixth century, and perhaps higher. In these Rabbinical writings, especially in the book Zohar, there are scattered valuable fragments of the more ancient belief of the Jewish people on this subject. (Schottmüller, Horae Hebreae et Talmudice; and Lightfoot's Works.)

In different ages there have appeared numerous false Messiahs (Matt., xxiv. 24). Of these ecclesiastical historians, the most famous and most of whom are still read is Josephus, in whom the reader is referred to J ohannes à Lentis History of False Messiahs.

MESSINA, INTENDENZA, or Province of, comprises the north-east extremity of Sicily, and is bounded on the west by the province of Palermo, on the south by that of Catania, on the north by the Mediterranean, and on the east by the Faro or Straits of Messina, which divide it from Calabria. The greatest length of the province is 60 miles, and its breadth 50 miles. A continuation of the mountains which border the coast on the east, known to the ancients under the various names of Nebrodes, Hermis, Pelorius, &c., covers the greater part of the interior of the province, and terminates at Cape Pelorus. A number of towns, called the rain, spring from both sides of the ridge, but they are nearly dry in summer. On the south-west the province of Messina skirts the base of Aetna, the mass of which belongs to the province of Catania. The province of Messina has no great pains, but it contains many valleys. Its chief products are wine, oil, and fruit of every sort. The towns of the province are—1. Messina. 2. Melazzo, the ancient Mylissus, a seaport town on a promontory of the northern coast facing the Lipari islands, fifteen miles west of Messina, with a castle and 7000 inhabitants, many of whom are employed as sailors and fishermen. It exports much wine from the south-west, and an extraordinary variety of fish and oil, which is made nearer to Messina, is better than that of the district of Melazzo. 3. Patti, on the same coast, fifteen miles south-west of Melazzo, and not far from the ruins of the antient Tyndaris, has several churches and convents, and between 9000 and 5000 inhabitants. 4. Tarquinia, the antient Tauromenium, on the east coast of the island, and at the north-east base of the group of Aetna, an old looking town with about 4000 inhabitants, is built upon a steep cliff towering above the sea; it has an antient theatre and other ruins scattered around. 5. Castello del volo, in oil and wine, has 12,000 inhabitants. 6. Randazzo, at the north base of Aetna, in a very fertile district, has 15,000 inhabitants. The islands of Lipari are included in the administrative province of Messina. [LIPARI ISLANDS.]

MESSINA, the Town of, lies on the north-east coast of Sicily opposite the Calabrian coast, from which it is separated by the channel of the Faro, which is here about four miles wide. The town is built on the east side of the channel, opposite Faro Point, or Cape Pelorum. The town of Messina is built partly on the slope of a steep hill, and partly along the sea-shore at the foot of it. The port of Messina is formed by a strip of sandy beach projecting into the sea at the south-east base of the cap and sweeping round in the form of a semicircle. From the sickle-like form of this strip of land, the town received from its first Greek inhabitants the name of Zankle ('curved' or 'bent'), which was afterwards changed into that of Messina. (Thucyd. vi. 5.) On this north side of the town rises the city of Palermo, which is about two miles in circumference, is one of the best in the Mediterranean. The larger part of the town rises in the form of a hill, but the lower part is formed of buildings, which is a handsome quay lined on one side by a row of fine buildings called La Palazzata; this quay constitutes the fashionable promenade of the town.

The view over the channel, the opposite coast of Calabria with its towns and villages, and the lofty Apennines behind them, and on the other side the low promontory of Faro, with its tower advancing into the sea as if to meet the Italian coast, form a splendid landscape, which is one of the finest in the Mediterranean, a sea whose shores are remarkable for a variety of beautiful scenery. The climate of Messina, though hot in summer, is very healthy, and is not so sultry as that of Palermo or Catania.

Messina has many remarkable buildings; the cathedral, the church of La Candelaria, and that of the Capuchins, some fine paintings. The church of Santa Maria de Grazioso belongs to the Greek clergy, whose protopapas is the spiritual head of the Greek or Epitope colonies settled in Sicily. The royal palace, the archiepiscopal palace, that of the senate, the seminary, the great hospital, the arsenal, the loggia or exchange, the granaries, the royal college, the bank, and the two theatres, are all worthy of notice. The public library, founded by Constantine Lascara, is rich in Greek MSS. Messina is an archbishop's see, has a court of appeal for the province, a commercial tribunal, a royal college called Arethusa Carolina, for the study of law and medicine, and about 60,000 inhabitants. (Serritiera, Saggio Statistico; Nuova Guida dei Viaggiatori in Italia, Milan, 1836.)

Cove of Donnal (Messina). British Museum.

Messina is the most trading town of Sicily; it exports oil, currants and raisins, wine, almonds, lemons, etc.

* The name was also written 'Donnal,' as appears by the coin which accompanies this article.
lamb-skins and kid-skins, liqueurs, and other produce of the island. The spinning and weaving of silk form the principal manufacture, and employ several thousand hands.

(Saggio su i mezzi di moltiplicare le Richezze della Sicilia, by G. de Welz, 4to., Paris, 1822.)

For the history of Messina see HIERON II, and SICILY.

METACENTRE is a point in a floating body, the position of which, relative to that of the centre of gravity, determines the stability or instability of the equilibrium of that body. The equilibrium is stable, if, when the body receives a slight disturbance from its position, it tends, by the combined action of its own weight and the pressure of the fluid in which it is partially immersed, to readjust itself to that position after some oscillations; and the equilibrium is unstable if a slight disturbance will cause the body to overstep and acquire a different position, which will then necessarily be one of stable equilibrium.

The surface of a heavy fluid at rest is a horizontal plane; the portion of this plane which we may imagine to be within the floating body is called the plane of floatation.

When a body floating on a fluid is in equilibrium, the weight of the body applied downwards at its centre of gravity must be equal and exactly opposed to the pressure of the fluid, or which is the same, to a force equal to the weight of the displaced fluid, applied upwards at the centre of gravity of that portion of the fluid; hence in this position the right line joining these two centres is vertical, and is called the line of support.

When the body is slightly disturbed from this position, the plane of floatation evidently alters its position in the floating body; the centre of gravity of the part immersed also changes, and the thrust of the fluid will in general no longer pass through the centre of gravity of the body. The magnitude of this force will however undergo but a very small change, and the body is now subjected to the action of two forces which are equal and contrary, but no longer directly opposite.

If the line and direction of a body may however possibly be such that the thrust of the fluid may, after the disturbance, continue to pass through the centre of gravity of the body. The equilibrium is then said to be indifferent, inasmuch as the disturbance communicated only produces a new position of equilibrium. This happens when a body floats in a fluid of equal density with itself, and in other cases, as in a floating sphere. We may observe that if the disturbance of the equilibrium consisted merely of an elevation or depression of the centre of gravity, small vertical oscillations would be the consequence: the disturbance considered here is supposed such as to tend to turn the body round its centre of gravity, or to make the original line of support deviate in a vertical plane through a very small angle; this line is called the axis of floatation through the centre of gravity.

When the position of the body is thus disturbed, if the line of thrust when produced upwards meets the abovenamed axis, the point of intersection is called the metacentre. The consequent motion of the body will then be the same as if the centre of gravity were fixed, and the thrust applied vertically at the metacentre; hence if the metacentre be above the centre of gravity, the thrust tends to re-adjust the axis, and the equilibrium is stable; if below, that force tends to carry the axis farther from its original place, and the equilibrium is unstable: if the two centres coincide, the equilibrium is indifferent. We give an example:

**Fig. 1.**

A horizontal section passing through G, the centre of gravity of a rectangular beam floating on a fluid of twice its specific gravity, this section being at right angles to the faces of the beam; therefore

\[ GH = \frac{1}{4} AB; \]

and if \( gH = \frac{1}{4} AB, g \) is the centre of gravity of the fluid displaced, \( Gg \) is the line of support, and \( EF \) the plane of floatation.

**Fig. 2.**

Fig. 2 represents the same body turned round its centre of gravity through a small angle \( FG/\theta \). Let \( GF = 1 \);

we must find \( g' \), the centre of gravity of \( sCCH \), and draw \( g'G \) vertical or perpendicular to \( sC \), cutting the axis \( GH \) at \( M \); the metacentre. Let \( mn \), be the centres of gravity of the portions \( E G \), \( FG \), and \( A \) that of the portion \( FC \); then

\[ hg = gm :: \text{solid } EG :: \text{solid } gGF; \]

and

\[ hg' = gn' :: \text{solid } gGF; \]

but the solids \( EG, gGF \), are equal: hence

\[ hg = gm :: gh' = gn'; \]

therefore \( gG = \) parallel to \( mn \), or nearly horizontal, and \( = mm \), solid \( FC \) nearly.

Now \( mn = 2Gm = m, \) and solid \( EGF = \pi \times 4 \times \theta \), solid \( EFCB = 2 \times \theta \); therefore

\[ gg'' = \frac{1}{4} \times \frac{1}{4} \times \theta = \frac{\theta}{4}; \]

but \( \angle g'Gg' = \theta \); therefore \( gG = \frac{\theta}{6} = \frac{\theta}{6}; \)

hence the equilibrium is stable. If the equilibrium were still, the times of the oscillations would be found by supposing the thrust applied at \( O \), the point \( G \) remaining fixed.

**METAGALLIC ACID** is prepared by the partial decomposition of gallic acid by quickly heating it up to about 480°. Carbonic acid and water are formed and separated, and a black, shining, tasteless compound is left, which is not dissolved by water, but is easily taken up by the alkaline ammonia, potash, and soda in solution. It also decomposes the solutions of the alkaline carbonates, expelling the carbonic acid. Metallate of potash gives insoluble precipitates with the salts of barytes and strontius, and also with many metallic salts.

It is composed of:

<table>
<thead>
<tr>
<th>Equivalent</th>
<th>399</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three equivalents of hydrogen</td>
<td>3</td>
</tr>
<tr>
<td>Twelve equivalents of carbon</td>
<td>24</td>
</tr>
<tr>
<td>Three equivalents of oxygen</td>
<td>24</td>
</tr>
</tbody>
</table>

**METALLURGY** is the art of separating metals from their ores. The processes vary for every metal, and are described under each.

**METALS.** The metals form a numerous and highly important class of simple or elementary bodies. Different opinions are entertained as to their number, which arises from the circumstance that a few substances are regarded as metallic in their nature by some chemists, while by others their claim to this title is either doubted or denied; thus by Berzelius a substance which he discovered and called selecium is regarded as a metal, but it is not so ranked by any English chemist; again, the base of silice is by some classed as a metal, and by them termed nilantium; whereas many consider it as more nearly allied in nature to boron, and call it silicon.

We shall consider neither of these bodies as metals. Independently of them, the metals, including those which have been longest known, as well as some whose claims are even yet somewhat doubtful, amount to forty-two; they are, given alphabetically, as follows:—aluminium, antimony, arsenic, barium, bismuth, cadmium, calcium, cerium, chromium, cobalt, columbium, copper, glucinium, gold, iridium, iron, lanthanum, lead, lithium, magnesium, manganese, mercury, molybden, nickel, sodium, palladium, platinum, potassium, rhodium, silver, sodium, strontium, tellurium,
The ductility and malleability of metals are in general considerably increased by heat, but only to a certain extent. There are some metals which are malleable only between two very near degrees of temperature: such, for example, is the case with zinc.

The degree of tenacity of metals is indicated by the powers of the wires in supporting a given weight. The following weights are capable of being sustained by wires of the annexed metals about 8'440 of a line in diameter:

<table>
<thead>
<tr>
<th>Metal</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>549'250</td>
</tr>
<tr>
<td>Copper</td>
<td>302'278</td>
</tr>
<tr>
<td>Platinum</td>
<td>274'290</td>
</tr>
<tr>
<td>Silver</td>
<td>187'137</td>
</tr>
<tr>
<td>Gold</td>
<td>130'753</td>
</tr>
<tr>
<td>Zinc</td>
<td>109'540</td>
</tr>
<tr>
<td>Tin</td>
<td>34'630</td>
</tr>
<tr>
<td>Lead</td>
<td>67'621</td>
</tr>
</tbody>
</table>

There are only a few metals which are very hard when they are pure. The following table exhibits some of them arranged according to the degree in which they possess this property, according to Professor Brande:

<table>
<thead>
<tr>
<th>Metal</th>
<th>Hardness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium</td>
<td>Silver</td>
</tr>
<tr>
<td>Rhodium</td>
<td>Bismuth</td>
</tr>
<tr>
<td>Tungsten</td>
<td>Gold</td>
</tr>
<tr>
<td>Palladium</td>
<td>Zinc</td>
</tr>
<tr>
<td>Manganese</td>
<td>Antimony</td>
</tr>
<tr>
<td>Iron</td>
<td>Cobalt</td>
</tr>
<tr>
<td>Nickel</td>
<td>Tin</td>
</tr>
<tr>
<td>Platinum</td>
<td>Arsenic</td>
</tr>
<tr>
<td>Copper</td>
<td>Lead</td>
</tr>
<tr>
<td>Gold</td>
<td>Bismuth</td>
</tr>
<tr>
<td>Silver</td>
<td>Scratched by glass.</td>
</tr>
<tr>
<td>Tellurium</td>
<td>Bismuth</td>
</tr>
<tr>
<td>Cadmium</td>
<td>Arsenic</td>
</tr>
<tr>
<td>Tin</td>
<td>Scratched by the nail.</td>
</tr>
<tr>
<td>Lead</td>
<td>Soft as wax.</td>
</tr>
<tr>
<td>Mercury</td>
<td>Liquid</td>
</tr>
</tbody>
</table>

The elasticity and sonorosity of metals are generally associated with their degree of hardness. There are not however any metals which are by themselves either very elastic or sonorous; but there are alloys which possess these properties in a high degree, as for example those of copper and tin.

The structure of metals is sometimes lamellar, sometimes granular, and frequently crystalline: indeed, some of them, and more especially copper, occur crystallized in the form of the cube and its varieties. Bismuth is a metal which may be artificially crystallized in cubes with great facility.

As to the action of the imponderable bodies upon the metals, it must be premised that no particular effect has been attributed to the agency of light.

The metals are good conductors of heat; they differ however greatly in the celerity with which it pervades them. According to M. Desprets, assuming the conducting power of gold as a standard, that of the undermentioned metals is as follows:

<table>
<thead>
<tr>
<th>Metal</th>
<th>Capacity for Heat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>10,000</td>
</tr>
<tr>
<td>Silver</td>
<td>8,730</td>
</tr>
<tr>
<td>Platinum</td>
<td>3,638</td>
</tr>
<tr>
<td>Tin</td>
<td>3,039</td>
</tr>
<tr>
<td>Copper</td>
<td>1,796</td>
</tr>
</tbody>
</table>

*This statement of coloumns is taken from Berthelot, 'Traité des Matériaux par le Vapeur chaîne,' in M. 9, p. 957. It will perhaps appear on examination that possibly any two columns agree precisely as to the colours of metals.
Volatility.—Metals also differ in this respect. Some metals are volatilized at moderate degrees of heat; among these are mercury, cadmium, arsenic, tellurium, zinc, potassium, and sodium; but there are others which may be exposed to the most intense heat of a wind furnace without being at all volatility.

Electricity.—Bequerel has given the following table of the relative conducting powers of the metals for electricity, the wires of the several metals being of equal diameter:

- Copper 100
- Iron 15:80
- Gold 77:50
- Silver 73:60
- Zinc 29:50
- Platinum 16:40

Accounting for Pouillet, each of the following metals is positive with relation to that which follows it:—zinc, lead, tin, iron, antimony, bismuth, copper, mercury, silver, gold, tellurium, palladium, and platinum.

Magnetism.—There are two metals only which are capable of being rendered permanently magnetic, namely, iron and nickel; the former of these only is met with possessing this property in nature; it is an oxide of iron, and commonly called the lodestone. Most of the metals combine with each other and form compounds differing very materially in properties from their constituent metals. [ALLOYS.]

Oxygen and Metals.—All metals unite with oxygen, but with different degrees of facility and affinity; most of them combine with more than one proportion of oxygen, as of some of them with several proportions. The nature of the compounds formed is extremely various; thus some metals form with oxygen comparatively inert compounds or mere oxides, such as iron and zinc; others, such as potassium and sodium, when oxidized become alkalies; while arsenic and chromium form acids with this element. It has been already observed that some metals unite with several proportions of oxygen, and these may be mere oxides, as in the case of iron; or oxide and acid, as occurs with manganese; but there is no case of any metal forming a metallic and an alkali with different proportions of oxygen, or an acid and an alkali under the same circumstances.

Acids and Metals.—No permanent compound of this kind is known.

Hydrogen and Metals do not readily combine; there are only two remarkable compounds; these result from the union of hydrogen with arsenic and with tellurium.

Chlorine and Metals combine with great facility, and the compounds are extremely important; every metal is considerably susceptible of this combination; chlorine possesses the remarkable property of forming in general volatile compounds with the metals.

Bromine, sulphur, iodine, and phosphorus combine with most of the metals; for an account of their properties, as well as those which the metals form with the preceding elements, see each particular metal. The action of the air, of water, and the acids, upon the metals, is extremely various, and depends greatly upon their respective affinity for oxygen; few of them are oxidized in dry air, but many of them tarnish and some oxidize readily in it when moist, of which iron is an example. Some metals, as potassium, sodium, and manganese, decompose water even at common temperatures, combining with its oxygen and evolving the hydrogen; others, as iron and zinc, require to be strongly heated, or the presence of an acid, to effect this decomposition.

Although most metals are dissolved by acids, yet platinum and gold are exceptions to it; these and some others requiring chlorine and arsenic, in the nascent state called arsenic regia. Few metals however are acted upon by acids without the presence of water, and in some instances the water, in others the acid, and often both, suffer decomposition, and it is to be observed that iron dissolves in acid unless it be either previously oxidized or acquire oxygen from the mixture of acid or water in which the solution takes place: the salts formed are in many cases of the highest importance in chemical investigations, in the chemical arts, and in medicine.

METAMORPHOSIS OF ORGANS, in the Vegetable Kingdom, consists in an adaptation of one and the same organ to several different purposes; connected with which are changes in form, size, colour, and other particulars. The plan upon which the development of plants takes place, notwithstanding the infinite variety observable in the vegetable kingdom, is extremely simple, and is executed by
modifications of one kind of elementary tissue, and one kind of external organ. In the beginning, that is to say, in its embryonic state, a plant is only a mass of spheroidal cellular tissue possessing vitality. But as soon as it is excited into growth, some of the cells lengthen and become woody tissue; others lengthen and generate an elastic spiral thread in the inside, acquiring the form and property of spiral vessels, while numerous other changes of a similar nature are produced; to each of which variations peculiar properties are assigned. The conveyance of water and air, the distribution of the plant in all directions, the conveyance of air, the strengthening of certain parts, the defence of others, and so on. In like manner a plant in the beginning consists of nothing but an axis of growth composed of fibres, of cellular tissue, of a pistil and a stamens, or a stomach, without which it could not live, points upon its surface are expanded into leaves; these organs at particular parts of the system alter their texture, colour, form, and become floral envelopes, or they contract, and organise in their interior a substance called pollen, when they become male organs, or finally, they roll up, and convert themselves into hollow bodies, within which are generated ovules or young seeds.

These circumstances rightly understood, are found to afford the clearest explanation of metamorphosis by which the most marvellous vegetable organisation are produced, and especially of those anomalous or monstrous cases whose occurrence is so common and difficult of explanation in the absence of the light thrown upon them by Morphology, or the theory of vegetable organisation.

This subject originated in the second volume of the tenth edition of the Systema Naturae, published in 1759, in which Linnaeus thus expresses himself:—"Leaves are the creation of the present year, bracts of the second, the calyx of the third, petals of the fourth, and the stamens and pistil of the fifth year, and the stamens and pistil of the same year are succeeded by the pistil. This is apparent from Ortho- globuluma, luxuriant and prolific plants, double flowers, and Carduus.

December, 1760, these propositions were sustained by Linnaeus in a thesis called the "Prolepsis Plantarum." He commences by remarking that 'as soon as leaves have expanded themselves in spring, a bud is observable in the axil of each. This bud swells as the year advances, and in time becomes manifest as composed of little leaves in the axil of the leaves fall off, but the bud remains, and in the succeeding spring swells, disengages itself from its envelopes, and becomes lengthened: when its outer scales have dried up and fallen off, the inner ones are expanded into leaves, which are known by the name of buds. Thus the formation of the branch, and presently each new leaf is found to contain in its bosom a little seedy bud, which in the following season will also be developed as a branch, with other leaves and other buds. New leaves are also adorned with buds, and the bosom of these leaves provided with its little-buds, we naturally inquire—of what do these buds consist? Can it be of rudimentary leaves, each with its buds, the latter of other leaves and buds, and so on to infinity, or at least as far as the extension of the plant is likely to proceed? Nature organizes living beings out of such minute particles, and even from fluids themselves, that the best eye may in vain seek to penetrate far into her mysteries. I shall however endeavour to show that the composition of buds does not extend further than is time than provision for six years; just as, among animals, we find the little Volvox globator containing within the mother its children, grand-children, great-grand-children, and great-great-grand-children in generation.'

The defects of this theory consisted, firstly, in its not accounting for the modifications of the pistil; and, secondly, in the fanciful supposition that the organs of fructification are prepared six years beforehand, and that their peculiar appearance is owing to the time of this development being anticipated by some unknown but ever-acting cause. It was this which probably caused the whole theory to be generally neglected. It was however maintained by Ludwig and others, in particular among whom is much upon the speculation of Linnaeus, by rejecting what was fanciful and supplying to a certain extent an explanation of the origin of the pistil, that his paper in the Novi Commentarii Academia Petropolitanae for 1768 would undoubtedly have been more acceptable to botanists. But as it was introduced into a paper upon the formation of the intestines of animals, it does not appear ever to have attracted attention until it was discovered by Miquel a few years ago.

It is in reality to the celebrated poet Goethe that the honour justly belongs of having brought before the world in a clear and philosophical manner the doctrine of all the parts of a plant being reducible to the axis and its appendages, and consequently of having proved, to use his own words, that vegetables 'develop themselves out of themselves progressively.' By this means he led to the discovery of many a new and beautiful law or arrangement, which exist between one thing and another in different tribes of plants; thus laying the foundation of vegetable comparative anatomy by establishing a principle in harmony with all the laws obeyed by millions of isolated facts.

A perfect plant consists of branches successively produced out of each other from one common stock, and each furnished with exactly the same organs or appendages as its predecessor. When the fructification is produced, an emission takes place in the extremity of the fructifying branch, which is incapable, generally speaking, of further prolongation; but as the branches, before they bore fruit, were repetitions the one of the other, so are the branches bearing fruit and the branches bearing buds. Moreover, each thousand fertile branches from the same tree are compared together, they will be found to be formed upon the same uniform plan, and to accord in every essential particular.

Each branch is also, under favourable circumstances, capable of developing itself into a separate individual; a separate individual, budding, grafting, and other horticultural processes.

This being the case, it follows that what is proved of one branch is true of all other branches.

It is known that the elementary organs used by nature in the construction of vegetables are essentially the same; that the plan upon which these organs are combined, however various their modifications, is also uniform; that the fluids all move, the secretions all take place, the functions are all regulated upon one and the same plan; in short, that all the variations we see in the vegetable world are governed by a few simple laws, which, however obscurely they may be understood by us, evidently take effect with the most perfect uniformity.

It is not only true that what can be demonstrated of one branch is true of all other branches of a particular individual, but also that whatever can be shown to be the principles that govern the structure of one individual, will also be true of all other individuals. It is particularly remarkable how little is required to form a just estimate may be formed of the nature of the proofs to be adduced with respect to the doctrines of morphology. Whatever can be demonstrated to be true with regard to one individual can also be assumed about all other individuals; whatever is proved with reference to one is proved with respect to all the same organ in all other individuals whatsoever.

Moreover, the fact of one organ being readily transformed into another organ is in itself a strong proof of the identity of their origin and nature; for it does not happen that one part assumes the appearance and functions of another, if they are originally different. Thus, while the functions of the hand may be performed by the feet, as we know they occasionally are in animals, nothing leads the heart to perform the function or assume the appearance of the liver, or the liver of any other organ. This is one of the arguments of Linnaeus.

The organs which are formed by a modification of leaves are the bracts; these bodies are intermediate between the leaves and the calyx. Their nature is extremely various; sometimes they have a greater resemblance to the leaves, and sometimes to the calyx. In some cases, as R. cannae, they are obviously in animals, nothing leads the heart to perform the function or assume the appearance of the liveer, or the liver of any other organ. In this one of the arguments of Linnaeus.
bracts. There is a bud in the axil of every bract of the rose. The common daisy often bears buds in the axils of the bracts of its involucre; in which state it is commonly known in gardens by the name of 'hen and chickens.' In the perennial monopodials and most monstrous small clusters of branches covered with minute armed yellow- ochre leaves resembling bracts is produced in lieu of each flower. Here all the parts of the fructification, instead of remaining at rest to perform their functions, are attempting, but in vain. The bracts are rising with mad haste to prove the error to assume that state from which, for the purpose of perpetuating the species, they had been metamorphosed by nature. Hence it is clear that bracts cannot be essentially distinguished from leaves.

With this general idea of the flower properly so named; it forms what some morphologists call the outer whorl of the fructification, and with it commences a new order of leaves, namely, those of the fructification, said to be distinguished from the leaves of vegetation by their constantly verticillate arrangement, and by the want of buds in their axis. With the leaves of the fructification all power of further increase ceases; the energies of the plant being diverted from increasing the individual to multiplying the species. The general order of the fructification, the cymes, for example, five green leaves like those of the calyx; the same was found in the genus Amm璐, described by Du Petit Thouars; profluous flowers of Geum and Rosa, in which the petals were converted into leaves, are adduced by Linnaeus.

The lines of fructification are occupied by the stamens. These often consist of a single row, equal in number to the divisions of the corolla, with which they are in that case alternate. The exceptions to this in flowers with a definite number of stamens are not numerous; and such as do occur are to be considered as wanting the outer row of stamens, and developing the second row instead. Thus in Primulaceae, in which the stamens are opposite to the petals, and therefore belonging to a second whorl, the one after the other, as in the form of clavate or subulate processes arising from the sides of the limb. These and similar processes, which are far from uncommon in plants, and which are known by various names, such as scales of the orifice of the corolla, glands, nectary, cup, &c., are in most cases metamorphosed stamens. In Narcissus the cup is formed of three stamens of the first row, become petaloid and united at their margins; while the six which form the second and third rows are in their usual state and within the tube. This is shown, the divisions of the corolla are not only uniform in length, but also in the number of their parts, so that one can say where the distinction lies; and in numberless Ericae the resemblance of the bracts and calyx is perfect. The divisions of the calyx are also occasionally gynemorphic, in Scabiosa, for example, it makes its appearance as two, the segments of Caltha palustris was separated from the rest, and furnished with a bud. And Du Petit Thouars speaks of a specimen of Brassocas nupis on which branches were produced within the calyx. A monster of Herrera parvifolia has been seen of the same nature. (Lindley, Introduction to Botany, ed. 2, p. 523.) From this it is apparent that the divisions of the calyx are not only not distinguishable from bracts, but that there is often a strong tendency in the former to assume the ordinary appearance of leaves. There is no doubt, I think, that in some cases of the metamorphosis, in order to complete the proof of the identity of calyx and leaves; this is, the verticillate arrangement of the former. Leaves are either opposite, alternate, or whorled; and these differences depend wholly upon their greater or less degree of development, and not upon any principle of origin. These differences, if considered, will be found to be inserted spirally round a common axis; that is to say, a line drawn from the base of the lower leaf to that of the one above it, thence continued to the tip by, and, if it be elongated into a stem, upon which the leaves are opposite; or, the leaves become approximated by pairs, the spiral is interrupted, and the leaves are opposite; let the interruption be a little greater, and the leaves become entire; and if the interruption be very considerable, what is called a whorl is produced, in which several leaves are placed opposite to each other round a common axis, as in Galium. Now a whorl of this nature is exactly of the nature of a calyx, only it surrounds the axis of the plant, instead of terminating it. As we know that such approximations often take place in the vegetative organs, it is clear we cannot say what is the manner of the vegetative existence in its greatest activity, there is no difficulty in comprehending the possibility of such an approximation constantly existing at the end of the system of growth, which, during their vegetative case, the whole calyx and inner whorls of the fructification do not always retain their verticillate position; on the contrary, they occasionally separate from each other and assume the same position with regard to the stamens. This is particularly striking in a very common permanent monster of Lilium album, known in the gardens by the name of the double white lily. In this plant the whole verticillation of the parts of fructification is destroyed; the axis is not divided into whorls, but is always spirally attached into a stem, on which the white leaves of the calyx are almost imperi- cated; and in double tulips the outer whorl, representing the calyx, frequently loses its verticillate arrangement, and becomes imbricated like the leaves of a stem. The same structure also occurs in the double white Fritillaria meleagris. Hence it cannot be doubted that the calyx consists of leaves in a particular case.

The corolla forms the second line or whorl of the fructification. It consists of several divisions, usually not green, and always alternate with those of the calyx. It is a series of petals, which is the same as the calyx, from which it is sometimes indeed very easy to distinguish, but only then which it is so often impossible to discriminate, that the difference between the calyx and corolla has been one of the most debatable subjects in botany. No limits can be fixed in number, the same is true of Lilium, and several similar plants. In all Lilaceae, Orchidaceae, and Zingiberaceae, the only distinction that can be drawn between the calyx and corolla is, that the one originates within the other; they are alike in figure, colour, texture, and function. Whatever, therefore, has been proved to be true of the calyx is also true of the corolla. There are also cases in which the petals have actually reverted to the state of leaves. In a Campanula Rapunculus, seen by Bentham, the corolla is a series of five green leaves like those of the calyx; the same was found in the genus Amm璐, described by Du Petit Thouars; profluous flowers of Geum and Rosa, in which the petals were converted into leaves, are adduced by Linnaeus.
its place, and the horn, diminished in size, no longer proceeds from the base, as in the genuine petal, but from the apex of this new form. In the last transition the lobes of the anther are more fully formed, and the horn is almost contracted within the dimensions of the connective, retaining however its purple colour: the next stage is the perfect stamen. The conversion of stamens into green leaftlet is a very rare phenomenon. In Planta magnum and Biwervania most perfect instances are known of a conversion of the stamens, with all the other floral organs, into leaves. Thus it appears that the stamens, like the petals, calyx, and bracteoles, are merely modified leaves.

The dish is so frequently absent, and is of so obscure a nature, that few morphologists take it into their consideration. In many plants it consists of a mere annular fleshy ring encompassing the base of the ovary; in others it forms a sort of cup, in which the ovaries are enclosed, as in certain Paponies, and it very frequently makes its appearance in the form of hydropogonous glands or scales: it is almost always between the stamens and pistil. That it is not an organ of a distinct nature may be inferred from its having no exudation, and from the number of floral scales; but if it is not an organ of itself, it must be a modification of something else, and in that view, from its situation, it would be referrible either to the stamens or pistil. It has so little connection with the latter, from which it always separates at maturity, that it is impossible to connect it with the stamens. When the stamens is some greater length, it becomes a stronger relation: it consists of the same cellular substance as the connective of the anthers, is very often of the same colour; whenever it separates into what are called hydropogonous glands or scales, these always alternate with the innermost series of stamens. In Paponies the calyx may in some measure be compared to the inner row of scales which exist between the stamens and pistil of the nearly-related genus Aquilegia. Dunnon has noticed half the disk of a Gentian being stamens; and a variety of stamens may be adduced of an insensible gradation from the stamens to the most rudimentary state of the organ.

The fifth and last series of the fructification is the pistil. The simple pistil, that of the pea for instance, consists of an ovary, bearing its ovules on one side in two parallel continuous rows, and at its upper extremity tapering into a style, which terminates in a stigma. If this organ be further examined, it will be found that there is a suture running down each edge from the style to the base: it will be also seen that the ovary is attached to another suture, and that the style is an elongation of the other: further, it will be perceived that the two sides of the ovary are traversed by veins emanating from the suture that terminates in the style. That style is a vein of the same nature and direction towards the suture which bears the ovules. Now if, when the pod of the pea is half grown, it be laid open through the latter suture, all these circumstances will at that time be distinctly visible; and if it then be compared with one of the leaves of the plant, it will be apparent that the suture that bears ovules answers to the two edges of the leaf, the suture without ovules to the midrib, and the style to the nuero. Hence it might, without further evidence, be suspected that the ovary is an alteration of the leaf; but if the inquiry be carried further in other plants, this suspicion becomes converted into certainty. In the first place, the suture without ovules, which has been said to be the midrib, is always external with respect to the axis of fructification, as would be the case with the midrib of a leaf folded up and terminating the fructification. In the next place, nothing is more common than to find the pistil converted either into petals or into leaves. Its change into petals is to be found in numerous double flowers, as for example Ranunculus ficaria, and in the double flowers, ranunculuses, saxifrages, and others. These however only show its tendency to revert to petals as the representatives of leaves. The cases of its reverting to other organs are much more instructive. In the double Ulex hedericus the calyx is extremely like one of the segments of the calyx; its ovuliferous suture is not closed; in the room of ovules it sometimes bears little yellow processes like miniature petals, and its back corresponds to what would be the back of the calyx; no style or stigma is visible; sometimes two of these metamorphosed ovaries are present: in that case the stigmas which should bear over them are opposite to each other, just as the two segments of two opposite leaves would be. In Kerria Japonica, which is only known in our gardens in a double state, the ovaries are uniformly little miniature leavels, with serrated margins corresponding to the ovuliferous suture of the ovary, and the stigmas are elongated but very rarefying the style; thus there is a occupied by other smaller leaves. Nothing is more common among roses than to find the ovaries converted into perfect leaves; in such cases the margins uniformly occupy the place of the stigmas; which is not the case with the sterile suture. But the most instructive and satisfactory proof of the pistil being merely a modified leaf is to be found in the common double cherry of the gardens. In this plant the place of the ovary is usually occupied by a leaf altogether similar to those of the branch; its smaller: it is folded together; its margins are serrated, and, in consequence of the folder, placed so as to touch each other; and they occupy the place of the ovuliferous leaf of a normal flower, the pistil. The origin of this leaf is to the station of the sterile suture of the ovary, and is not only lengthened into a process representing a style, but is actually terminated by a stigma. There is thus a greater identity of function between the pistil and the other series of organs than there is between the stamen and style. The pistil is seldom indeed found converted into stamens; but it often takes upon itself the form of petals, as has been shown above; and although cases are very rare of petals bearing pollen, yet several instances are known of ovaries represented by petals. This occurs continually in Sempervivum tectorum.

It appears then that there is not only a continuous unruptured passage from the leaves to the bracts, from bracts to calyx, from calyx to corolla, from corolla to stamens, and from stamens to ovary, in which the origin of all these organs might have been referred to the leaves, but that there is also a continual tendency on the part of every one of them to revert to the form of a leaf. The possibility of a reversion from the simplest form of appearance from its simple form. At section 76 of Die Metamorphose der Pflanzen von Goethe, are the following remarkable words:—'Keeping in view the observations that have now been made, there will be no difficulty in dissolving away this insensible membranous structure of that part and its peculiar combinations. Thus, the pod is a leaf which is folded up and grown together at its edges, and the capsule consists of several leaves grown together; and the compound fruit is composed of several leaves grown together in the same manner.' As to the origin of all these structures,统一 probably of much importance, the capsule of Nigella orientalis consists of pods assembled round a centre, and partially united; in Nigella damascena their union is complete.

As it may thus be proved that all the parts of a flower are merely modified leaves, the following propositions may be stated to constitute the basis of morphology:—

'Every flower, with its peduncle and bracteoles, being the development of a flower-bud, and flower-buds being altogether analogous to leaf-buds, it follows as a corollary, that every flower, with its peduncle and bracteoles, is a metamorphosed branch.'

'And further, the flowers being abortive branches, whatever the laws are of the arrangement of branches with respect to each other, the same will be the laws of the arrangement of flowers with respect to each other.'

'In consequence of a flower and its peduncle being a branch, and a bracteole being a division of a bracteole, metamorphosed leaves which constitute bracteal, floral envelopes, and sexual characters, are subject to exactly the same laws of arrangement as regularly formed leaves.' (Lindley's Outline of the Forest Principles of Botany, edit. 2.)

'There is no other instance in which the structure inconsistent with the propositions must be vicious.

The reader who would occupy himself further with this curious subject, may consult Martius's edition of his Oeuvres d'Histoire Naturelle de Goethe, Paris, 1857.'

Engelmann has moreover (De Anthophyl Pedromus) attempted to classify the principal formations from normal structure, and has collected a very considerable number of cases under the following heads:

1. Retrgrade metamorphosis (Regresstion), when organs assume the state of some of those on the outside of them, as when a tapetum invades the spiral scales or stamens, stamens to petals or sepalas, sepalas to ordinary leaves, irregular structure to regular, and the like.

2. Follicial metamorphosis (Virescentia), when all the parts of a flower assume more or less completely the state of the same sex; the new system of ovaries is, however, usually cohered as separated, as the carpels of a syncarpous pistillum, the filaments of monodelphous stamens, the petals of a monopetalous corolla, and so on.

3. Viviparousness (Draiphysis), when the axis is not only elongated, but continues to grow and form new parts, as in those instances where one flower grows from within another. And, finally, 4. Prolixity of flowers (Apostasia), in which the whole of the flowers are broken up by the extension of the axis.

METAPHOR (μορφη, literally 'a transference'), a figure of speech which renders the subject of discourse striking, by the aid of expressions primarily referring to other objects. A common kind of metaphor is that called personification, in which a character is ascribed to a thing, as if the thing were endowed with life, and even with feeling, reason, &c., as 'the fields do laugh and sing,'—'stern winter.' If this kind of metaphor spiritualises the corporeal, another kind, on the contrary, embodies the spiritual in the corporeal, as 'in the bound, and 'moon,' 'gold,' and 'sun,' are connected merely on account of their obvious similarity of colour and brightness.

The origin of the first two kinds of metaphor is not so apparent, for though they likewise express a similarity, yet the similarity is not of the objects, but of the subject of discourse. The chief means by which the mind is interested in the beholder is the words already formed, is sufficient to explain the use of these metaphors generally. But still the fact that such and such bodily attributes are universally predicated of such and such spiritual objects alone, may still furnish matter for consideration to the curious mind.

METAPHYSICS, a name originally applied to those books of Aristotle which followed his 'Physics,' and which has editors called 'the books after the Sciences' (poëd re dolore philosophi). In modern times the word has been generally applied, and seems to assume quite a distinct meaning as employed by different authors. With the Germans, metaphysics is a science purely speculative, which soars beyond the bounds of experience. The objects of this science are supereminent ideas, usually beyond the reach of human knowledge, the difficulty of defining the word lies in the circumstance that the very knowledge of the ideas sought requires some proficiency in the study. Hence to one altogether unacquainted with speculative philosophy it is almost impossible to explain the meaning of the word 'metaphysics' as used in this sense. The very possibility of a science beyond experience has been denied by a great body of men, many works called metaphysical should rather be termed inquiries into the possibility of metaphysics. Thus Kant's celebrated work, the Critik der reinen Vernunft, is a mere speculation of the possibility of a transcendent science of things beyond experience, which terminates with the denial of such possibility, and hence some modern philosophers have considered Kant as no metaphysician, but as a critic of the mental faculties, whose labours were to be the precursors of a new science. On the other hand, a work like Spinoza's 'Ethics' is purely metaphysical. He assumed the possibility of his science, and, proceeding from a number of axioms, speculates accordingy. Those who deny the possibility of metaphysics deny even the right to assume any axioms as applicable to a sphere beyond experience: and those who did assume them, as Spinoza, Leibnitz, and Wolff, were called by the Kantians dogmatists, in opposition to their own appellation of critics. The great point to be established prior to the speculative investigation is the identity, or at least the necessary concurrence, of body and spirit. This once established, speculative inquiry may proceed, as the results of logical investigation must in such a case, of course, concern with the nature of being itself: but the axioms always hold good, in the metaphysical discussion of identity or concurrence, while on the other hand different theories have been adopted to prove them, such as those of harmony between body and spirit,—of the non-being of body altogether, except as an affection of spirit,—of an absolute identity of essence, and 

This in England, the word metaphysics is usually applied to denote the philosophy of mind, as distinguished from that of matter. This science treats of the association of ideas, memory, and various phenomena of mind; and as it consists merely in collecting facts and making inductions like any other experimental science, its possibility is no more questionable than that of chemistry or electricity. However, Locke's Essay on the Human Understanding, as a denial of any source of knowledge other than experience, may be put at the side of Kant's 'Critik,' as containing inquiries of a similar nature, though the results be different; Berkeley's 'Idealism' may be compared with the 'Wissenschaftslehre' of Fichte, and the 'History of the Present' of Reid with the views of Jacobi. The philosophy of mind or experimental science has been chiefly treated by the modern Scotch philosophers.

METASTASIO, PIETRO, was born at Rome, on the 6th of January, 1698. His father, one of the last nobles of Assisi, afterwards a soldier, then an amanuensis, and finally a small pastrycook at Rome, was enabled, by the profits of his trade, to place his son at a little grammar-school, where he soon displayed that talent for poetry which so highly distinguished him in after-life. Before he was ten years old, says his biographer, Dr Burney, he could make verses on any subject, and it was no unusual sight to see his father's porch surrounded in the evening, after school hours, by groups listening to the poetcy of a child, child, much to the surprise of his pupils. He was so highly distinguished in his profession, that the critic Gravina happened to pass by, and was forcibly struck by the extraordinary talent displayed by the youthful improvisatore. He offered the young poet money, which was refused in a manner so firm, yet so polite, that the impression of his mind was at once made on the critic, who immediately formed the resolution of adopting him. The father, Felice Traspari, willingly consented, and the next morning Pietro was consigned to the care of his patron, who changed his name to Metastasio, and the son to Metastasio, sometimes changing the name, a term expressing his situation by adoption.

Gravina immediately determined to educate his charge for the profession of the law, wishing rather that he should become an orator than a poet, well knowing that the former profession leads to great renown, and that he might be to empty fame. He nevertheless caused him to study the
antient poet, in which pursuit his ardour and success were so great, that at the early age of fourteen he produced his tragedy Giustino, written after the death of his protector; and on this occasion, although not allowed but encouraged his devotion to the muses; and when Metastasio had reached his eighteenth year, Gravina accompanied him to Naples, that he might meet and sing with the most eminent imitators of his adoration of the muse. His attention to his study was not what his patron might wish, but his mind was formed for the stage, and he devoted himself to that study. The harmony of his verse, the grace and dignity of his eloquence, and the expressiveness of his countenance, were the topics of all conversations. Still he continued to study the law; and, to secure an opening in the odious order of priesthood, he was made a Minor priest.

Within two years after his arrival at Naples, his patron died, and Metastasio mourned his loss like an affectionate son. By Gravina's will he became sole possessor of all his property, consisting of 15,000 crowns, the library, and a few houses in the kingdom of Naples. But such was the generosity, not to call it by a harsher name, of the poet's disposition, that, in the short space of two years, all that remained to him of this property was the small landed estate. He now applied to the law, and during a whole year was most assiduous in his studies under Paglietti, a mortal enemy to the muses. But at the end of that time he was again attracted to his poetic pursuits, and produced an Epithalamium at the request of the Countess Althau, who likewise prevailed on him to write the drama Endimione. Under the patronage of the viceroys of Naples, he next produced Gil Orti Esperidi (the Garden of the Hesperides), and then Angelica, the plot from Ariosto. The last mentioned was most admired by Signora Bulgarni, better known as the Romanina. She was the first singer of her day, and performed the part of Venus in the favoured opera. Such were her admiration and esteem for the poet, that she advised him to renounce the law, to take up his abode under her husband's roof, and to dedicate the whole of his energies and time to the muses and to friendship. Feeble was the struggle between Paglietti and the Romanina: he acceded to the tempting proposal, and henceforward

"Apollo best Man Theme below."

His Didone Abbandonata was written at the request of his female friend, to whom, it has been surmised, the poet is indebted for some of the finest dramatic incidents. Such was the celebrity of this drama, that it was set by all the great Italian composers of that period, and not only established the author's fame, but brought him a large pecuniary remuneration. In 1727 he accompanied the Romanina to Rome, where he produced his Semiramide, Ezio, Alessandro nell' Indie, Catone in Utica, and the opera so well known by our English version of it, Artaserse. But praise was nearly the whole of the reward he reaped from his labours. His Dominus was disastrous.

In the year 1729 Metastasio received an invitation from the court of Vienna, whither he repaired, and became the successor of Apostolo Zeno, the Imperial laureate. This appointment was rendered more gratifying to him, as it was made on the recommendation of Zeno himself, who had long enjoyed the office, and had written a vast number of lyrical dramas, among which are many of the best that the Italian language can boast. [Zeno.] The stipend assigned to Metastasio was considerable for that time—3000 florins was then a large salary; and other advantages were added. This came rather opportunely, for at Rome he had suffered much from the stenches of his income, and was often indebted to his friend for assistance. To her, when he left Italy, he entrusted his affairs, and promised her a sum for the temporary support of his father, till he could make an arrangement of a permanent kind. His reception by Charles VI. was most gratifying, and promised everything for the future, a promise not disappointed; for in seven years, his succession with his 'inestimable counsellor and friend' amounts almost to an autobiography; but in 1734 he sustained an irreparable loss by her death, who to the last profounded herself unmindful of her attachment by begging him to follow her, after the decease of her husband, the whole of her property, amounting to 25,000 crowns. Metastasio however, guided in this instance, as he was in every other, by the strictest rules of honour, declined to derive any advantage from the will so generously made in his favour, and immediately transferred to the husband all right to the reversionary property. What may have been the nature of the property, it is impossible to say. From Metastasio's letter to the husband on the death of his wife, the sorrow expressed is in a tone of candour which looks as if there had been nothing to conceal on the subject. His letter is rather not how to begin this letter. The tidings are so intolerable to me on many accounts, that I can devise no means to diminish the acuteness of my sufferings; therefore I trust you will not accuse me of want of feeling if I am unable to express the many tender sentiments which I feel towards you. I have hitherto been totally unequal to finding any for myself. At what age the lady died is unknown, but as she was first singer at Genoa in 1715, it is likely that she was much the same age.

Metastasio's mode of life, from his first settling in Vienna till the moment of his death, was that of a poet and man of letters, who devoted his time and thoughts to the muses, to general literature, and to the conversation of persons more or less connected with his profession. In 1733 he produced, among other pieces, Olimpia, which the Italians distinguished as il divino, and his very popular rancia, La Libertà. For the emperor's birth-day in 1734 he wrote the noble opera, so well known in every part of Europe, La Clemenza di Tito, which is in the most approved style of Calzana, but not a vestige of the music remains. The same drama however was in 1790 chosen by Mozart, whose magic notes have assisted in bestowing on it immortality. It is a remarkable fact, that though all the poet's operas were set as soon as they were composed, and even earlier, yet the original music is now known, or, we believe, to be found, except perhaps in the Imperial library of Vienna. He continued supplying the court with lyrical dramas and oratorios, and produced a number of operas, some of which are among the most celebrated pieces of opera, till the year 1747, when the death of the emperor brought on the long and devastating war in Germany, and this led to the closing of the theatre, for which he had so successfully laboured. He now turned his pens in translating into blank verse the Arscotea of Horace, together with one of the Satires and Epistles, and Juvenal's third Satire. He likewise wrote notes on the Greek tragedians, and translated a portion of Aristophanes' Poetic, adding a very learned, luminous, and ingenious commentary, which appeared in print after his decease. But though his dramatic labours for the Imperial city were suspended, he produced in 1744 Antigono for the court of Dresden, and Perseus in the same year. His health however appears now to have suffered from the anxieties occasioned by the long war, and he entertained serious thoughts of hastening back to Rome; but the return of peace operated on him like a charm; it removed the nervous disease which had hung on him, it restored his sight, and his spirits returned, and in 1751 he accompanied the ladies of the Imperial court, by whom it was performed, and the bold sentiments on the duty of sovereigns, which he ventured to put into the mouth of one of characters, do equal honour, Dr. Burney remarks, to his Imperial patron, who could listen to them with pleasure, and to the man who had the courage to preach them.' His last drama was Il Ruggiero, performed in 1771 at Milan, on the marriage of the archduke Ferdinand.

Of Metastasio's seven sacred dramas, or oratorios, La Passione, La Mort d' Abel, and lecoco are best known; but all of them, Calsabigi justly observes, are as perfect as this kind of composition will allow. Of his cantatas, La Primavera, La Libertà, and La Partenza are admired by all. The operas, all are extremely popular, except the occasional short dramatic pieces, sonnets, and other miscellaneous are too numerous to be mentioned here; a cataloguo raisonné of them is given in the work whence we have drawn most of our materials for the foregoing portion of this article. For the period of twenty years, his letters are most interesting and valuable, and his papers were deposited in the church of St. Michael at Vienna. His property, consisting of a well furnished house, carriage, &c., many princely presents, an ample library, and 130,000
Metellus was censor B.C. 102. He took an active part in the civil communions of his time, and was one of the powerful supporters of the aristocratical party. In B.C. 100 he was obliged to go into exile in consequence of opposing the measures of the tribune Saturninus; but on the execution of the latter, Metellus was recalled from exile in the following year.

3. Q. Ceccilius Metellus Pius, son of Numidicus, belonged to the same political party as his father, and supported Sulla in his contest with Marius. Metellus received especial distinction over the latter, and was consuls with him, B.C. 80.

In B.C. 78 Metellus was sent against Sertorius in Spain, where he appears to have remained till the conclusion of the war, in B.C. 72. From the year 76 Pompey was his colleague in the command; and they triumphed together over the end of the war, B.C. 70; (Ep., iv. 5; Plut., Pomp.) Metellus was Pontifex Max.; and on his death, B.C. 63, in the consulship of Cicero, he was succeeded in that dignity by Julius Caesar.

METEMPSYCHOSIS (μετεμψυχώσις), derived from a Grecian practice of the ancients, when they believed that the souls, forms a part of the philosophical or religious belief of many nations. The Hindus believe that the souls of men pass after death into different bodies, either of men or animals, unless an individual has lived a most holy and religious life, in which case his soul retains the divine essence. 'The soul passes from one state to another invested with a subtle frame consisting of elementary particles, the seed or rudiment of a gross body. Departing from which it occupied, it ascends to the moon, where, clothed with an alabaster form, it receives the compensations of its works; and whence it returns to occupy a new body with resulting influence of its former deeds. But he who has attained the true knowledge of God does not pass through the stages of rebirth, but proceeding directly to reunion with the Supreme Being, with whom he is identified, as a river at its confluence with the sea merges therein altogether. His vital faculties and the elements of which his body consists are absorbed completely and absolutely; both name and form, he is immortal without parts or members.' ('Extracts from the Brahma-sūtras, or Aphorisms on the Vedanta doctrine, by Bādārakāya,' translated by Mr. Colebrooke, in Trans. of the Roy. As. Soc., vol. i.)

METEOROLOGY, in its extended sense, embraces all physical causes which affect the state of the atmosphere or are affected by it. Hence it is connected with the phenomena of heat and cold, rain, hail, snow, clouds, wind, storms, aurora borealis, haloes, parhelia, &c. The sense in which Aristole (μετεόρολαγία, i.) uses the term is still more extensive, comprehending, in addition to what is now called meteoros, every affection (φυσικός) common to the air, such as the rise and descent of the barometer, the temperature of the earth, and their affections, as winds and earthquakes, and everything incident to such kinds of motion.

Our first inquiry shall be, what is the nature and what the probable extent of the terrestrial atmosphere? Essential as it is both to animal and vegetable life, to the distribution of heat, and to various modifications of light, the knowledge of its nature and composition is eminently useful. The air, though composed of several elastic fluids, obeys the same laws to which they are individually subject, namely, its elasticity and density as a given temperature.
are proportional to the pressure which it sustains, and for
every degree of the centigrade thermometer under a given
pressure it expands $\frac{1}{273}$ of its volume at the temperature
state. Hence if its density be represented by $\delta$ and its
temperature by $t$ (in centigrade degrees), its elastic force
will be proportional to $(1 + \frac{t}{273}) \delta$ (where $\delta$ represents
the decimal $0.00754$) as well as the pressure sustained.
Lastly, the pressure is equal to the weight of a vertical column
of air having its base in the same horizontal plane, and the
portion of this column in the atmosphere may be considered
as a base, and extending upwards to its extreme limit.

According to Dalton's views, the various constituent
gases constituting the air are not chemically combined by
the law of definite proportions, but only mechanically mixed,
constituting a sort of space, and are affected by the sun's
independent pressures the elevation of the mercury in the
barometric tube: an ingenious theory, which however
appears open to objections from the known laws of the
specific gravities of fluids.

We have seen that heat increases the elastic power of
air, and hence the equilibrium of a mass of air unequally
heated is constantly disturbed. The currents of warm and
cold air change places, the cold air moving to the warm
region, and there, when warmed, repeating the course of the
influence. Thus the atmosphere is a great agent in tending
to equalise the mean temperatures of climates in various latitudes.

Besides, the aerial currents or vehicles for the transfer of clouds, for producing elec-
tric discharges, and the like, are in a large majority of man to promote his industry and extend
his knowledge of the globe which he inhabits.

The atmosphere, considered as a transparent medium,
has also great effects on light by its refractive power, and
the phenomena of aqueous mists and strata.

Thus, when twilight, which mitigates the transition of day
to night, and from the duration of which it is easy for the
astronomer to compute that altitude of the atmosphere at
which it ceases to act sonantly on light, either from its total
absence in some regions, or from the its tendency to freeze to
sixty miles above the level of the sea. Again, by the refrac-
tive power of the atmosphere distant terrestrial objects are
removed to the view when the spherical curvature of the
earth would otherwise have caused their concealment;
various optical illusions, such as, the mirage, the morgana, &c.
are all easily explained from the same refractive power
under peculiar circumstances of temperature. By this
medium sound is conveyed and odours are disseminated; the
clouds which float in it soften the direct glare of the solar
beams, and the optic particles are thrown into the vanes of
the beautiful phenomena of halos, rainbows, false suns, &c.
Its greater specific gravity elevates the balloon, by means of
which the nature of the upper strata of the air may be
ascertained, and the barometric elevation and temperature
observed, which furnish data for calculating the physical
limits of the atmosphere.

With regard to the extent of the atmosphere, we may
consider it under two points of view: first, the extreme
limits which are probably definite, and secondly, the much
smaller upper limits which are more confined.

Any particle of the revolving atmosphere is acted on by
two forces, namely, gravity, which is directed nearly to the
centre of the earth, and the centrifugal force produced by
rotation, which is directed according to the line by which
the particle is actually projected on the earth's surface and
tends directly from that axis. The former force varies
inversely as the square of the distance from the earth's
centre; the latter, directly as its perpendicular distance from
the earth's axis. At any point taken in the external space
therefore, the result of these two forces must be normal to
that surface, in order that its form may be permanent.

At the terrestrial equator the ratio of these two
forces is known; as we ascend in the atmosphere and
the distance of the radius produced, gravity diminishes
and centrifugal force increases, in this instance being
directly opposite: hence it is easy to calculate the distance
of a point in that radius where the two forces are exactly
equal. Beyond that point the centrifugal force predomi-
nates, and there an air current could remain attached to
our atmosphere, revolving with the earth both in its
diurnal and orbital motions.

The above point therefore defines the extreme limit to which
it is possible for our atmosphere to extend, and which is
at a distance of about 25,000 miles from the centre, through
it by no means follows that it must extend so far. Other
data would be necessary to give the actual extent; for
instance, the height of the barometer at the surface of the
sea, and the law of the diminution of temperature in the
upper strata of the air. The figure of the extreme surface
can however be determined as follows: it is that of an oblate
spheroid flattened at the poles, and in which the polar axis is to the equatorial in the ratio of
2 to 3.

As the phenomenon of twilight indicates an extreme de-
near of rarefaction in the atmosphere at an incredible
altitude above the earth's surface, we shall now consider
some of the physical causes which demonstrate that the
actual limits of that fluid are much more contracted than
the extreme possible limits given above.

The term circulation by $p$ is very advantageously, the pressure,
density, and temperature of the air at the surface of the
earth, and by $p'$, $\delta'$, and $t'$, like quantities for a portion
of air at a certain elevation, it follows from the general laws
of gaseous bodies that $p'' = (1 + \beta \delta') \delta'$, where $\beta$ represents
the fraction $\beta$.

Now the pressure measures the elastic force of the air particles: this elasticity cannot become nega-
tive, and the latter, which will happen either because $1 + \beta \delta' = 0$, or $\beta = 0$. This latter
situation would bring us to the consideration of the mathemat-
ical limits above discussed; the former, to the physical limits
depending on the decrease of temperature at high altitudes.

Hence there ceases to be an elastic fluid when $\delta = 1 - \frac{800}{273} = -266^\circ$ centigrade. Now the law of the
decrement of heat in the atmosphere proceeds in a pro-
gression quicker than an arithmetical, and as the plane of
perpetual snow is at a comparatively small altitude in cli-
mates of mean temperature, it is easy to see that from 100 to
200 miles altitude would be sufficient to diminish the temperature to the above number of $266^\circ$ below zero. Even
the extreme limits of the atmosphere may be estimated in all probability, be still too extensive, for it is not necessary that the elasticity
should be totally destroyed: it is sufficient that the repu-
tive power of two contiguous particles of air at that altitude
should be so diminished by the action of the centrifugal
force, that those two forces are equal, it will be the greater
at the lower latitudes. The air can remain attached to the globe, leaving out of con-
sideration the centrifugal force, which at that altitude is
considerable, and which would itself tend to remove those
particles. Hence the limits become still more contracted
by this consideration, and it will not be necessary that the
temperature should be as low as $-266^\circ$.

Some have imagined that planetary atmospheres are due to
the attraction of the masses of the planets on a rare elas-
tic fluid disseminated through space, but this supposition
will not bear investigation, for putting aside the consider-
tation of the extreme cold of the planetary spaces, this hy-
thesis is not corroborated by the dimensions of the atmo-
spheres of the sun and planets, which would then depend on
the masses of the sun itself ($1 + \beta \delta' = 0$), and the sun's
satellites of Jupiter behind their primary would be con-
verted into an annular appearance round his body at the
time of the eclipse of a satellite.

We have seen that the unequal distribution of heat in
the terrestrial atmosphere, consisting in the varying direc-
tions of winds, and consequently the distribution of
climate; but on the other hand, the earth itself, having its
own distribution of heat, resists on the atmosphere and
produces dew, heat, frost, &c. In like manner the sea and the
Polar fields of ice materially affect the general distribution
of heat.

The general causes of the temperature of the globe are
the proper heat of the earth and the restriction of the sun;
their effects however are greatly modified by various local
circumstances, and the radiating power of the soil, together with the con-

The direct hit of the sun being unequally distributed over different parts of the globe is the primary cause of the variation of climate; the effect of its rays is felt to a considerable depth in the sea, but its diurnal action on land is sensible only for a few inches in depth; the annual action however extends throughout the superior stratum of variable temperature above mentioned. The mean temperature of a place is generally estimated by taking the average of the diurnal temperatures during the four seasons of the year, and again taking the average of these four averages. Inasmuch as there is a great diversity of temperature in the same parallel of latitude, we cannot base our judgment on any one element of the general heat of the place, or even on the comparison of the mean temperatures. The construction of a chart of the temperature of the earth from a series of these averages is groundless, as the constitution of the atmosphere is always varying, and the sun's rays effect different degrees of temperature at different times. In the following table is given the average temperature at New York and London for the years 1850-1853, and the annual mean temperature at several places in the world. The mean temperature of the earth is approximately that of the surface of the sun, and the difference in temperature is of the same order of magnitude as it is from the surface of the sun to the earth. The mean temperature at the equator is about 84°F (29°C) by the formula of Mayer and Breasted, and it is supposed to be about 53°F (12°C) in the south, and 77°F (25°C) in the north. The mean temperature of the earth is supposed to be about 59°F (15°C) by Mayer and Breasted, and it is supposed to be about 53°F (12°C) in the south, and 77°F (25°C) in the north. The mean temperature of the earth is supposed to be about 59°F (15°C) by Mayer and Breasted, and it is supposed to be about 53°F (12°C) in the south, and 77°F (25°C) in the north.
The mean temperature in the latitude of 34° in different continents, and at places near the sea, is found to vary but little, thus:

<table>
<thead>
<tr>
<th>Places</th>
<th>Latitude</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cape of Good Hope</td>
<td>33° 51'</td>
<td>68° 6'</td>
</tr>
<tr>
<td>Port Jackson, N. Holland</td>
<td>33° 53'</td>
<td>66° 9'</td>
</tr>
<tr>
<td>City of Buenos Ayres</td>
<td>34° 36'</td>
<td>67° 5'</td>
</tr>
</tbody>
</table>

The sea varies in temperature much less than the air; the region of warmest water extends about 54° on each side of the equator, but farther to the south than to the north, and is on the average greater in the Indian than in the North Pole attributable to the different propagation of heat in the New and Old Worlds above remarked. Dr. Brewster supposes them to be about 80° of lat., and situated in 95° E. and 160° W. long.; the temperature at these points appears to be decidedly below zero of Fahrenheit.

The production of winds in the atmosphere, we have already stated, is mainly attributable to the unequal distribution of heat in the atmosphere. The attractive action of the sun and moon on that fluid, the fluids producing atmosphere, which have been recognised by barometrical observations, could only produce a tropical wind with a velocity of 4 miles per day, which would be evidently insupportable amongst the numerous disturbances arising from temperature; but the accelerative action of the cold polar air produces some well-known winds in the following manner.

On account of the annual accumulation of heat from the solar rays between the tropics, two currents of air from the north and south rush forward to occupy the place of the resulting vacuum. Now our rotation moves from west to east, these currents appear to deflect to the west on account of the increased velocity of the parallels of latitude near the equator, which have greater winds than the arctic parallels, the apparent excess of motion towards the equator is produced, and the north and south descends by the equinocial wind above described by the tropical and even polar circles; the velocities perpendicular to the equator, being nearly equal and contrary, produce no sensible wind, but those parallel to it produce a wind directly blowing, called the 'trade wind,' with this exception, that the northern hemisphere being the warmer, the resultant is a few degrees north of the equator, crossing the Atlantic from Africa to Brazil, and the Pacific from Panama to the Philipino Islands, and the Indian Ocean from Sumatra to Zanzibar. But when the continents stretch into the torrid zone, the local accumulation of heat being great, two opposite periodical winds, known by the name of monsoons, are produced, approaching the north tropics in the summer and blustering the Arabian and Indian seas north-west from April to October, and in the contrary direction during the rest of the year: the reverse occurs south of the equator.

Now as the cold air rushes into the tropical regions, expelling the air, and that locality being left, the latter forms a countercurrent, still possessing equatorial velocity, and produces in both hemispheres exceeding the above latitude a westerly and general breeze, which is felt during three-quarters of the year from Newfoundland to the west of England, and from South America to the Cape of Good Hope. On the same principle the easterly, or rather north-easterly winds originate in the polar currents, and are piercingly cold in general. The great radiation of arid plains produces many local winds, such as the sirocco from Africa to Italy, and the destructive siroco of Arabia, &c., but they do not depend on general atmospheric causes.

The meteors so frequently visible in summer and in frosty weather have not yet received a satisfactory explanation, the law of their origin being the presence of changeable gases in the atmosphere: this undoubtedly is the case in the ignis fatuus, which, as the writer has witnessed, will change the direction of its motion by the slight current of air produced by a person walking towards it; but we are not satisfied with great accuracy in which may occupy the higher regions of the atmosphere.

The astoroids of November, so well described by Sir W. Herschel, have in all probability an origin independent of the sun, and the regularity of their appearance about the 18th of that month, but have not the sense of the objects of curiosity and very general observation, we may hope ere long to learn something more precise of their nature, and to take another opportunity of noticing them more at length.

Among subjects connected with meteorology which are treated in separate articles, we may notice cloud, dew, aerosol, air, barometer, thermometer, hydrometer, mist, &c., to which articles the reader is referred.

Methodism, a very memorable word in the English vocabulary, and the thing signified is also very memorable in the history of the Christian church, and especially of that part of it which consists of inhabitants of the British Isles.

The people of England have been described by foreign writers as being beyond all other nations religiousness, or very strongly devoted to religious business and thoughts and were the object of much attention into this island is one proof of it; but still more is the great encouragement given to the religious orders and the multitude of churches which were erected in the very earliest periods. A few centuries and we have the proof of the great courage which the different orders of friars received, who were a species of Methodist preachers of the middle ages.

Again, when the system of Christian instruction and edification as settled by authority was in complete operation, the high aim of the collecting a body of persons who pressed for something more exciting, greater freedom, greater holiness, or greater labour in the ministers, each distinguished by its own peculiarities, but all exhibiting that part of the national character to which w: have adverted, which did not belong to the orders, or at least failed to the important truths of religion, and earnest in the desire to please God, and make their own calling and election sure.

Each century seems to have had its schism arising in the national character. In the fifth century there was a schism amongst the Apostolical churches by the Church; in the sixteenth, the Gospellers, who, having the court with them brought about the Reformation: in the seventeenth, the Puritans, who were for a short time triumphant, but who were finally reduced to the severest of troublesome conditions of law. In the eighteenth century, the Presbyterians, the Independent, the Baptist, and the Quakers. In the eighteenth century, when not only the Church but the several dissenting bodies were thought by many to have lost much of the spirit of freedom and persecution, and those allowed to proceed unmolested, have produced, without having attempted to overturn the Church, no small change in it, in modifying its ministrations, in calling back attention to the supposed doctrines of its founders, and in restoring at once the system of the Church.

Methodism then designates the great English schism of the eighteenth century differing little in essence from the Puritanism of the century before. In both cases it was the desire of services of a more exciting character than were not found in the established churches. There was the same desire for the Christian religion in England, and the desire of a greater admixture of doctrinal matter in the instruction which was delivered from the pulpit. Evangelicalism is a kind of form of Methodism, but is perhaps sufficiently distinguished from it to be considered on its own account as a change in religious feeling in the nineteenth century. The chief difference between Puritanism and Methodism lies in this that the Puritans had within their body a much larger proportion of persons of rank and opulence, and that they never contended for the attainment of a body of production of an inferior ministry. In the Methodists of the last century were found not many great, not many noble, and the instruments of the propagation of Methodism were, with few exceptions, performed by the lower classes of society, men without learning or attainment, and supposed to be qualified for the work chiefly by possessing qualities which are indeed truly valuable in a Christian teacher, zeal for the promotion of holiness and virtue, and a familiarity with the lewd and ill-natured in the family, in the female portions of it, took it under its patronage, and there were two or three other ladies of rank who attached themselves to the Countess of Huntingdon, and encouraged the labours of the Methodist preachers. In the Puritans, we may regard it as identical with Evangelicalism, obtained the countenance of many persons high in rank. The change is chiefly to be attributed to two persons, the late Mr. Wilberforce and the late Mrs. Hannah More, who were Methodists in one sense of the term, but not in the other and more common sense of it; that is, they continued in the Church pleading for greater strictness of life and greater zeal in the ministry, more energetic preaching of what they regarded the distinguishing doctrines of the gospel, and more serious labour in the church; but not, like Edwards,...
Huntingdon, forming societies and placing pastors over them, who were to be dissenters, and not comprehended in any way within the pale of the Established Church. It is interesting to observe the various forms in which Methodism is presented. We see it in the Church of England in the character of those ministers and congregations which are called Evangelicals; we see it in a large body of dissenters now calling themselves Independent or Congregational; and we see it in respect of various sects which are called the Methodist sects, and which are in fact so many different classes of persons who collectively are called Methodists. There are:—1. the Wesleyan Methodists of the Lady Huntingdon's Connection; 2. the Methodist New Connexion; 3. the Methodists of the New Connection, 4. the Primitive Methodists; 5. the Bible Christians; 6. the Protestant Methodists; 7. the Association Methodists; 8. the Inghamites. There is also a large body of persons, chiefly in Wales, calling themselves Calvinistic Methodists, and who took no part in what is called Lady Huntingdon's Connection.

The year 1739 is considered as the time at which Methodism began. John Wesley, who is universally considered as the founder, was at that time residing at Oxford, being a member of that college under which name he was known, was preparing for the ministry in the Church, where he formed a little association for the consideration of spiritual and religious improvement. The society is said to have been a small one, and to have met in a hired room, and for wearing more of the form of religion than was then usual at Oxford. It is said that these persons very soon got the name of Methodists, arising out of a casual observation in which one of the members, John Collinson, said: 'My new sect of Methodists sprung up,' but to what set of persons in ecclesiastical or other history he referred is not quite settled. The name, it is manifest, is a very absurd one.

The Wesleys were sons of a country clergyman who resided on his living at Epworth in Lincolnshire, a part of the kingdom where at that time the inhabitants were singularly rude and uninformed. It has not been remarked by the writers of the life of Wesley that his father was educated for the ministry in order that he might furnish his sons with a Church early in life. It is not intended in this article to give a biographical notice of the founder of Methodism. This will be given in its more appropriate place. [WESLEY]

Under the word WHITESIDE will also be found a notice of George Whitefield, who was a student at Oxford, and who joined the Wesleys in 1732, and who had a large share in them in laying the foundation of Methodism. It may suffice for the present to say that the Wesleys and Whitefield, instead of seeking the means of consequence on their own part for living, after studying in the university, undertook the wider duty ofrousing their countrymen generally to a higher tone of devotional feeling, and to a regard to the doctrines of the Church, to which there was then, owing in a great measure to the University of Oxford and Cambridge, a great deal of political and church politics, and the dissenters of all denominations originally, and, after them, of Locke, Addison, Burnet, Hoole, Clarke, Whiston, Peirce, and others, a growing indifference: men were beginning to think that the all-in-all in Christianity was the doing justly, loving mercy, and walking humbly, looking for that blessed hope and glorious appearing of our Lord and Saviour Jesus Christ, when every man should receive according to his works. Wesley went forth proclaiming that he came to call men back to old Church of England principles. This was hated by the dissenters by many of the leaders in the journals, and this object (at first, at least) was what he himself considered the chief purpose of his mission. What he meant was original sin, regeneration, the stoning by the blow of God, the influence of the Spirit, justification by faith, freedom of the will, accountability, and eternal reward or suffering; Whitefield added to these the eternal decrees, the extreme doctrines of Calvinism.

The object of neither of them was to be founders of societies in the Church, but to proceed by their own power for the good of the Church. It was soon however manifest that their end could not be attained by remaining, even outwardly, conformable to the rules of the Church in regard to its ministers. The doors of the parish churches were soon closed against them, and its influence was destroyed. The Wesleyan preachers were ejected, and their houses either closed likewise. They then preached wherever a congregation could be gathered together, in rooms or in the open air, and preaching with the zeal and energy of Apostles, it was in vain, with a population like the English, to attempt to prevent them from making a deep impression. Such energy of preaching had not been witnessed since the time of the Old Puritans. The effect which it did produce may be described as miraculous. The cry, 'What shall I do to be saved?' was heard from many voices wherever they had an audience; sometimes this cry was accompanied by dreadful shriekings and faintings. The accounts given by friends and enemies of the Wesleys are very various. Many of the hearers regarded it only as a mischievous enthusiasm. By the pro- fane the preachers were not unfrequently assaulted, and their lives placed in jeopardy. But many were soon found ready to assist them in their work, either by forming into societies persons pious and devout, and fitting them for their assembling together, or by taking upon themselves the office of preacher, and following in the track which their masters had trod. There were at the same time a few persons who were masters in the Church, and who did not leave the parishes in which they were settled, who seconded the labours of these men. Such were Fletcher, Sillon, Perronett, Dickinson, Venn, Grimshaw, and others. Whitefield died early, worn out by his extraordinary exertion. He was the head of the Calvinistic section of Methodists. But the life of Wesley was prolonged to his eighty-seventh year; and when he died, which was in March, 1791, he had been sixty-five years in the ministry, and fifty-two years an itinerant preacher; he lived also to see the rise of a large number of Methodists, and a thousand of what are called local preachers 'raised up from the midst of his own people,' and eighty thousand persons in the societies under his care.

Such was the state of Methodism in the year 1740, and the principal branch of Methodism at the time of Wesley's death. Some thought that as it had grown with him, it would die with him; but they were mistaken. He had provided (as far as human means go) for its perpetuity by binding up his members in the union of a church, with all the forming of new churches and the establishment of churches; he provided to give it to subordination, authority, rules, common interest, and the bond of common property. Thoroughly regardless of accumulating personal wealth, the contributions of the members of his societies, which had long far exceeded the expenses, enabled him to transfer to the body of preachers, in whom, as in an assembly of preachers, he vested it, whatever interest he had in a multitude of chapels in every part of England, and a large surplus fund; and this property, it is understood, has gone on year by year constantly increasing, notwithstanding the vast expenses which have been made in the erection of chapels, schools, and other buildings, the support of an additional number of preachers, and in missionary excursions among the people not yet Christianized.

It was in the year 1740 that the first Methodist society was formed. It met at a chapel in Moorfields, and it was in 1743 that the rules, which still continue in force, were drawn up for this and other societies, especially those of Scotland and the north of England. At the beginning of his ministry, Wesley had chiefly laboured on, and the same. These rules set forth, that the Methodists are a people who, in addition to the form of Christianity, seek the power of godliness, and manifest it by good works: the societies are united, that by counsel, exhortation, and prayer, they may assist each other in the great work of religion. We have next to describe the constitution of these societies and of the general union of them, forming the highly important class of Christians called the Wesleyan Methodists.

These societies are divided into classes of ten, twenty, or more persons, and he that is supposed the best qualified by mental and religious excellence, is appointed the leader. His duty is to see his members weekly, and to hear their case; to receive the monies from the leaders, pay the ministers their weekly stipend, and take the surplus to the circuit stewards at the quarterly meeting. In the leaders' meetings are stewards for the poor also, who, at the direction of the meeting give assistance to the leaders, and, if necessary, to the poor, and are furnished by any society and congregation for that purpose.

A number of these united societies laying around some cen
eral town or large chapel is known as a circuit. The villages
or chapels in the vicinity of the centre are regularly visited
by the ministers at stated times for the purpose of conduct-
ing worship, and the discharge of other, in actual duties
other than Methodism these circuits included not merely
one county, but sometimes parts of several; but now, owing
to the spread of Methodism, the circuits are limited to a di-
meter of twenty, ten, and in some cases of fewer miles. The
incidental missions in these circuits are committed to the
the care of the ministers yearly appointed by the Conference;
and more especially to one who is termed the superintendent;
generally, when compared with his fellow-ministers in the
same circuit, he is of the longest standing in the connection,
but not always so. The superintendents, as representatives of
the Conference, appointed to this office the person whom he judges
the most proper
To the superintendent principally the direction of
the other ministers is committed, as well as that of
the local preachers also, who are men in business and only occa-
sional preachers; and in addition to the super-
intendent has the care of the leaders, stewards, and, in one
sentence, the whole circuit: he is accountable to the Con-
ference for the use of the power committed to him.
About the termination of every quarter, the minis-
ters, circuit-stewards (who are two principal members in
the circuit, nominated yearly by the superintendent and
chosen by the quarterly meeting), society-stewards from every sepa-
rate society in the circuit, other leading friends meet, for
the purpose of examining the records of the circuit, accounts of
the separate societies, and the balances, if any, from the society-
stewards, out of which the circuit-stewards pay the quarterly
stipends of the preachers, balance all the accounts of
the circuit, and determine everything within the province
of the quarterly meeting, according to the Statutory Laws of
Methodism, which are found in the 'Minutes of Confer-
ences.'
A number of these circuits, as for example the collective
member of the Circuit Council, is the chairman, to whose care its Metho-
distical direction is chiefly committed. In the month of September
in every year the superintendents of the circuits in the district,
and the circuit-stewards of every circuit, are called together
in some central or convenient town, there to examine the
the financial affairs of every circuit therein, for the coming
Methodistic year; that is to say, the probable amount that the
connectional collections will be able to allow to every
circuit, so that means may be taken to supply its
local needs. This requires a certain degree of
in the month of May, the district, as above, is again
assembled; the ministers alone the first day, to examine
the moral character, Methodistical orthodoxy, and obedience
ever to the laws of Methodism; afterwards, in the presence
of the circuit-stewards, they wind up the financial affairs of
the circuit for the Methodist year, which in May has nearly
expired. The result is carefully recorded in minutes, which
are authoritatively required from every chairman of every
circuit, at the time of the next Conference.
At the May district-meeting, when the circuit-stewards
have taken their departure, one of its ministers is chosen
by ballot, as its general representative at the coming Con-
fERENCE. Then the meeting determines how many additional
ministers belonging to the district shall be allowed to proceed
to the Conference. The Conference, strictly and truly, con-
sists only of one hundred preachers, whose names in the
deal that gives it a legal existence, but all the preachers
allowed to go from the respective districts are suffered to sit
therein, under a legal formal act. At the adjournment of
the Conference, one of its first acts is the choosing
by ballot the president and secretary, who must be of the
hundred, the legal Conference. The business which fol-
lows comprises the supplying of the places of those
 ministers who have been removed, by examination,
and partly by nomination; the examination of the
character of every minister as to his moral conduct, Metho-
distical orthodoxy, &c.; the examination of the minutes of
the previous district-meeting, the appointment of the ministers
for the coming year. For these purposes they have to face the
multifarious concerns of the connection.
In Methodism, the members are divided into two great
classes, the ministers and the people; and each, if accused,
is tried at its separate tribunal, and by its own peers. The
members are tried by the leaders’ meeting; and the ministers
by the ministers only, at a district-meeting. If neither the mem-
bers or ministers are dissatisfied with the decision of their
respective judicators, they may appeal to the Conference
the highest court of Methodism.
Methodism furnishes its ministers from the members, who
first are known as local preachers, and then nominated at
the March quarterly meeting as persons proper to be recom-
}
science (1358) as under the care of their foreign missionaries in their various stations was 66,808.

This is to be regarded as the state of only one branch of Methodism, a principal branch undoubtedly, or rather, the main branch, but there are several branches besides of which we have already spoken, each with chapels, preachers, and numerous members, and most of them having some special missionary service for the extension of the knowl-
dge of Christianity.

Some of them have separated from the main body of Methodists since the death of Dr. Wesley. The respect paid to him has not been so generally transferred to the hundred ministers, in whom he vested the power of managing the affairs of his community, as he probably wished and ex-
pected.

In 1793 great dissensions existed about the sacraments, whether they should or should not be administered by the ministers, in the chapels, to the members of the society who request it, Dr. Moore, of the North Cornwall district, was the founder of the Bible Christian Methodists. The Primitive Methodists, who are sometimes known as Ranters, originated in Staffordshire: their professed object is to recall the Wesleyans to the moral and devotional duties of their forefathers, and unevilled mobs. Dissension in Leeds some ten years since gave birth to the Protestant Methodists, who declared that the Wesleyans had violated their own laws by the erection of an organ in one of the chapels in that town, contrary to the decisions of a leaders' meeting. Some four years since, the establishment of the Theological Institution, the expulsion of Dr. Samuel Warren, and contentions on the rights of the leaders' meetings, gave existence to the Association Methodists. These are the leading offshoots from this source.

The reader who wishes to see how Methodism appears to a person of an acute and discerning mind, who is not of the body, may consult the 'Life of Wesley,' by Robert Southey, a work in which there is much profound reflection and a sound little has escaped the eyes of the Methodists themselves; and one of their ministers, the Rev. Richard Watson, has published Observations upon it, in which Dr. Southey is rather severely handled. Other Lives of Wesley there are by Mr. Wiliams, W. S. Williams, and by the same Mr. Watson. Dr. Adam Clark's Memorials of the Wesley family" is but a poor and tasteless performance. We may mention also a little volume entitled 'A Miniature of Methodism,' or a Brief Account of Methodism, or according to the ambitious Character of the Methodists," by Valentine Ward, of which the sixth edition was published in 1834. There is also 'The Portraiture of Methodism,' by Joseph Nightingale, and many histories of the rise and progress of Methodism in particular districts. Those who wish thoroughly to understand Methodism in its genius and true character, to see its defects and its excellencies, the difficulties with which it had to contend, and the means by which it triumphed, would do well to read the 'Journal of John Wesley,' published by the Wesleyan Missionary Society, under the direction of Dr. John Fitch, 1627, 4to. *The Descrip-
tion of the methodists," by Thomas Nightingale, in 1792, 8vo. *It is a work containing the history of Methodism, which subsequent events have proved to be not only a melancholy, but a vain exercise to impose (though such endeavours are but vain) upon private judgment in affairs relating to religion, and private religious thought and action.

METH'DIUS and CYRILLUS, two brothers, the apostles of the Slavonians in the eighth cen-
tury, and the inventors of the Slavonian alphabet, were natives of Salouica or Thessalonica in Greece. Methodius held a high command in the Greek army under the emperor Michael III. In 823 he and his brother are said to have returned to the westwards assumed. Cyrilus, who had been edu-
cated at the court of Constantinople, was in holy orders, and was keeper of the library of Santa Sophia. He was first sent by the emperor as a missionary to convert the Saracens inhabiting the banks of the Euphrates; and about the year 863 he and his brother received a commission from Pope Adrian, 4vo. to visit the Mo-
tis, Swiatopolk, and Kozel, who had made application to the court of Constantinople for instructors in the Christian faith. The choice both of the emperor and the clergy fell on Methodius, who left Constantinople with an account of his knowledge of the Slavonian, and the other

whether he was well skilled in many Oriental languages.

Both whether both had a share in the formation of the Slavonian alphabet is doubtful, some writers attributing it to both of them, only one, and of these latter some to Methodius, others again to Cyrilus. They translated the Psalter, the Gospels, and many other parts of the Scriptures into Slavonic. Cyrilus however did not continue there above four years and a half, after which he visited Bulgaria, and next proceeded to Rossia, where he died according to Schlzer in 871; according to others, in 873. Methodius, on the contrary, remained, and continued his labours for about thirty years, in the course of which time he is said to have translated all the Scriptures. None of the original manuscripts are extant, but it is supposed that the Slavonic version adopted by the Greek church is derived immediately from that of Methodius and Cyrilus.

METH'ONE, MODON. [Macedonian.]"
England by Harriot in 1610. (See the 'History of Optics,' by Mr. Barlow, in the *Encyclopedia Metropolitana.*) Weiss adds ('*Biogr. Univers.*') that Metius guarded his secret with such extreme caution, that, even when about to die, the priest who attended him could not induce him to divulge it; another story is that he confided the secret reluctantly to Prince Maurice, on an occasion when that prince honoured him with a visit for that especial purpose. We have now to consider the year in which James Metius was born, or that in which he died.

**METON**.

The astronomer Meton was living at Athens at the beginning of the 8th Olympiad, a.e. 432. He was, according to some, a Laocoonian (see that authority, *Loc. cit.*), and according to others (Mr. Browne, &c.), all we know which is worth recording here is, that the solstices which he observed with Euctemon were preserved by Ptolemy, and that he was the founder of the celebrated lunar cycle which is still preserved by the Western churches in their computation of Easter.

The Metonic cycle takes its rise as follows: 235 revolutions of the moon are very nearly 19 revolutions of the sun, and one complete revolution of the moon's node. If these approximations were exact, all the relative phenomena of the sun and moon, particularly those of eclipses, would commence in the same order, at the end of every nineteen years. There is however an error of some hours in every cycle. (*Calippus; Moon; Period of Revolution.*)

The first year of the first Metonic period commenced with the summer solstice of the year 432 a.e.; and if the reckoning had been continuous, what is now called the golden number of any year would have denoted the year of the Metonic cycle which terminated with its summer solstice. But in 191 the reckoning however will be found that A.D. 1, which is made the first year of a period of 19 years, would have been part of the fourteenth and part of the fifteenth of a Metonic cycle.

**METONIA.**

[Also RELLIOU]

**METOpIA.** (*Ornithology,* Mr. Swainson's name for a subgenus of *Pipra.*

**METRE.** (from the Greek *μέτρον, metron*) is that quality of verse by which it is to the ear distinguishable from prose. It is generally held to be one of the essentials of poetry: an imaginative thought being the other. No reason can be assigned for this opinion, the truth being that it is attributable only to our nature as men, by which we feel pleasure in rhythmical arrangement of words, and consistently with our idea of imaginative writing as perfect, unless couched in metre.

A distinction has been drawn between antient and modern metres, one being said to depend on quantity, the other on accent; quantity is said to be short or long, and accent to be primary or secondary. A little reflection however will tend to convince us that delicacy of ear has as much to do with the difference between antient and modern metres as any fancied change from quantity into accent.

The southern races still retain the delicacy of ear, as well as the marked difference in Italian between the pronunciation of double and single consonants, a difference to which our language is a stranger as far as *time* is concerned. Though we see no distinction in time between the second syllable of the words *laborare* and *liberae*, there is no reason why the Romans should not, and with that assumption the whole difference between accent and quantity vanishes. It would be useless to enumerate the names which have been given to metres. The Greek and Roman metres are in many cases numerous, and in allowing collocations of syllables (called feet) such as we could scarcely feel to be consonant with rhythm. The cause of this difference seems to lie in the form of each language.

Another grand distinction between antient and modern metres is that of rhyme, which occurs but seldom in the former, and which, until the time of Shakspere, was nearly universal in the latter. Antient and modern languages both afford specimens of the alliterative measure. It may be traced in the older Latin writers, and was the distinguishing peculiarity of the Anglo-Saxon verse. *Piers Plowman's Visions* are the best known compositions of this kind. Those who seek for further information on the subject of English metres, particularly on peculiarities which have occasioned so much difficulty to the readers of Chaucer, will do well to consult Mr. Guest's *History of English Metres.* Some observations by Coleridge, prefixed to *Christabel,* are also worth attention.

**METRIORHYNCHUS.** Dr. Hermann von Meyer's name for a group of fossil Gavials, found according to him in the loam, the Oxford clay, at Honfleur, and the Kimmridge clay at Havre.


**METRONOME.** (from *μέτρον, metron,* and *νους,* a *nous;* also, a *song,* a very ingenious instrument, a pendulum, the point of suspension of which is between the extremities, invented, and introduced about the year 1614, by Mons. Mollet, a Leucite, or a German (a commander of the emperor of Austria), for the purpose of determining the movement, i.e. the quickness or slowness of musical compositions.

It is of utility of a *time-measurer,* both to composers and performers, and for some account of its early use, see *Chronometr.*

Of Maelzel's Metronome there are two kinds. The one is a pendulum kept in motion by a spring and wheelwork, and which ticks the vibrations; the other is a pendulum, as above described, but without any mechanism for acting only as long as the force of the impulse given shall last. The former, therefore, it will be obvious, is complicated and expensive; the latter is simple and cheap.

The following passage describes and explains the manner of using this instrument:

1. A sliding weight is attached to the rod (which is graduated) or steel pendulum; the higher up this weight is shifted, the slower will be the vibrations, and *vice versa.*

2. That when the weight corresponds with the number 54, the vibrations will be the slowest possible; at No. 160 they will be the quickest.

3. These numbers have all reference to a *minute of time*; i.e. when the weight is placed at 56, fifty beats or ticks will be given in each minute. When at 80, 80 beats; when at 100, 100 beats; &c., any stop-watch, therefore, will shew how far the correctness of the metronome may be depended on.

4. The numbers of the scale answer to a precisely double degree of velocity. Thus, if 50 be the proper number for a minim, 100 will be the number for the crotchet in the same movement, &c. The numbers omitted on the scale have been found practically unnecessary.

5. The composer is best able to judge from the nature of his own taste whether he prefers crotchet, quavers, &c. Generally speaking it will be found, that in *adagios* it is most convenient to mark the time on the Metronome by quavers; in *andante* by crotchets, and in *allegros* by whole bars. As often however as the case admits, it is desirable that the pendulum should be made to beat integral parts of a bar, just as a master would beat or count the time.

Much opposition was made to the use of this excellent instrument, when first introduced; but no sensible composer or performer now entertains a doubt of the usefulness of the Metronome, or of some kind of pendulum answering the same purpose.

**METZ.** [Colony, vol. viii, p. 359.]

**METZ.** a city in France, capital of the department of Moselle, situated on the Moselle at the junction of the Seille; 172 miles in a direct line east by north of Paris, or 191 miles by the road through Château-Thierry, Châlons, Metz, and Verdun; in 49° 6' N. lat. and 6° 12' E. longitude.

This city existed in the time of the Romans, to whom it was known by the name Divodurum, and was the chief town of the Mediomatri, one of the Belgic nations. At a later period another Metz, the name of which, early in the fifth century, was substituted the shorter designation of Metis or Metia, whence the modern *Mey.* In the civil dissensions which followed the death of *Ner.,* a.d. 70, Divodurum was nearly destroyed by a sudden and unexpected break of the town walls, 4 km., i.e. 6; &c. Divodurum was ruined in the invasion of the Huns under Attila, a.d. 452; but afterwards became the capital of Austrasia, which was sometimes termed the kingdom of *Metz.*

In the division of the Carolingian empire, *Metz* was comprehended in the kingdom of Lotharingia or Lorraine.
The city of Metz was however made, by the emperor Otho II., a free Imperial city, with a voice in the diet of the empire, the right of choosing its own magistrates, and of conducting its own affairs. The city is a piece of ground, apparently, of a great inland trade between France and Germany; and in a.D. 1444 was enabled to resist an attack from the combined forces of Charles VII. of France, and René of Anjou, king of Sicily and duke of Lorraine. The persistence of which the formation appear to have occasioned some troubles at Metz; but the principles of the reformers made such progress, that a.d. 1543 they were allowed the free exercise of worship.

In the troubled west of the empire near the close of the reign of Charles V., Henry II. of France, with whom the German Protestant princes had formed an alliance, entered Lorraine with an army, and was admitted into Metz by the towns- men. a.d. 1552. In the same year the emperor besieged the place with 100,000 men of the duke of Guise, who commanded the garrison, made stout resistance, that the emperor was obliged, in Jan., 1553, to raise the siege.

From this time the town remained under the protection of France, though the bishops recognised the authority of the emperor in certain points. This arrangement lasted until 1653, when the king of France assumed the sovereignty of Les Trois Evêchés, which was confirmed to him by the treaty of Münster, or Westphalia, a.d. 1648. The siege of the town, subsequent dissensions, and the loss of the privileges, brought on a decay of trade and population; and at the close of the seventeenth century, the town numbered only 22,000 inhabitants.

In the division of France before the Revolution, Metz, with the rest of Les Trois Evêchés, was included in the province of Lorraine.

The Moselle and the Seille are divided in and near the town into several channels, enclosing small islands, on some of which, as well as on the mainland, the town is built. Metz is in the first class. [Horn Works.]

There are nine gates with drawbridges. The interior of the town, which is principally in the angle formed by the two rivers, is in general handsome. The streets are wide, straight, and well paved. The square called 'Quartier Loyal,' in the south part of the town, is in a good state; and the esplanade of the citadel affords a pleasant promenade. The square of St. Louis is surrounded with arcades. The houses are for the most part well built. The cathedral is Gothic building, remarkable for the boldness and lightness of its structure. The façade is perpendicular, and the height of the tower at 373 French, 398 English feet.

There are nine other churches, four nunneries, a con- vent, barracks, military hospital, and various buildings, which had formerly a particular quarter of the town assigned to them, which is still distinguished by its dirty and narrow streets. The most remarkable of the churches are those of St. Simon, Notre Dame, and St. Vincent, the last distinguished by a portal with a triple row of columns. The church of the Palais du Gouvernement, built at a great expense in the reign of Louis XVI., where the courts of law sit, the prefect's office, the theatre, a building of greater external than internal beauty (these two last-named edifices are on each side of the river), the military hospital, a vast building, the arsenal, the different barracks, the building for the school and staff of the artillery, the workhouse, and the covered market, lately erected,—are among the public buildings most worthy of notice. There are also bridges, ten over the arms of the Moselle, and as many over those of the Seille.

The population of the town has been gradually increasing since the commencement of the eighteenth century. In 1711, 36,000; in 1741, 41,000; in 1831, 44,416; in 1836, 42,793. The chief branches of manufacture are woollen cloths, flannels, and stuffs, cotton yarn, leather (formerly the staple of the place), diminished by the continuance of war, but now reviving, hats, especially military hats, hat-trimmings, and embroidery (in which 1200 people are employed), starch, soap, beer (which is very good), brushes, pencils, iron wares, cutlery, buttons, jewellry, clocks, paper-hangings, and confectionery. There are workshops connected with the arsenal and other military establishments. In the neigh- bourhood of the town are quarries of good limestone, tile kilns, beet-root sugar-houses, and other industrial establish- ments. Traffic is carried on by land and by water. There is a harbour, which is navigable to Nancy, many miles above Metz. High roads communicate with Luxembourg, Namur, and other places in Belgium; with Mainz and Frankfort in Germany; and with Strasburg, Nancy, and Paris.

Metz is the seat of a bishop's see, which comprehends the department of Moselle, and the bishop of which is a suffragan of the archbishop of Besançon. It has a Cour Royale and an Académie Universitaire, the juris- diction of which the departments of Ardenne and Moselle. Here also are the head-quarters of the military division, including the departments of Moselle, Meurthe, and Mosges. There are a variety of other government offices, fiscal, judicial, and administrative. There are also a number of establishments connected with the military department, a royal practical school of artillery and military engineering (the finest institution of the kind in Europe), a central military post-office, a school, and a miners' school. For general or special instruction there are several collèges connected with the Académie Universitaire; a college or high school, a normal school, a society of literature, science, and art; a society for the encouragement of agriculture and establish- ments, free workshops or schools for drawing, painting, music, and geometry and mechanics applied to the arts; public lectures on midwifery and botany, a school of trade, a society for the encourage- ment of elementary instruction, a departmental society for the encouragement of arts and trades, maintained by the wealthier Jews (of which nation there are many at Metz) for their poorer brethren; a ma- terity society, and a mont de pitié, or loan society; a public library of 31,000 volumes, three other libraries, a botanical garden, a departmental museum of natural history and mineralogy. There is a school or schools taught by the Frères de la Doctrine Chrétienne, with a thou- sand pupils.

The arrears of Metz comprehends an area of 620 square miles: it is divided into nine cantons or districts, each under a justice of the peace, and comprehends 218 communes. Its population in 1831 was 150,840; in 1836, 150,811.

In the neighbourhood of the town are the remains of a Roman aqueduct, which conducted the waters of a stream, seven or eight miles distant, to the Naumachia, which was in the south part of the town. Seventeen arches of this aqueduct yet remain. The ruins of an amphitheatre and Roman baths have been also recovered.

The territory known as Le Pays Messin comprehended the territory immediately around the city, included in the diocese and jurisdiction of the bishops, to which alone the title of Metz, however described, was originally given.

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of horses; and this induced his friend Le Brun, whose
niece he married, to give him the execution of the horses
in his celebrated paintings of the battles of Alexander the
Great. Van der Meurs painted also some of the other
subjects, with equal excellence. His principal works are
at Paris; but many of his easel pictures are preserved in
England, France, and Flanders. In the 16th and 18th
vols. of the Cabinet du Roi, there are 125 engravings
after his designs. He was a member of the French
Academy of Painting in 1673. He died in 1690, at the age of
56 years. His most celebrated scholar was I. Van Huchten-
burg, battle-painter to Prince Eugene.

MEURS, JOHN (the Latinized form of his real
name, which was De Meurs), was born near the Hague,
in 1579. He was educated at the university of Leyden;
and after he had completed his studies, was entrusted with the
education of the children of Barneveldt. [BARNEVELDT].
In 1610, Meursius was appointed professor of history at Leyden,
and in the year following professor of Greek. After
the execution of Barneveldt, on the 14th of May, 1619, Meursius
was exiled to great annoyance and persecution from the
enemies of his illustrious patron; and it was therefore
with great pleasure that he accepted an invitation from the king
of Denmark, in 1625, to settle in his dominions. Meursius
died on the 20th of September, 1639.

Meursius was a diligent and laborious scholar. He edited
several of the Greek writers, and wrote many works
on historical and archaeological subjects, which were
folio. The following are a few of his principal works:
5. "De antiquis Graecorum, et Romanorum personis,"
6. "On the north-east part of France, bounded on the north
by that of Moselle, on the north-east and east by that of Bas
Rhine, on the south-east and south by that of Vosges, and
on the west by that of Meuse. Its form is compact; the greatest length is from east to west,
from Pont-a-Mousson to the mouth of the Meuse (Meuse),
70 to 71 miles; its greatest breadth, at right angles
to the length, is from the bank of the Moselle, between
Pont-a-Mousson and Metz, to the neighbourhood of Mire-
court (Vosges), 46 miles. Its area is estimated at 2357
square miles, which nearly is the average extent of the
French departments, and rather greater than the conjoint
areas of the English counties of Kent and Surrey. The
population in 1831 was 415,568, in 1836 it was 424,366,
shoaling in five years of 750, or above 9
per cent., and giving 180 inhabitants to a square mile. Both
in amount and density of population it considerably exceeds
the average of the departments, but falls considerably short
of the average density of population in England. Nancy,
or its department, is, in area, 1,722 miles in a direct line east of Paris, or 204 miles by
the road through Château-Thierry, Châlons-sur-Marne, Vitry-
sur-Marne, Bar-le-Duc, and Toul.

The department is hilly, and even mountainous. The principal
chain of the Voges crosses the eastern extremity
between Sarrebourg and Phalsbourg; and branches from
this mountain chain, of gradually diminishing height, ex-
tend over the eastern portion of the department. Near
the principal chain of the Voges the mountains are intersected by
valleys, which frequently present picturesque
scenery. Amid the lower slopes are several lakes, as those
of Lindre, Stock, &c.; there are also several marshes. The
western side of the department is traversed by the hills
which bound on the east side the Meuse, and separate it from that of the Moselle. Between
these hills and the Voges is the valley of the Moselle.
The Voges in this department are composed chiefly of
the new red or saliferous sandstone and the subjacent
secondary sandstone; but of the rest of the department is occupied
by the rocks which intervene between the chalk and the
red sandstone. The mineral treasures of the department
comprehend freestone for building, and limestone, which
are quarried in numerous places; gypsum is also abundant,
and in some parts is of great extent. Lignite is plentiful near
Nancy. Various ores are found, but not in sufficient quantity to make it
worth while to extract them. There are two forges for
producing wrought-iron. The most important mineral is
rock-salt, of which a vast bed was discovered in 1819,
within a mile of the town of Vic on the Seille, at a
distance of rather more than three miles below the source, which,
instituting about 100 feet lower, five strata of rock-salt were
found, having an aggregate thickness of nearly 90
feet, separated from each other by thin strata of gypsum
or clay. A sixth stratum has been discovered a few feet
below this, and it is probable that there are others which
have a superciliary extent of 230 square miles. This salt is
pure muriate of soda. The working of the mine commenced
in 1823. The cost of raising the salt and breaking it was
very trifling, about 8s. to 8s. 6d. per ton. The depart-
ment have been known to produce yearly about 40,000
tons: the principal springs are in the valley of the Seille
at Dieue, Château Salins, and Moyenval; there are others
in the valley of the Moselle, as that of Mousson near Pont-
à-Mousson, and of St. Thibault near Nancy. The cost of
refining this salt is nearly double that of preparing the rock-salt.

The department belongs almost entirely to the basin
of the Moselle: a small portion at the eastern extremity,
which passes over the principal ridge of the Vosges,
which included in the basin of the Rhine, of which indeed that of
the Moselle is only a subdivision, and another small portion
on the south-western border is included in the basin of the
Meuse.

The Moselle enters the department on the south side, a
little below the town of Charmes (Vosges), and flows north-
west in a rather circuitous channel to Toul; at Toul it turns
to the north-east, and flows in a circuitous channel to the
principal valley of the Moselle, into which it is
entered by west into the department of Moselle. Its whole course
in the department may be estimated at 65 miles, for 10
of which (22 according to the government statement, viz.
from the junction of the Meurthe, it is navigable.

The Madon, another considerable feeder of the Moselle,
enters the north-west part of the department, and joins
the Moselle just within the border. The Seille, a more con-
siderable stream, enters the northern side of the depart-
ment, and receives the Verbrach and the Petite Seille; it
joins the Moselle at Metz, in the adjacent department
of Moselle. The Seine and the Moselle, after entering the
Moselle, rises in the Vosges and waters, the east side
of the department, a few miles beyond which it becomes
navigable. The Zorn, which rises just within the eastern
border of the department, runs into the River and the Deul, which
waters the south-western border, separates from the
Meuse. There is one navigable canal, that of
Les Salines de l'Est (the Eastern Salt-works), 22 to 23
miles long. It commences at the little town of Dieuze, in
the Seille and runs parallel with the Valley of the Seille, which
enters the department on the west side, and runs to
Toul to Nancy, from whence it is continued, first along
the valley of the Meurthe to Lunelville, and then along that
of
the Vezouze to Blamont, from which town it runs north-east across the Vosges by Sarrebourg and Phalsbourg into the department of Bas Rhin. Another branch branching off from this at Nancy, and rejoining it at Sarrebourg, runs through Château Salins and Moyeuvre. Roads run from Nancy along the valley of the Moiselle, down to Pont-à-Mousson and Metz (Moselle), and upward to Charms and Épinal (Vosges), and across the Moselle and the Meuse to Neufchâteau (Vosges) and Langres (Haute Marne). Roads lead south in a similar direction across Bazemont, and further to Sarreguemines (Moselle) ; from Pont-à-Mousson to Commercy (Meuse) and Bar-le-Duc (Meuse), and from Lunéville to St. Die (Vosges) and Colmar (Haut Rhin). The aggregate length of the routes departmentales was (January 1, 1837) about 1,121 miles, viz. 168 in good repair, 42 out of repair, and 23 unfinished. The bye-roads and paths had an aggregate length of 3000 miles.

The climate of the department is colder than the latitude would lead one to believe. It is the most enjoyable by far of all those parts of France to the elevation of the eastern parts, the quantity of woodland, and the extent of water. The air is in most parts tolerably healthy. In the neighbourhood of the Vosges however the inhabitants of the valleys are very subject to phthisis, and there are in these valleys several instances of the inhabitants being driven from all agriculture, and driven to Sarreguemines (Moselle) to cultivate, or to Bar-le-Duc (Meuse) to work, and from there to Sarrebourg, their only means of subsistence. The average of the department is 72° 18′, and its mean produces are wheat, rye, flax, hemp, and flaxseed, and the average annual produce of wheat and rye is 2463 (pop. 1836, 31,445 commune) [Nancy]; Rosières (pop. 2463 town, 2507 whole commune), and St. Nicholas (pop. 3006 town, 3043 whole commune) on the Meurthe; Pont-à-Mousson (pop. 2718 town, 7218 whole commune) on the Moselle ; Haroué, on the Madon ; Vézelise (pop. 1742) on the Uroy; and Nomeny on the Seille. At Rosières (still distinguished as Rosières aux Salines, though the salt-works from which it has derived its name have long been dismantled) are the nearest of the royal studs in France; there is much meadow land round the town, and many horses are bred. St. Nicholas has a fine old Gothic church, a town-hall, and an abattoir, or public slaughter-house, lately built. There are mills, moved by water, for spinning cotton and woollen yarn, trimming manufactories, and tan-yards. Pont-à-Mousson is on a slope in the midst of a valley surrounded by fruitful hills. It is divided by the Moselle into two parts, which have some good houses in the town, and the streets, which are inconveniently paved with round stones, are tolerably straight. It has a good place or square surrounded by arcades; the town-hall is in this square. The principal church and the church of the Palatine bank are an ancient building. The place has two towers resembling crowns; the second has a portico overcharged with ornaments. The manufactories of the town are chiefly earthenware, especially artificial stone, much used for water-courses, reservoirs, flat roofs, &c; and the sales of the salt-works have in this respect enabled it to produce earthenware is exported into the adjacent departments. On an eminence near the town have been found antiquities which show that its summit was antiently occupied by a temple of Jupiter. There was formerly a university at Pont-à-Mousson, founded by Charles III., duke of Lorraine.

In the arrondissement of Château Salins are—Château Salins (pop. in 1831, 2708; in 1836, 2621), on the Petite Blanche; Dieuze (pop. 1852), Marsal, Moyenneville, and Vie (pop. 3119 town, 1816 whole commune). Also clouds of ore are mined on the Vezouze, on the Verbach, and Insming, near the Albe, a feeder of the Sarre. Château Salins derives its name, and formerly derived its importance, from its brine-springs; but it has now none. The town is in a pleasant valley at the junction of four rivers, lead respecively to Metz, Nancy, Sarrebourg, and Sarreguemines. The inhabitants trade in saffron and hosiery. Dieuze has brine-springs, a salt-mine, and salt-works; there is also a large factory for manufactory of salt from salt mines, and salt-works and from rock-salt. Salt has been made from the brine-springs of Dieuze for 800 years. It was a place of some importance under the Romans, who called it Decem Fugi. There are some Roman antiquities in an inlet in the river, which is now a mill-pool.

Marsal is a fortress; it was bombarded by the allies in 1815, and has now a population of scarcely 1000. It is situated in a marshy plain; the foundation of the town consists of a layer of brickwork formed by the Romans. Moyenneville is a town of about 950 inhabitants, who are chiefly engaged in making salt from the brine-springs. The town was dismantled by Louis XIV. Vie has also salt-works. The salt-mine opened in the bed of rock-salt near this town was inundated with water from a subterraneous reservoir; but another mine has been opened at Dieuze.

In the arrondissement of Lunéville are—Lunéville (pop. in 1831, 12,216 town, 12,341 whole commune) in 1836, 12,798 commune) [LUNÉVILLE] on the Vezouze, very near its junction with the Meuse; Blanzy (pop. 1836, 31,445 commune) on the Meurthe; Gerbervillers (pop. 3044) on the Mortagne; Bayon on the Moselle; Einville on the Sanon; Blamont (pop. 2281) on the Vezouze; and Badonviller (pop. 1814 town, 2257 whole commune) on the Blette, a small feeder of the Vezouze. Badonville is on a good hill, on the left bank of the Blette, a steep hill, and near an extensive forest. One of the principal manufactories of flint and cut glass in France is in this little town. The river Meurthe brings down the timber for fuel from the Vosges, and supplies a moving power to the machinery for cutting glass, for which purpose there are two hundred lathes. The artisans with their families are lodged in the establishment, and form a population of 600. Many females in the neighbourhood find employment in different branches of this manufacture. Blamont was formerly the residence of the princes of Salmsalins. It is now a busy little town, where calico is woven and printed,
In an I.W.A., and Essey the and them. Direct the percent., trim- the of rootrici con. France.

The town is supplied with water by a fountain of admirable construction.

St. Quirin (pop. 1523 village, 1660 whole commune) and Cirey (pop. 1768 village, 2193 whole commune), though only villages, require notice for the extensive plate and other glass works established in them. Coloured glass and mirrors like those of Nürnberg are made here. St. Quirin was formerly encircled by vast forests, and has not yet lost its glass-houses. At Cirey earthenware is manufactured.

In the arrondissement of Toul are—Toul (pop. in 1831, 7206 town, 7304 whole commune; in 1836, 7333 commune) and Dieulouard on the Moselle; Essey and Triaucourt on the Marne. Toul is the seat of one of the towns of the Romans, by whom it was called Tullum; it was the capital of the Leuci, a Belgic people. In some deeds of the time of the Carolingian princes, it is called Leucon; and in the treaty between the kings of France and the Empire in 1828-29, the town of Toul outside of the time of the Romans, by whom it was called Tullum; it was the capital of the Leuci, a Belgic people. In some deeds of the time of the Carolingian princes, it is called Leucon; and in the treaty between the kings of France and the Empire in 1828-29, the town of Toul outside of

The manufacture of earthenware and porcelain, which is noted for its strength and whiteness, the beauty of its enamel, and the variety of its colours. There are a high-school, an agricultural society, and several military establishments. Wine (of which the surrounding district produces abundance) and brandy are articles of trade.

The population of the above towns, where not otherwise specified, is of the whole commune, and from the census of 1831.

The manufactures of the department are considerable; the principal are woolen, linen, and cotton goods; trims- and embroidery; hats, salt, glass, oil, leather, earthenware, paper, paper-manufactures, cotton, paper, cordage, architectural ornaments, and ornaments for the fitting up of rooms. At Plaisburg fine liqueurs are prepared. This little town, which is fortified, and defends one of the defiles of the Vosges, was built in 1570 by George John, count Palatine of the Rhine, from whom it obtained its name, which in its German form, Plaufurg, means 'the town of the Palatine.'

The department belongs to the district occupied by the iron-works of Abainville near Commercy coal is used.

The central valley which traverses the department in the direction of its length, and the north-eastern portion, belong to the basin of the Meuse; which river enters the department about 38 miles from its source and flows north-west through the central valley 95 to 166 miles, past Commercy, St. Miehle, Verdun, and Stenay, into the department of Ardennes. The navigable communications of this department are the Moselle, the Aisne, the Meuse, and the Meuse, which afford means of communication between the eastern Lowlands and the western districts, and between the departments of Ardennes, Meuse, and Meuse.

The western side of the department belongs to the basin of the Meuse, a subdivision of the great Rhine basin; and is watered by the Orne, the Longue, the Iron, the Math. It is drained by small streams belonging to the system of the Meuse.

In respect of education this department is the eighth in France. Of every hundred young men enrolled in the military census of 1829-30, sixty-eight could read and write; the average of the departments of France being only about thirty.

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The department is divided into four arrondissements as follows:—

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<tr>
<td>Bar-le-Duc</td>
<td>369</td>
<td>82,134</td>
<td>80,897</td>
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<tr>
<td>Commercy</td>
<td>725</td>
<td>84,510</td>
<td>56,957</td>
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<tr>
<td>Montmédy</td>
<td>498</td>
<td>65,947</td>
<td>66,493</td>
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<tr>
<td>Verdun</td>
<td>Central</td>
<td>580</td>
<td>80,897</td>
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There are several canals, or pools, in the department, especially in that part which belongs to the basin of the Moselle. The most considerable, which is about two or three miles long, and in one part nearly two miles broad, is named the village of Wool. The river Yonne flows through it.

The navigation of the Meuse within this department is given in the official statements at 53 miles; there are no navigable canals.

The roads of Royales, or government roads, had in 1837 an aggregate length of 317 miles, of which the whole, excepting 5 or 6 miles, were in good repair. The principal roads are those from Paris by Châtillon-sur-Marne (Marne) to Metz (Moselle); and from thence to Mayence and Frankfurt in Germany, and from Paris also by Châtillon to Nancy (Meurthe) and Strasbourg (Bas Rhin). These roads both cross the department from west to east, the former in the northern part, through Clermont-en-Archange and Verdun; the latter in the southern part, through Bar-le-Duc and Ligny. The road from Paris by Longwy (Moselle) to Luxembourg in Belgium, and Treves and Coblenz in Germany, branches off from the Metz road at Verdun, and runs north-eastward through Rtain. A road from Dijon (Côte d'Or) to Langres (Meuse), via Chaumont, runs along the valley of the Meuse by Commercy, St. Mihiel, and Verdun, into the department of Ardennes, and so into Belgium; with a branch from between Neufluhcôteau and Commercy, to Ligny and Bar-le-Duc. A road from Troyes (Aube) to Nancy (Meurthe) crosses the southern part of the department.

The Routes Départementales had at the same time an aggregate length of 170 miles; of which the whole (except about 20 miles) was in good repair. The bye-roads and roads of extension have also improved much.

The climate of the department is cold (especially on the higher lands, some of which are of considerable elevation) and moist, but it is considered healthy. The soil in the valleys and on the hill sides is very fertile: a large portion of the territory is covered with meadows. As the Abbees of Autun, in consequence of being more than half the surface of the department, is under the plough. The produce in grain is very considerable, especially in wheat, barley, and oats: that of barley is nearly three times as much as the average produce of the French departments; that of oats is above the average, but, from the great number of horses reared, is insufficient for the consumption of the department. But little rye and linseed, or mixed corn, is grown; and neither maize nor buckwheat is of much importance. There is a considerable quantity, also rape-seed for oil, flax, hemp, pulse, and fruit of every kind, but especially gooseberries. Orchards and gardens occupy about 18,000 acres. The vineyards occupy about 11,000 acres, and are chiefly in the south-west part of the department; and the quantities produced are large. The red wines of Bar-le-Duc are excellent. The woodlands occupy about 340,000 to 350,000 acres, of which about 100,000 acres belong to the state, about 220,000 to the communes, and public establishments; the rest is private property. The chief forest trees are the oak, beech, and elm. The timber and firewood supply the wants of the department, and furnish an article of export to the department of Ardennes and the departments in the basin of the Senne.

There are about 124,000 acres of meadow land, the best of which is in the valley of the Meuse; and 30,000 acres of heath or other open pasture. A great number of horses of a small breed are reared; the whole number in the department is estimated at 60,000, and the average number in the other departments. They are employed, to the exclusion of oxen, in nearly all the labours of agriculture. The number of harnessed cattle is about equal to the average of the departments, viz. about 80,000. The dairy cattle are not very considerable; neither is the cheese, which resembles that of Gruyère. The number of sheep is not great; the breeds have been improved by crossing them with those of England and Holland. There are about 230,000 sheep in the department, which is a few above the average. The forests contain wild boars and roe-deers; and small game abounds in all parts of the country. A great number of red-breasts are taken every winter. The rivers and pools furnish plenty of fish, especially the pike, perch, loach, salmon-trout, and eel.

It is subdivided into 28 cantons, or districts, each under a justice of the peace.

In the arrondissement of Bar-le-Duc are—Bar-le-Duc (pop. in 1833, 12,496) [Bar], Ligny (pop. 3,122), and Revingy (pop. 1,598), on the Oltain; Vaubecourt, on the Aisne; Beaumes, on the Aire; and Ancerville (pop. 2,399) near the south-western boundary of the department. Ligny, distinguished as Ligny-en-Barrois, is a pleasant little town, antiently fortified, but the walls are now in ruins. The parish church contains the monument of the Maréchal de Luxembourg. The inhabitants spin cotton-yarn and weave linen goods, and carry on extensive stock-farming.

The arrondissement of Commercy are—Commercy (pop. in 1831, 3622; in 1836, 3716), Makey, Vauvoueurs (pop. 2157), Voirrey, Sorcy or Sorcy (pop. 1634), and St. Mihiel (pop. 5823) in the valley of the Meuse; and Gondrecourt (pop. 2998) on the Oltain. It is a pleasant little town, surrounded by a thickly wooded district.

The streets are remarkably straight. There is a fine range of cavalry barracks, formerly a château built by the Cardinal de Retz. The inhabitants manufacture cotton-yarn and goods; there are also some iron-works, and a flouring-mill built on the slope of a hill on the bank of the Meuse, and is surrounded by meadows. The inhabitants manufacture stockings, linens, and cotton goods. There are some tannards. Void is the depot for rape-oil, which is made in abundance in the neighbouring part of the valley of the Meuse. It has some tannards, also paper-mills, and oil presses moved by water. St. Mihiel was formerly a fortified town, and was besieged by Louis XIII. in person, who in the course of the siege, on the 16th of October, 1626, in the town of Void, caused the fortifications to be razed. The situation of the town is very picturesque, but the houses are old. There was a Benedictine abbey, the foundation of which gave rise to the town. The parish church, formerly conventual, contains the remains of several princes of the house of Lorraine and counts of Bar. Another church, that of St. Etienne (St. Stephen), is adorned with a fine piece of sculpture, a 'holy sepulchre' carved out of a single block of fine white stone, by Liger Richer. The site of the church in 1615, being defended by about 100 soldiers of the line, and some national guards and custom-house officers, making in all 600 men, it resisted the attempt of a corps of 1500 Prussians to surprise it; the assailants lost 500 men. The inhabitants manufacture cotton-yarn and linen goods; and there are some tannards, a flouring-mill, and some oil mills. Void is a pleasant situation, and was formerly a place of strength, but was dismantled, a.d. 1654, by Louis XIV. There are barracks. There is in the town an extensive co-operative, in which the movement was founded. There are some small iron-works near Stenay. In the village of Avioth near Montmédy is an ancient church accounted one of the finest specimens of Gothic architecture in France.

In the arrondissement of Verdun are—Verdun (pop. in 1831, 9978; in 1836, 10577) [Verdun], in the valley of the Meuse; Clermont-en-Archange [Clermont] and Varennes (pop. 1632), on the Aire; Etain (pop. 3034), on the Ornes; and Fresnes, on the Longeau. Varennes was the place where Louis XVI. and his family were stopped in their at
tempt to escape from France. There is a glass-house in the town. Estain or Estain is a tolerably neat town in a marshy plain. The inhabitants manufacture reed-mats, fettuccia, leather, and paper. This town gave title to the French admiral Count d'Estaing. The chief manufactures of the department are iron goods, glass bottles, paper, earthenware, and leather; cotton hose, lace, and cotton and woolen fabrics and other works. There are brandy distilleries and oil presses. The chief trade is in agricultural produce, corn, wine, oil, timber, &c., and in iron.

The department forms the bishopric of Verdun, the bishop of which is a suffragan of the archbishop of Besançon. It is in the jurisdiction of the Cour Royale and the circuit of the Académie Universitaire of Nancy; and in the second military division of which the head-quarters are at Châlons. It sends four members to the Chamber of Deputies.

In respect of education this department is in advance of every other in France. Of every hundred young men enrolled in the military census of 1828-29, seventy-four could read and write; while the average of the departments was under forty.

The department antiently formed part of the territories of the Verodunenses and of the Leuci; small portions of it were comprehended in the territories of the Remi, the Medrano, the Teuton, the Saxo, or the Teutonic nations. In the Roman division of Gaul the Remi were included in the province of Belgica Secunda; the other nations in Belgica Prima. Verodunum (or, as it is written in the Itinerary of Antoninus, Verdun), capital of the Verodunenses, or the modern Verdun: Nasium, a town of the Leuci, was the modern Naix or Naïs, a village on the Orne above Ligny; and Catariigis was in the vicinity of Bar-le-Duc. On the overthrow of the Western empire, the country was divided into the hands of the Franks, and formed part successively of the kingdoms of Austrasia and Lotharingia or Lorraine. The greater part of it was comprehended in the duchy of Lorraine and Bar; and the remainder in the bishopric of Verdun, one of Tross Épôches (three bishoprics); or in the county of Champagney and the county of Clermont.

MEW, a name for the Gulf. [Laridse.] In falconry it signifies the place where hawks are kept.

MEXICAN STATES. THE UNITED, a federal republic in America, occupy the north-western and by far the greatest part of the Mexican isthmus, together with the south-western portion of the main body of North America: they lie between 15° and 42° N. lat. and 87° and 125° W. long. The United Mexican States have washed in the Gulf of Mexico and the Bay of Honduras, a division of the Caribbean Sea; and on the south-west and west by the Pacific, which here forms the long Gulf of California. On the south-east it borders on Guatemala, one of the states of Central America; on the British colony of British Guiana; on the north-east and north it is bounded by the states and territories of the United States of North America. The boundary-line on this side, according to a treaty, begins on the east at the mouth of the river Sabine, and follows its course northward to the point where it is intersected by 32° N. lat.; it then continues along the meridian of 94°, until it reaches Red River. The line ascends the last-mentioned river to the point where it passes the meridian of 106°, and proceeds along this meridian northward to the Arkansas river and thence along the boundary-line westward to its very source in the Rocky Mountains. From this range westward to the shores of the Pacific, the parallel of 43° separates the territories of both republics. As large tracts along the northern boundary are quite unknown, the area of this extensive country can only be approximated to. It probably occupies a surface of about 1,560,000 square miles, or more than seven times the area of France.

Surface: Soil: Climate: Rivers.—This immense country is divided into three great parts, each marked by different features. The first comprehends the countries lying to the east of the isthmus of Tehuanterep, which is crossed by the meridian of 93° west of Greenwich: we shall call it the Eastern Region. The second extends from 93° to 106° W. in a curve to the mouth of the Rio del Norte on the east (26° N. lat.) and to the most northern reeves of the Gulf of California (32° N. lat.) on the west: it is the Central Region, or Anahuac. The third or Northern Region comprehends the countries situated north of a line drawn from the mouth of the Rio del Norte to that of the Colorado.

The Eastern Region comprehends the peninsula of Yucatan, the western declivity of the table-land of Guatemala, the plain of Tabasco, and the isthmus of Tehuanterep. The north-eastern extremity of the peninsula of Yucatan, near Cape Catoche, is hardly more than six miles in length. Cape S. Anthony, the most western extension of the island of Cuba. Through the strait formed by these berths a current with considerable velocity sets in to the north. The sandy particles brought by this current are deposited in the northern gales are very unsafe; but along the eastern shores there are several harbours. The shores are rather land flat. The level country extends to an altitude inland, whilst the centre of the peninsula is occupied by a range of low hills, or rather a long and comparatively narrow table-land enclosed by two ranges of low hills. The country along the Bay of Honduras is well watered, and the west, and where the boundary of Mexico and Central America crosses the table-land it is probably less than five feet high. It continues to descend until it meets the plain of Tabasco, north of 17° N. Lat. Its surface is far from level, and is subject to inundations, and generally under water for several months during the rainy season. It seems that the part of the Mexican States suffers as much from the super abundance of water as the States of the American continent lying along the Gulf of Mexico. Between the lagune of Tabasco and the coast of Central America, the coast line is irregular. The shores of the Gulf running east and west about 30 miles, are a short distance from the shore; and where the plain terminates on the west is Cape Parida Rock, the extremity of a somewhat elevated and rocky shore, which extends
about 30 miles south-south-east and north-north-west. The Laguna de Terminos is about 60 miles long from north-north-east to south-south-west, and 30 miles wide on an average; but in many places it has hardly four feet of water, and the three or four channels by which it is connected with the gulf are hardly passable for large boats. The water is brackish. The plain of Tabasco is watered by a considerable river, the Rio de Tabasco, and its two branches the Usamansinta and the Grijalva, of which the former rises in two branches on the eastern corner of the table-land of Guatemala, and the latter in the adjacent plain of west, forms a considerable cataract south of 17° N. lat., where it descends from the table-land. Above this water-fall it is navigable for canoes, and below it for larger boats. There are also a few smaller rivers which rise in the hills on which the ruins of Palenque, the most northerly of the table-land of Guatemala. The Usamansinta joins the Rio de Tabasco a few miles above its mouth, after a course of more than 300 miles. The river is broad, the beds of deep canals, and the banks are made of 30 hills in Guatemala, between the town of Toninácapán and Coahuas, and runs with many bends in a wide valley in a north-west direction, until it issues from it near the isthmus of Tehuantepec, where it turns to the north-east by the sharply inclination of the table-land. It traverses the whole plain in a rather oblique direction, and appears to be navigable in this part for boats of considerable burden. Before it joins the Usamansinta it is navigable for vessels of moderate size, which ascend as far as Yéladal. Having joined the Usamansinta, it falls into the Gulf of Mexico at Port Victoria, after a course of about 350 miles.

The plain of Tabasco occupies the northern portion and about one half of the isthmus of Tehuantepec. The southern portion of the same, known as the province of the Mixteca, is covered with almost impregnable ravines and hills, which descend from the table-land of Mixtecapán, a distance of about 30 miles. The most western declivity of the table-land of Guatemala assumes the form of a ridge at about 94° W. long, which, running due east and west, connects the last-mentioned table-land with the western part of that same ridge (or rather these ridges, for there are several, running nearly parallel to one another) occupies between 35 and 40 miles of the isthmus. It is called Cerro Pelado, and probably does not rise above 2000 feet. Being entirely covered with forests, it is joined by the Rio Chimalapa, a river of about 30 miles. On the same Cerro, but within the northern ridges of the Rio Huasauculco, which first turns to the west, and then to the north, breaking through some of the ridges of the Cerro Pelado. In this part of its course it is joined by two small rivers which descend from the western declivity of the table-land of Mixtecapán, and it soon becomes a powerful river, though it is not navigable on account of rapids or cataracts. As soon as it enters the plain of Tehuantepec it becomes very shallow, and is laid open by the construction to the navigation. Its mouth, which is situated in the south-western corner of the Gulf of Mexico, is however so choked by a bar and shoals, that vessels even of small size cannot enter it. This isthmus of about 15 miles, which separates the Mexican States may be called Anahuac, though this name was used before the Spanish conquest to designate only the country as far north as 21° N. lat. and did not comprehend the northern district, which we include in this region. In its natural features it exhibits great variety.

We begin our survey with the eastern coast, which is low and sandy from the Punta de Revolta (18° 40' N. lat.) to the most north-eastern corner of the Gulf of Mexico (about 29° N. lat.), and still farther eastward. It runs on a continuous line, without being broken by bays or bays; and consequently it contains no harbours except those formed by the mouths of the rivers; and even these are only unsafe roadsteads, as the rivers of this coast (between 18° 40' and 22° N. lat.), with the exception of the Rio Alvarado, have only water enough in the rainy season. North of 23° several rivers of considerable size fall into the sea; but except at their mouths the coast cannot be approached by vessels, as it is lined by long, low, and narrow islands, which lie parallel to, and from two to six miles from it. The channels by which these islands are separated are too shallow to admit of navigation. The adjacent coast, which lies from three to ten miles inland, is very low, but is defended from the sea by sand-hills rising from 50 to 200 feet high. The soil is sandy and destitute of vegetation, with the exception of a few situated shrubs and some hardy plants. At the back of this low sandy tract the country rises gradually to the foot of an extremely steep ascent, which constitutes the eastern edge of the extensive table-land further west. The country which lies between the shores and the steep ascent varies in width to the north (near 19° N. lat.) it is only about 60 miles wide, and this may be considered as its average breadth south of 22°. Farther north it widens, and at Saltillo (26° N. lat.) it is more than 180 miles across. Its salinity can only be called gradual in comparison with the south, but for a certain distance it extends, and attains an elevation of 2500 or 3000 feet at a distance only 50 miles from the sea. In the wider portion of this tract, north of 22° N. lat., a small number of isolated hills, generally of considerable height, are scattered over the inclined plain; the temperature of the month of July is the highest, and are visible at a great distance.

This tract is comprehended in the Tierras Calientes, or 'hot countries.' The seasons are divided into the winter, or the season of the north winds, and the summer, or the season of the south winds. The season of the north winds begins about the 1st of December, and lasts about 6 months, or until the 1st of June, during which time the north winds (los nortes) are prevalent, and frequently blow with the force of a hurricane, sometimes for days together. They are the terror of navigators, as they sometimes blow with the force of a hurricane. During this period the coast is healthy, and the vomitio prieto, or yellow fever, is most prevalent. The mean height of this season is 71° of Fahrenheit, but whilst the north winds are blowing the thermometer sometimes descends to 60°. Rain is not rare during this season, but the showers are of short duration. During the summer the heat is great; the mean temperature is about 81°, and in July and August is about 82°. The rains are not heavy before June, but in that month they descend in torrential nearly every day for several hours. In July alone it is not uncommon for the showers to rise to 60 inches. It is the annual quantity at London. In this season, but especially towards the end of it, in September and October, the vomitio prieto is prevalent, and very destructive among the white inhabitants. This disease however only occurs in the lower portion of the country, which extends from 2500 to 3000 feet are entirely free from it. The mean annual height of this tract is 77°. It is extremely well adapted for the cultivation of all tropical products, and as its soil, with the exception of the sandy shores, is possessed of a considerable degree of fertility, it produces rich crops of cotton, rice, and vegetables where it can be irrigated. Bananas, pine-apples, oranges, and manioc are also cultivated. The products adapted for exportation are chiefly coffee, sugar, and cocoa, which is a small quantity of cotton; vanilla and jasp are collected in the woods, with which a great part of this region, especially that near the steep ascent, is thickly covered.

The steep ascent which bounds this tract on the west rises in some places in terraces, which lie between the declivities of the adjacent table-land, and are thus rendered available space; but in other places it rises from 5000 to 6000 feet in a distance generally not exceeding ten miles in width, and frequency much less. The salinity is so steep that on the whole line there are only two places where it is practicable for carriage of any kind, at Xalapa and Tetelcingo (19° N. lat.), and at Santillo, west of Monterey (26° N. lat.), though its whole length probably does not fall short of 600 miles. The rocks are generally too steep to maintain any vegetation beyond a small shrub, but the cultivation in the lower part there are many oak-trees, and in the higher large pines.

The steep ascent just described constitutes the outer edge of the elevated plains of Anahuac, which extend westward to a great distance. The edge itself is lined by a continuous
series of hills rising in general only to a moderate elevation above the table-lands, but some of them attain a great height, as the Coño de Perote, near the road leading from Vera Cruz to Mexico, which is 13,415 feet above the sea-level, and 5723 feet above its base, and the peak of Orizaba, which attains a height of 17,133 feet. The heights which line the margin of the table-land do not form a continuous chain, but appear rather isolated in the southern districts. North of 23° N. lat. however they constitute a continuous range of high mountains, considerably elevated above the adjacent table-land. The range is bounded by the Gulf of Mexico to the west, and the Gulf of California to the east (24° lat.). North of the group which surrounds this place they again sink down nearly to the level of the table-lands.

The elevated plains of Anahuac are divided into two parts by a range of mountains, which traverses them in a general eastern and western direction, and is called Sierra Madre. This chain begins not far from the eastern edge, near 21° N. lat., west of Tlacotalpa, with the mountains of La Encarnacion, whence it continues in a west by north direction to San Felipe (21° 40' N. lat.), which town is situated in a comparatively small plain enclosed by two branches of the range. Here an elevated and wide bench of land reaches off to the southward, and stretches over the plain for about 50 miles, terminating among the hills in which the mines of Guanajuato are situated.

West of San Felipe the range declines to the north-north-west, and its continuity seems to be broken into isolated ridges, as the Sierra de Alatania, which extends for about twenty miles, or more, north-east from the Gulf of California, and the group of mountains which contain the mines of Zacatecas. But at no great distance west of Zacatecas the Sierra Madre re-appears in the decided shape of a mountain-range, and occupies a width of a hundred miles. This direction is almost north-west to north as far north as 26° N. lat., where it declines to the north, and terminates near 32° N. lat., in an isolated mountain-group called the Sierra de las Espuelas, having gradually diminished both in elevation and width. The elevation here is more than 4000 feet above sea-level, and the mountains of La Encarnacion rise more than 10,000 feet above the sea, and about 4000 feet above their base; those enclosing the plain of San Felipe are probably as high, especially those of La Tachiquirea. It would also seem that the range stretching north-west from Zacatecas is not elevated for a considerable extent, though it sinks lower north of 26° latitude.

The elevated plains which spread out west of the steep ascent occupying the greatest part of the surface of Mexico. They are widest between 19° and 20° N. lat., where they occupy 350 miles from east to west. This extensive tract of country however is not one plain, but divided into four plains, unequal in extent, and separated from each other by ranges of mountain which rise from 4000 to 5000 and more feet above sea-level. The most eastern plain may be called the plain of Tlacotalpa, from the town of that name, which is situated nearly in its centre. Its surface is from 7000 to 7400 feet above the sea, and it occupies the space between 97° and 98° W. long., and between 18° and 20° N. lat. Its surface is pretty level: the hills, which occur on it at considerable distances from one another, rise only to a very moderate height, and the depressions are few and of small extent. Two isolated peaks of considerable elevation, the Cerro de Pizarro and Mount Malinché, are near the road which leads from the sea to Mexico. The parts of this plain which are contiguous to the eastern edge of the table-land are very sterile, the ground being covered with laves, and producing only scattered patches of brush. The northern part of the plain, called el mal pais, occupies about one-third of the plain. Farther west the soil improves, and in many places the ground is covered with maize, wheat, barley, or laid out in plantations of maize and beans. The centre of this plain, west of the range of Tlaxcalla from that of Tenochtitlan, contain the peak of Ixtaccihuatl (15,704 feet above the sea), and the volcano of Popocatepetl (17,584 feet), which last is the highest mountain in Mexico. The plain of Tlaxcalla is bounded on the west by the ranges of the Sierra del Moctezuma, is between 19° and 20° N. lat. and 98° 30' and 99° 30' W. long., and about 7480 feet above the sea. Farther west is the plain of Toluca, which extends to 100° W. long., and is somewhat smaller in extent than that of Tenochtitlan, but is likewise surrounded by chains of hills. In the southern chain is the Nevado de Toluca, which is 15,160 feet above the sea, and through the northern chain the Rio de Lerma forces its course. The surface of this plain is in many places uneven and broken, but it contains also extensive levels. As it is nearly 9000 feet above the sea-level, it is too cold to produce wheat, and it serves chiefly as pasture-ground. The most western of these extensive plains is that of Michoacan. This limits between 100° and 110° W. long., extends from 100° to 110° W. long., and approaches the Pacific within about 30 miles. Its surface in the eastern districts is about 6500 feet high, but towards the west it sinks down to 5500 feet. Far from being so level as that of Tlacotalpa, this plain is broken by the ranges of the Sierra Madre, and the ranges of the valleys of moderate width and great fertility. The mountains are covered with a fine growth of timber. The level country is fertile, and produces abundantly every kind of grain, and cotton, and the elevated plains above the level of the sea admit the cultivation of tropical products. Nearly in the centre of this plain is the lake of Patzcuaro, famous in the history of the ancient kingdom of Michoacan, whose capital, Tzintzuntzan, was built on its banks. Towards the western extremity of the plain is the peak of Tlatelolco, which is probably more than 10,000 feet above the sea.

From the western edge of the table-land of Michoacan, on which the small town of Zapotlan is built, the country declines rapidly to the plain of Colima, which seems to resemble the course of the coast. This country, as we ascend the west, and approach the summit of the range, becomes gradually more level and not much elevated above the sea. On this plain the isolated volcano of Colima rises to a great height. This country is fertile. It is not rich in producing all the tropical plants; but it is badly cultivated.

On the north the table-lands just mentioned border on others of a similar description. On the south the country descends rapidly and with a very irregular surface, except where we are near some of the mountains. The tableland extends east of the range, from a town called Zumpango, near 23° 30' N. lat., southward to the mouth of the river Mixtepecan, which stretches from about 18° 30' N. lat. southward to the very shores of the Pacific, where it terminates with high mountains, leaving only a narrow tract between them and the sea, from the plain of Toluca to the ocean. This tract has been very little known. As we approach the sea, the waste, a space of 300 miles. We are less acquainted with the features of the table-land of Mixtepecan than with other parts of Mexico, as it has rarely been visited by European travellers, though it contains the best cultivated and most populous districts of the republic. It is however certain that the whole region, with the exception of a few depressions and the low tract on the coast; forms a table-land about 3000 feet above the sea. Its surface appears to be very undulating, the peaks of the mountains rise into hills. Towards the town of Tabasco a chain rises to a greater elevation, though the highest summit, the peak of Senpueltpec, probably does not exceed 7000 feet. Indian corn and other grains are grown in abundance, and a great quantity of cotton and indigo produced.

The table-land of Mixtepecan, stretching south and north, and extending westward to 98° 30', forms nearly a right angle with the table-land which stretches east and west over the Mexican isthmus, between 19° and 20° N. lat. The countries which fill up this angle do not present just the least degree the features of a table-land, being covered with numerous narrow ridges running generally east and west, with valleys between these ridges sometimes wide enough to be called plains. Both the ranges and the valleys grow low, and appear to approach the sea. As we pass the low ridges which enclose the table-lands of Tecoman, Toluca, and Michoacan, on the south, we descend immediately to a country hardly 3000 feet above the sea, as the people term it, the table-land. This table-land, the town of Tala (3100 feet) and at Cuautla y Amilpas, not more than 30 or 40 miles south of the table-land of Tenochtitlan. Farther south the descent is less rapid, as the valleys, which are only 30 or 40 miles from the Pacific, are still about 2000 feet above the sea. The coast is formed by a narrow stretch of the Pacific Ocean. As we pass the low ridges which enclose the table-lands of Tecoman, Toluca, and Michoacan, on the south, we descend immediately to a country hardly 3000 feet above the sea, as the people term it, the table-land. This table-land, the town of Tala (3100 feet) and at Cuautla y Amilpas, not more than 30 or 40 miles south of the table-land of Tenochtitlan. Farther south the descent is less rapid, as the valleys, which are only 30 or 40 miles from the Pacific, are still about 2000 feet above the sea.
on the 29th September, 1759, in a violent eruption, by which a surface of between 24 and 30 square miles was raised several feet above the level of the plain. The volcano is surrounded by numerous conical hills of moderate elevation, from which smoke is continually issuing. From the mouth of the Rio Bolsa, westwardly, and northwardly along the Pacific, which joins that of Colima, and spreads about 30 or 40 miles inland. It is a tierra caliente, resembling, in climate, fertility, and productions, the low coast along the Gulf of Mexico, and, like the latter, it is very un- blemished by the towns and villages. The year round, the region is one of vigorous plant growth and rarefied air. The rivers of this region are of little consequence except for irrigating purposes. The absence of snow and cold winds, the gales by which it is visited rather resemble hurricanes, and blow during the months of July and August from the northeast; times they occur as late as September and October. From October to May the air is in general calm, and the sky cloudless; but the sun is nearly inviable on account of a fog, of an olive colour, which covers the whole sky in its upper regions. This region is of a size as in the lakes of Puebla and Chapala, whence it is sent to Mexico, slightly sprinkled with salt or preserved in snow.

The Rio Santiago, or Rio Grande, the largest of the rivers of the Mexican sierra, principally traverses the regions of Queretaro, and Guanajuato, and is from 101° to 102° 30', and 15° 18' W. long. This river rises in the highest of the table-lands, in that of Toluca, in a lake situated at the base of the range which divides this table-land from that of the Tecoluca, and in an extensive morass surrounding the small town of La Yaguita, and hence it is the outlet of its course, Rio de Lerma. Its course across that region is rather gentle, until it breaks through the range of hills which separates the table-land of Toluca from that of the Sierra Nevada, and then becomes an independent course, and its waters are abundantly used for irrigation. Where it leaves the plain of Queretaro, it is closely hemmed in by precipitous mountains, full of rapidis and bars, and runs quickly over a stony bed; in this part of its course navigation is entirely impossible, except for small canoes in the spaces between the rapids. On approaching the lake of Chapala its course becomes gentle, and before it enters the lake it passes through an extensive level tract, which is inundated by the river during the rains and is swampy all the year round. It splits into two branches below the town of Barca, where it is 90 yards wide. The waters of the river may easily be distinguished from those of the lake, from which it issues on the north side not far from the town of Toluca, and extends to the town of Tepic, and to the uninstructed course to the Puente del Rio Grande, near Guadalaxara, where there occur in the space of less than three miles between fifty and sixty falls. Its course farther down, though less obstructed, is still very rapid, and at present at least not used for navigation. The course of this river considerably exceeds 400 miles in length.

The eastern part of the table-lands is drained by the river Panuco, which rises in the lake of Zumapango on the table-land of Teneuchtitan. The waters of this lake are carried by the canal called the Huehuetoca to the Rio de Tula or Motezuma [Mexico], which runs in a northern direction, inclining a little to the east to Tamainsihi, where it is called the Rio de S. Juan. From this place it passes in the same direction to Tulaflora, S. Juan. Tanquiichi. From this place to Panuco, a distance of 87 miles by the numerous windings of the river, it may be navigated by large boats. Between these places the Rio San Juan is joined, from the west, by the river Tamamochi, and after this junction it is called de Panuco, and is navigated for a much shorter distance than from the last-mentioned to Panuco, a distance of 87 miles by the numerous windings of the river, it may be navigated by large boats. Between these places the Rio de San Juan is joined, from the west, by the river Tamamochi, and after this junction it is called de Panuco, and is navigated for a much shorter distance than from the last-mentioned to Panuco, a distance of 87 miles by the number
below Panuco is exceedingly winding. It traverses a low and frequently swampy tract, covered with extensive forests, in which mahogany and different kinds of dye-wood are cut. At its mouth the river forms the harbour of Tampaico. Its whole course, including the windings, can hardly be less than 480 miles, and, so great is the evaporation, and, as well as the table-lands themselves, enjoy a very healthy climate all the year round, whilst the inhabitants of the low tracts along the coast are subject to dangerous diseases.

As we pass to the countries lying to the north and east of the Sierra Madre. The country, which is bordered by the range on the south and west, is a plain of great length, terminating on the north on the banks of the Rio del Norte, between 30° and 32° N. lat., and at the Sierra de las Espadas, the most northerly mountain of that chain, which is nearly 700 miles. Its width, which between 22° and 24° N. lat. hardly exceeds 100 miles, widens considerably farther north, so that at 29° N. lat. it is probably more than 300 miles. The southern portion of this plain, as far north as the mouth of the Zaza or the Gulf of Mexico, the east, may be on an average about 6000 feet above the sea-level. Its surface is in many places traversed by ranges of hills, running east and west, and its soil in general resembles that of the plain of Queretaro, but is not equal to it; for, although the climate is preferable to it, there are no great and extensive tracts of grass, and some parts are quite barren, and others covered with forest. This portion of the country is a great table-land. We now follow the course of the river Panuco, and as it very serves as pasture-ground for numerous herds of cattle, sheep, and goats. The rains are less abundant than farther south, and fall mostly in October and November; the heat in summer is less, and the cold in winter greater than on the table-lands of Queretaro.

The northern portion of the plain is still less favoured by nature. Near a line drawn from Zacatecas to Catore it is about 6000 feet above the sea-level, but in the neighboring country of the Rio del Norte it is only 5000 feet. It suffers greatly from the scarcity of rain, which in the southern districts is far from being abundant, and north of 27° N. lat. is very rare. It is consequently badly supplied with water. The springs being few in number, and the river through the great desolation that extends from the coast to near 31° N. lat. in the southern districts are the Rio Grande de las Nieves, which runs about 300 miles, and loses itself in the lake of Parras, and the Rio Nasas, which after a course of about 200 miles enters the lake of Mapimí. In the northern districts are the Rio de San Esteban, and the Rio de las Casas Grandes, which runs hardly more than 100 miles, and falls into the lakes of San Miguel and of Guzman. The cultivable land of this plain is limited to the river, which successively extend from two to four miles along the banks, and produce here and there a few cornfields. In the valley of the Rio Nasas much cotton is grown, and in the neighborhood of the lake of Parras are extensive vineyards, from which a good wine is obtained. All the vines, of the same kind, are cultivated on the banks of the river, and on the mountains. The country, in other respects, is more level, and consists mostly of a firm soil, the sandy or stony tract being rare and of comparatively small extent, but they are quite destitute of wood or even shrubs, and in certain seasons even dry grass is rare. Gales of wind are common, and they occasionally have periodical rains from May to September. In the valley of the Rio Nasas, below, they are very cold and raise immense clouds of dust filled with saline particles. The last-mentioned circumstance is considered as the cause of the insalubrity of this region. Within this plain is situated a mountainous range, the Sierra de Sapos, which forms an isolated tracts of land extending from the northern shores of the lake of Mapimí to the banks of the great southern bend of the Rio del Norte. But its extent to the east and west is imperfectly known. It is in possession of an untraced

other, and the uneven plain of Xalisco, are called Tierras Templadas. Their mean annual temperature amounts to between 75° and 78°, and they enjoy nearly a continual spring, as the temperature of the winter in the colder and hotter season does not exceed 8°, or at the utmost 10°. These tracts of lands are broken here and there by small and extensive table-lands, which, though rarely, descends below 32°. In summer it never exceeds 75° in the shade. On the table-land of Tolueva, which is the most elevated, the air is so cold during the greatest part of the day, that the thermometer generally varies between 65° and 68°, and somewhere is brought up in northern regions find the climate very unpleasant. On the table-land of Valladolid, Mixtecapan, and Michoacan, which are considerably lower than Tenochtitian, the mean annual temperature probably varies between 66° and 68°. All these countries, being more than 5000 feet above the sea-level, are called by the inhabitants Tierras Frías (cold countries). The winter is indeed not severe, but the summers are not warm. To the small difference of the temperature in the different seasons, and to the extent of the heat in summer, it is the fact that several plants do not grow in these countries, which thrive very well without the tropics and in places the mean annual temperature of which is considerably below that of the table-lands. A few of the table-lands are only two, that of the rains (estación de las aguas) and the dry season, or summer (el estio). The rains commence in June or July, and terminate in September or October; the rainy season consequently lasts only four months. The rains occur earlier in the countries approx-
tribe of natives, called the Appaches, and has never been
examined by European travellers, but it is said to contain
an abundance of metals, which have never been worked.

The Sierra Madre, which extends along the western side
of this plain in a north-western direction, lowers itself
towards the Rio Grande. Its first branches, in these cases,
separated from each other by abrupt declivities, and tra-
versed by deep and steep transverse valleys. The crest of
the chain is situated towards its western declivity, and be-
tween the ridges which compose the mountain-region are
longitudinal. The greatest part of the plain appears to be con-
stituted by an extensive and hilly surface, containing rich
mines. Towards the plains, which lie along the Pacific, the
desert is very rapid, and only sur-
faced by ravines.

The plains between the Sierra Madre and the Pacific are
naturally divided into two different regions, the plains of
Cauhila and the hilly region of Sonora. The former ex-
tends between 24° and 25° N. lat., and the latter between
25° and 32° N. lat. The plains are perfectly level, and
even to the south-south-west. Two large mountains, which
are only 100 miles in extent, are quite enough to water the
adjacent tracts. The most considerable of these rivers are
the Rio de Culincan, the Rio del Fuerte, and the Rio Mayo,
each of which may run upward of 100 miles in a wide and
depth, but the fact is that its surface is not ordi-

It is not yet known how they are connected with the princi-
ple range of the mountains, but their elevation has not been ascertainment.

Between these hills run rivers in valleys, generally several
miles wide, and possessed of a considerable degree of fertili-

ty. The largest is the river Yacqui, which is formed by
the confluence of several of smaller streams. The Rio del
Sierra Madre southward, and the Rio Oposura, which
runs parallel to it farther west. The first runs about 200
miles, and the second 120 miles, before they unite upon
emerging from the hilly region. After their junction they
only hills of Rio Elevation, and then join the
more, until they fall into the Gulf of California, south of
25° N. lat. The central districts of Sonora are also tra-
versed from north to south by the rivers Arise and De-

ores, which flow parallel to each other until they unite a few miles below the mouth of Pitie at the junction of the plains.
None of these rivers are navigated, but they are used to
irrigate the valleys, in which maize and wheat are grown to
a considerable extent. Without this irrigation the country
would be a desert, as the climate is extremely dry, with
more than 100 weeks, fall only in short showers, and are very irregular and uncertain. It would seem that in
the most northern district there is no rain at all. As
this part of the Mexican States is situated within the tem-
perature of the tropics, such is the case with the climate
which commonly occur in these countries. The
thermometer ranges during the year between 30° and 95°.

During the northern and north-eastern winds, which blow
from the Rocky Mountains, and probably pass over elevated
plains, it sometimes freezes every night for several weeks
at Pitie (23° N. lat.), and the thermometer then sinks as low
as 18° in the night-time. It seems that frost occurs in these
parts every year. But the summer is excessively hot, and the
hot weather continues for several months: the rains
take place much later here than farther south.

The countries hitherto described are situated on the
Mexican isthmus, which is divided from the main body of
North America by a plain extending from the shores of the
Pacific eastward to the lower course of the Rio del Norte,
between 32° and 33° N. lat. This plain seems to be
interrupted by the ranges of mountains which extend
from the Arizona, is situated near 109° W. long., and noted for
the fabulous stories of its great wealth in the precious
metals; the other occurs near the bank of the Rio del
Norte, where it begins to extend along the border,
eastward, and is called Sierra del Florida. Nothing
is known of these mountain-groups. The plain is drained
by the river Gila, which runs more than 500 miles in a
western direction, and unites with the Rio Colorado near
the embouchure of the Gulf of California. It rises in the
Sierra de Mogollon, the most southern extremity of the
principal range of the Rocky Mountains; and though it
may have a considerable volume of water in its upper
course, it loses it imperceptibly by flowing through an
arduous and barren country, which not only does not sup-
plies the whole of them, but sustains

The Mexican States extend much beyond this natural
boundary, and comprehend a considerable portion of the
unknown region extending between Upper California and
the Rocky Mountains; the Vale of the Rio del Norte, or
New Mexico; and Texas, or the country extending eastward
of the Rocky Mountains, and at least the southern
States of America. As to the Californias, see CALIFORNIA,
v. i., p. 158. Of the country lying north and east of
Upper California little is known: two lakes of great extent
are stated to occur in it, of which one is said to be salt.

The reports of travelers respecting the river, as mentioned in the article COLORADO. We shall conclude
our survey with New Mexico and Texas.

New Mexico is a valley of great extent, included by the two
mountain-ranges with which the Rocky Mountains terminate
in the south. The western range, called Sierra de Mogollon,
commences about 34° N. lat., and is in the plain which lies
along the upper course of the Rio Gila. It is not known if
this range is connected with the Sierra del Florido, which is
about 60 miles south-south-east of it. The other range,
which is called Sierra de Arizones, forms a parallel margin
of the mountain-region called the Bozon de Mapimis, in
the most southern end of the Rio del Norte, near 29° N. lat.,
and extends northward to 40° N. lat., where it joins the
Sierra de Mogollon. Both ranges run nearly parallel to the
valley and the mountain valley between them is New Mexico. Its southern
district, between 34° and 35° 30' N. lat., is a desert, covered
with arid hills, which close up to the banks of the river,
and are, in part, without vegetation, except in some narrow
valleys traversed by rivulets. This district is called Desereto del Muerto. The northern district, between 35° 30' and
38° N. lat. is a valley, from 20 to 40 miles across: this part
has been settled, and produces grain enough for the con-
sumption of the inhabitants. In this part of the country
the people consists in their pasture-grounds, which feed nu-
merous herds of sheep, their plantations of tobacco, and
the wild animals which inhabit the adjacent mountains.
The most northern part of the valley, between 38° and 40° N.
lat., is uninhabited, and on account of the dryness of the
climate, which even in the settled part is so great that
the Rio del Norte, though a rapid river, is annually covered
with ice for several months. This circumstance is partly to
be attributed to the ranges enclosing the valley, which in
some places are covered with eternal snow, but chiefly to
the elevation of its surface, which Humboldt thinks cannot
be less than from 2000 to 2500 feet, an estimate probably
rather below than above the truth. Rain is very scarce,
and usually falls only once a year, and in some years not
at all; the snow however, which covers the ranges to the

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2
month of June, supplies the soil with the moisture requisite for the growth of grain and grass.

The Rio del Norte, also called in its lower course Rio Grande, and on the maps incorrectly Rio Bravo, is the largest of the rivers of Mexico. Humboldt estimates its course at nearly 140 miles. It rises in the most northern and western part of the Mexican Republic, near the 34th N. lat., not far from the sources of the Arkansas, a tributary of the Mississippi, and of the Rio Colorado, which falls into the most northern recess of the Gulf of California. The Rio del Norte, rising from 40° to 45° N. lat., and even to the vale of New Mexico is a considerable river, which has water enough for small boats, but is not navigable. In the mountains between 35° 30' and 34° N. lat. it seems to be too full of rapids to permit of any kind of navigation. Within 200 miles of its mouth, south lat., its waters are abundantly used for irrigating the fertile district which surrounds the Paso del Norte, and its water is consider-
ably diminished. Afterwards it receives a small supply of water by the Rio Conchos; and after having changed its course by a great bend to the east and north east, it receives a larger supply by the Rio Puerco, which runs in a longitudinal val-
ley east of the Sierra de Sacramento; but as its course lies through an arid plain, which is rarely refreshed by abundant rains, its waters are too scanty for small boats until it has changed its course to the south-east, and has arrived at the Presidio de Rio Grande, about 200 miles from its mouth. At this place or in its neighbourhood, as it seems, the river leaves the elevated plain and descends into the country, which extends to the shores of the Gulf of Mexico, and from this place downward it may be navigated by small boats. The waters of the Rio del Norte rise, as those of many other rivers, annually: this rise begins in the month of April, is highest in May, and at the end of June the waters are at their greatest height. This change is owing to the melting of the snow on the sur-
rounding mountains. The rise of the water is not perceptible in the lower course of the river. The mouth of the river is south of 33° N. lat., at Braxos de Santiago, and about twenty-five miles from the Gulf. It is navigable by vessels of small burden may ascend; but larger ones cannot enter the river on account of its bar and of numerous shoals.

The country east of the Sierra del Sacramento, and north of the lower course of the Rio del Norte, which is comprc-
hended almost entirely under the name of Texas, differs greatly in its natural features from all other parts of the Mexican States. That portion of it which lies along the Sierra del Sacramento and extends eastward to 105° W. long. is a table-land, and extends northward for the space of at least 1200 feet. Its northern portion, embracing the coun-
try on both sides of the Red River as far north as the Arkansas, is an extensive plain, considerably elevated above the water-level of the river. The country is bounded with moderate extent, covered with trees of heavy growth, which indicate a considerable fertility of the soil; but the spaces between these river-valleys have an arid though commonly a firm soil, which is covered with vegetation only in the early season of the year, and on this account the region is deprived of it. Like the extensive plains along the base of the Rocky Mountains, it wants water and wood, and seems to be incapable of cultivation. This region is joined on the south by an extensive tract of mountainous country, called the hills of San Salba, which is connected with the Sierra del Sacramento, and extends southward to the mouth of the Rio Puerco. Its eastern offsets extend to the meri-
dian of 100°. The mountains probably do not rise above the elevation of 2000 feet; but their situation, as the whole region, being in possession of a tribe of natives, the Comanches, who are enemies to the white set-
tlers, is unknown. In this mountain-tract most of the large rivers that water Texas take their origin. Between this region and the elevated plain on the Red River a swamp of great extent is stated to exist, in which one of the branches of the Rio Brazos rises. When the salt, which crystallizes on its surface after long dry weather, is dissolved by abundant rains, the water of the Rio Brazos becomes saline.

The remainder of Texas, included between the meridian of 100° N. lat., the Red River on the north, the Sabine on the east, and the Gulf of Mexico and Rio del Norte on the south, is considered one of the most fertile countries of North America. The country is drained by a number of long flat islands, separated from the main by narrow

strials; but those straits are much deeper than those far-
ther south, and afford in several places good anchoring
ground for vessels of moderate size; so that Texas has more and better harbours than all the Mexican States on the Gulf of Mexico taken together. The bars on the rivers have deeper channels than the preceding part of their course is less and their waters less troubled, as they do not descend from countries at a great elevation above the sea-
level.

The low country along the coast extends about ten or twelve miles inland. It is not, like the country south of the Rio del Norte, a sandy desert without vegetation, but suffers rather from superabundance of water, being a great part of the year inundated or in the condition of a swamp. Behind this low swampy tract the country rises imperceptibly for some miles, and then appears to stretch out in a level plain, with a nearly level surface. The width of this plain varies consider-
bly, as its northern and western borders form nearly a crescent. Near the boundary-line of Louisiana it is from 40 to 50 miles wide. At the north-western corner of the Gulf of Mexico, between the rivers Texas and Guadalupe, its width is stated to be 70 or 80 miles; but on approaching the Rio del Norte it narrows to 20 or 25. This plain is from 10 to 30 feet above the water-
level of the river, and is extensively covered with praries,
which are destitute of trees, and exhibit fine prairies. The forests consist of different kinds of oak, hickory, iron-wood, sugar-maple, and other useful trees, which are found in the southern states of the American Union. It is supposed that the bowlders and the alluvial and the organic debris have been cast into an immense field, producing cotton, sugar, Indian corn, tobacco, wheat, and every kind of plants and fruit-trees which grow in the temperate zone and on the borders of the tropics, whilst the prairies, which hardly occupy one-fourth or one-half of the whole, in their natural state, serve as pasture-ground for cattle.

The country at the back of this plain is less favoured by
nature, the proportion between the cultivable land and the prairies being nearly inverted. The former is chiefly limited to the bottoms of the rivers, which are numerous and gen-
erally wide, so that they perhaps occupy one-fourth of the surface. Their soil is alluvial, and in the present state covered with trees of large growth, a certain indication of the fertility of the soil. They are not liable to be deprived of water, and have sufficient fall to draw off the superabundance rapidly, the inundations are of short duration, and serve only to impart new vigour to the soil. The country between these bottoms generally rises from them with a gentle acci-
dence; and the country, which is the summit of one of the most elevated surfaces, on which is a considerable
area of hills of moderate elevation are dispersed. By the far the greatest part of this tract is destitute of trees, which occur only in the northern prairies, and at considerable distances from one another. The most extensive of these wooded islands cover the bases and declivities of the hills. The remainder of the country is covered with grass, which affords excellent pasturage. As the grass maintains its verdure for many months, it appears that Texas is less arid and destitute of

moisture than further north, or on the table-lands of Mexico, and it is thought that extensive tracts of it may be cultivated with wheat or other grains. The least fertile district of this tract occurs about the sources of the Sabine river, which is a branch of the Nueces, and has a mean elevation of about 200 feet, its surface being generally undulating, and overgrown with pine-forests. It resembles that part of Louisiana which lies between the Red River and Arkansas west of Natchitoches.

Texas owes its great capability for agricultural purposes to its numerous rivers and the importance of the navigation of these. These rivers, when the country shall be well settled and cultivated, will materially contribute to its prosperity, as all of them, even those which run only fifty miles, are navigable for flat boats. The most important of these rivers are the Rio Nueces, which flows about 250 miles with a general south-eastern course; the Rio Guadalupe, which is nearly as long, and which falls into a lagoon forming the harbour of the Gulf of Mexico; the Rio Grande, which enters in its upper course the mountain-tract ot }
Most horses are exported in great numbers to the United States. On the great plains bordering on the Red River and around the American buffalo abounds. In winter the buffaloes traverse the hills of Santa Barbara, and pasture on the plains along the lower course of the Rio del Norte. Carnivorous wild animals are not numerous. Game is abundant, especially deer and hares. Among the birds are various kinds of pheasants, quail, and partridges. The latter abound in flocks. Bees seem to abound on the prairies of Yucatan, and the coleoptile insect is reared with great care on the table-land of Mixtacapan, whence by far the greatest part is brought to the market of the world. In the Gulf of California pearl shells are found, and forty-forty many pearls were collected, but it seems that this branch of industry has declined.

Mexico is noted for its mines of gold and silver. The gold-mines occur chiefly on the western side of the Sierra Madre, north of 24° N. lat.; the silver-mines are richest on the mountains which rise on the table-lands, and in those which border their margin. During the civil war, which began in 1810 and lasted for many years, the greatest part of the mines were neglected. Their working was however renewed in 1825, partly by the Spaniards, but chiefly by the English, and it is reckoned that in 1825 the produce was much less than it had been before 1810. Since the year 1825 it has considerably increased as well as expanded in consequence of the discovery of various metals. Mexico has abundance of copper, iron, and lead, which are worked. The iron-mines however have only been opened since the year 1825. A quicksilver-mine is worked at S. Onofre, on the northern declivity of the Sierra Madre, but the Tin is also abundant. The most considerable of the silver-mines is the Santa Maria; which produces a large quantity of silver carbonate of soda, called tequesquite, which is necessary for the smelting of the silver ore, is collected in several lakes, where it is found crystallized on the surface in great abundance. It is also common in most places on the table-land in the upper layers of the soil, where it appears in the state of an efflorescence in the month of October, after the rains have ceased.

The whole population of these states is composed of moors or descendants of Europeans and Indians, and of those of mixed blood. The number of Europeans, who are called Gachupines, and formerly amounted to 80,000 individuals, has been much reduced by the expulsion of the natives of Spain; and though many individuals of other nations, especially Englishmen, have settled in these states during the last twenty years, it is supposed that the whole number of Europeans hardly amounts to more than 20,000 or 25,000.

The bulk of the population still consists of the descendants of those native races which inhabited the country at the time of the Spanish invasion. Humboldt thought that they constituted two-fifths of the whole population; but as he asserts that no natives were mixed up with the white population in Sonora, where modern travel has proved that they really constituted more than half the number of the inhabitants, it is probable that the natives form one-half of the whole population, especially if we take into account the numerous tribes which occupy the large tract of unknown country between Upper California and the vale of the Rio del Norte, and which are computed to amount to 300,000 individuals; though this number is probably exaggerated.

The aboriginal tribes of America resemble one another in the general features of their face and body, which, according to Humboldt, are the following: the colour of their skin approaches that of copper; their hair is black, lank, and so smooth, that it always appears as if it had been wetted; and they have little beard.

The men's heads are short and broad, their hair is long, and a little raised towards the temple-bones, as in the tribes which belong to the Mongol race. Their cheek-bones are prominent, their lips thick, and their mouths exhibit an expression of fierce energy which forms a striking contrast to the rigidity of their looks. Though they thus greatly resemble one another in personal appearance, the tribes into which they are divided speak languages which are said to differ as far from each other as the English from the Russian. Humboldt gives the opinion that two generations ago this description were spoken within the territories of the states south of 33° N. lat.; but it would seem that he has not comprehended in this number the eight nations which live
within the boundary of Sonora, or the northern portion of the state of Occidente. The number of tribes which are still entirely independent, and live north of 30° N. lat., is not known, and seems to be very great. The language which is most extensively spoken is that of the Azteks, which seems to be understood by nearly all the tribes which inhabit the country between 16° and 27° N. lat. The language of the Otomites, which is spoken in the countries along the Gulf between 20° and 23° N. lat., is remarkable for its structure, which resembles that of the Chinese language, being composed of monosyllables. (Naxera, De Lingua Otomitornia Dissertatio, Philad., 1835, and London Geographical Journal.) Next to the language of the Azteks, that of the Otomites is the most widely spread.

The natives who have submitted to the dominion of foreigners have attained different degrees of civilization. Those who inhabit the country between 18° and 23° N. lat., were, on the arrival of the Spaniards, subjects to the kings of Tenochtitlan and Michoacan, or united in the republics of Tlaxcalan (Tlascala), Huaxochingo, and Chollollan, and had then attained a considerable degree of civilization, as is proved by the ruins of their numerous buildings, or castles, their causeways and dikes, their hieroglyphics, paintings, and sculptures; and though the objects of their agriculture were only few in number, their cultivation was extensive, and carried on with considerable ease. They submitted to the conquerors without resistance, and continued to cultivate the ground on which they were born. Their present condition is not worse than that of the lower classes who cultivate the ground in most parts of the European continent, but they appear to have fewer wants, and accordingly indulge more in idleness among them. Some of them have very rich families, but they are not distinguished by their mode of life or their dwellings from the other members of their tribe. In most places they live mixed with the whites and mestizos; in others they occupy large tracts, to the exclusive possession of the foreigners. The countries north of 24° N. lat. were inhabited at the time of the conquest by tribes resembling those of the United States of North America. They had no fixed dwellings, and lived mostly on the produce of the chase; they introduced cotton into the contiguous countries whose vegetation is so scanty, and which are destitute of trees, their numbers were small, and they speedily retired from the large plain east of the Sierra Madre to the mountain tract called the Bolson de Mapimi, where they still continue their savage life. They have also disappeared from the plain which extends along the Pacific to the Rio Mayo. In these two plains a few natives are only found along the southern boundary-line, and these seem to have settled their fate as they have. But in the mountain tract north of the Rio Mayo the natives resisted the invasion of the Spaniards, and were only subjected by the Jesuit missionaries. The padres accustomed them to a civilized life, and taught them the principal mechanic arts; their success seems to have been so great, that they have attacked the famous missions of Paraguay. Though these Indians inhabit the same country with the numerous white families which have spread among them, they live in separate places, and no close intercourse exists between them, except for the purposes of trade. In the arts of domestic life they seem to approach nearer to the Europeans than the Azteks, and they certainly exhibit a greater degree of energy and mental power than the last-mentioned nation.

The Indios Brutos, or savage tribes, inhabit the countries north of 33° N. lat., along the Rio Gila, the Bolson de Mapimi, the mountain-ranges which include the vale of the Rio del Norte and the north-western district of Texas. Many of them, especially the Apaches and Comanches, the most numerous of the tribes, were still in open war with the white settlers. For the protection of the latter the Spaniards erected presidios: a presidio consists of a wooden wall of a quadrangular form, within which the houses are built, and the flocks of cattle and sheep are shut at sunset. They are inhabited by a few white families and a small number of soldiers for their protection. The inhabitants of the presidios cultivate the adjacent grounds, and keep large flocks of cattle and sheep, but do not venture to pass the night without the walls. The Iltubos Brutos generally live near the source of the Gila and the Pecos, and are most numerous in the tracts which are visited by the buffalo. It does not seem that they cultivate the ground. Where the states of Yucatan and Tabasco border on Central America there is still an independent tribe, the Mayas, who speak a language different from that of the Azteks, and have made some progress in civilization; they cultivate maize, coca, and tobacco, and clothe themselves with cotton and the bark of the Indian-rubber trees, but they still depend principally on fishing and hunting for their support.

The mixed race is mostly composed of the descendants of Europeans and the aboriginal tribes: these are called Mezocl, or Mestizos, and constitute more than one-fourth of the population. The descendants of Africans and Indians, and of Africans and Europeans, are much fewer. The former are called Zambos, and the latter Mulattos. In the neighbourhood of Arapalca there are a few Chinese and Malays, who have emigrated from Asia. There are very few negroes in this country.

The whole population, which probably at present considerably exceeds seven millions, is composed of these different elements, according to a rough estimate, in the following proportions:

- Aboriginal nations: 3,500,000
- Mestizos: 2,000,000
- Mulattos and Zambos: 600,000
- Creoles, or descendants of Spaniards: 1,200,000
- Europeans: 15,000

Political Division and Towns.—The confederation called the United Mexican States consists of nineteen republics or states, besides three territories, and an immense tract of country which has not been annexed to any of them. According to an estimate, the states contain the following number of inhabitants and extent in square miles:

<table>
<thead>
<tr>
<th>Number of Inhabitants</th>
<th>Extent in Square Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Chiapa</td>
<td>130,000</td>
</tr>
<tr>
<td>2. Yucatan</td>
<td>350,000</td>
</tr>
<tr>
<td>3. Tabasco</td>
<td>55,000</td>
</tr>
<tr>
<td>4. Oaxaca</td>
<td>800,000</td>
</tr>
<tr>
<td>5. Vera Cruz</td>
<td>230,000</td>
</tr>
<tr>
<td>6. Puebla</td>
<td>820,000</td>
</tr>
<tr>
<td>7. Mexico</td>
<td>1,200,000</td>
</tr>
<tr>
<td>8. Michoacan</td>
<td>450,000</td>
</tr>
<tr>
<td>9. Jalisco</td>
<td>800,000</td>
</tr>
<tr>
<td>10. Guanaxato</td>
<td>450,000</td>
</tr>
<tr>
<td>11. Queretaro</td>
<td>230,000</td>
</tr>
<tr>
<td>12. S. Luis de Potosi</td>
<td>220,000</td>
</tr>
<tr>
<td>13. Zacatecas</td>
<td>275,000</td>
</tr>
<tr>
<td>14. Durango</td>
<td>200,000</td>
</tr>
<tr>
<td>15. Oaxceno</td>
<td>180,000</td>
</tr>
<tr>
<td>16. Chihuahua</td>
<td>120,000</td>
</tr>
<tr>
<td>17. Chihuahua Texas</td>
<td>146,000</td>
</tr>
<tr>
<td>18. Nuevo Leon</td>
<td>85,000</td>
</tr>
<tr>
<td>19. Tabasco</td>
<td>60,000</td>
</tr>
</tbody>
</table>

To these the territories are to be added:

<table>
<thead>
<tr>
<th>Number of Inhabitants</th>
<th>Extent in Square Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The territory of Santa Fé, or New Mexico</td>
<td>45,000</td>
</tr>
<tr>
<td>2. Territory of Lower California</td>
<td>3,000,000</td>
</tr>
<tr>
<td>3. Territory of Upper California, comprising the whole country north of the Rio Gila, and between the Pacific and the mountains, including the vale of the Rio del Norte</td>
<td>325,000</td>
</tr>
</tbody>
</table>

1. The state of Chiapa, called also Las Chiapas, comprehends the whole of the western declivity of the table-land of Guatemala, as far as it belongs to the Mexican States,
and a portion of the plain of Tabasco, the river of that name forming for a considerable distance the bound-
dary-line between Chiapas and Tabasco. Though its soil is in general fertile, and the climate favourable to the
growth of tropical productions, it does not appear to
contribute any article to commerce, except lignum, which is floated down the rivers Ususaminta and Tabas-
co to Villa Hermosa. Near the banks of the Rio Chacamas, a tributary of the Ususaminta, are the ruins of
Palenque, in a country which at present is a desert over-
grazed, the ruins of the ancient Mayan city are still
covered with earth, and a few ancient columns are
seen through the undergrowth. A little further north,
the river rises in the Sierra Madre, and flows south-ward, twenty miles along the summit of a ridge, and, as far as
can be inferred from their architecture, they seem to
eve their origin to a people more resembling in taste the
East Indians than the Mayas. This state formed a part of
Central America up to 1825, when it was united with
Mexico, without the republic of Central America having
noted its claims on it. The capital is Ciudad de las
Casas, formerly Ciudad Real, in a very fertile country,
the soil of which is well-watered. Coffee, cotton, indigo,
and salt are produced in considerable quantities. A
monument was erected here in the year 1725, by the
famous Luis Casas, the protector of the Indians, who was
bishops of this province, and died in 1566. Some other
places are still more considerable: as Chamula, with 6000
inhabitants; San Juan Bautista, with 7000 inhabitants;
and Tuxtla, with 4500 inhabitants.

2. The state of Yucatan comprehends the peninsula of
that name as far south as 18° N. lat. It exports much com-
merce, chiefly sugar, and fustic. The coast extends about
200 miles north, and 100 south, and contains about
10,000 inhabitants. It is bounded on the south by the
coast, and also on the western, south of 20° 30' N. lat.,
and also a considerable quantity of bees-wax. The Mayas, who
live in a state of independence, occupy its southern district.
The rivers Champion and Pacitan are navigable, for small craft,
and the trade is carried on by sea. The capital is Merida,
with 28,000 inhabitants, situated on an arid plain about twenty-
five miles from the sea. It carries on a considerable
commerce by means of the harbour of Sisal, which is properly
only a roadstead formed by a sand-bank called Bajo Sisal,
two miles long and a mile wide. This sand-bank is Valladolid, with a popula-
tion of 3000 inhabitants, in a district in which much cotton is
grown. On the eastern coast is Salamanca de Bacalar, with 2000
inhabitants, whence much mahogany and fustic are employed in the trade of
Belize. On the western coast is Campeche (Campechy), and a number of populous villages inhabited by
Indians.

3. The state of Tabasco extends over the greater part of
the low plain, from the lake of Terminos on the east,
the Rio de Honduras salt-collected with the lake, and the
Rio de Tabasco. It exports cocoa, coffee, Tabasco pepper,
indigo, and vanilla. The capital is Villa Hermosa, also
called San Juan Bautista, on the river Tabasco, about fifty
miles from the sea, to which place vessels of moderate size may
approach. It carries on some commerce, and contains
8000 inhabitants.

4. The state of Oaxaca extends over the whole of the
table-land of Mixtecapan, and is rich in agricultural pro-
ducts; the industrious inhabitants rear the oak-nut-insect and
the silk worm, and apply themselves to the cultivation of
indigo. It has some mines of gold and silver in the
mountain-ridge which separates it from the low plain of Ta-
basco, but they do not appear to be rich. This state contains
several antiquities, among which are the ruins of the
pantheon of Mitla, which was excavated by the Aztecs, and erected in style nearer to those of
Greece. They lie on the table-land, 5300 feet above the
sea. The capital, Oaxaca, which contains 40,000 inhabitants, is
the second city in Mexico, and drains its trade over the
coast. It is well-built, has fine houses, squares, and
aqueducts, and contains some manufactures of sugar,
chocolate, and silk. Tehuantepeque is situated about ten
miles from the sea, on a plain on which indigo and cocoa are
raised in considerable quantities. It contains 7000
inhabitants, and carries on some commerce by the harbour called Ventosa, or Tehuana-
tepce Road, which is only an open roadstead, but has good
anchorages.

5. The state of Vera Cruz comprehends the whole coast
of the Gulf of Mexico, from the river Huascacalo on the
south-east, to that of Panuco on the north-west, and, in
some parts, extends over the mountains which border the
table-lands on that side. Accordingly it exhibits a great
variety in climate and vegetation: its most elevated parts
are covered with pine-forests. Within its boundary-line
are situated the Peak of Orizaba, the Cofre de Perote,
and the small volcanos of Tuxtlà. Its commercial products
are sugar, coffee, jaspil, sarapilla, and vanilla. Tobacco
is extensively grown. In the northern districts of this state,
in a forest near the village of Panamá, there is a mountain
built of hewn blocks of porphyry, which are worked with great
care and skill. The capital is Vera Cruz. [VERA CRUZ.
Alvarado, about three miles from the mouth of the Rio
Alvarado, is a small town, which however carries on some
commerce, its market is good, of 4000 inhabitants, and well
defended from the wind; but the bar at the entrance of the river does not admit vessels that draw
ten feet of water. The harbour of Huascacalco, at the mouth of the Rio Huascacalo, has still less water, and is
little frequented. At the most northern extremity of the
state is the town of Tampico, or rather Pueblo Viejo de
Tampico, built on the border of a large shallow lake, the
Laguna de Taminuga, which communicates with the Rio
Tampico near its mouth contains about 4000 inhabitants,
and is ill-built. It carries on a considerable commerce,
which however has lately decreased since the now town,
called Pueblo Nuevo de las Tumaiipas, has been founded
on the northern side of the river, about three miles from it.
The interior of the state is not rich in commerce, and
Orizaba, built near the base of the steep ascent, encloses
about 1000 inhabitants; in their neighbourhood much tobacco and coffee are grown. On a level spot, situ-
ated on the steep ascent, is the town of Xalapa, or Jalapa, 4353 feet above sea level, and is a very beautiful place;
the number of inhabitants contains about 13,000 inhabitants.
To this place the merchants of Vera Cruz retire when the vomito pito is raging along the coast.

6. The state of Puebla comprehends by far the greatest
portion of the table-land of Tascala, and also a consider-
able portion of the lower but very hilly country, which
extends to the Pacific, between the table-land of Mixtecapan
and those of Tenochtitlan and Michoacan. It contains the
several well-cultivated valleys of Popocatepetl and Ixtaccihuatl. Near the town of Cholula is the small rock
Cholula. The western and southern districts are fertile
and well cultivated. In the country about the capital great
quantities of carbonate of soda are collected; but this state is not particularly remarkable for exports. The
capital, formerly called Puebla de los Angelos, is built in a
well-cultivated plain, on the south side of a hill which is
wooded to its summit. The houses are all of stone, large,
and commodious. The churches and convents are very
many and very different. It appears to be in the
considered the finest and most magnificent edifice in the whole
republic, and very rich. The town contains between 50,000
and 60,000 inhabitants; it has some manufactures of cotton,
wool, and earthenware, which however have greatly declined
since the commencement of the war. Coffee is grown, but the
trade with the neighbourhood is considerable. South-east
of it is the town of Tehuacan, which is stated to contain a
population of 16,000. North and north-east of Puebla
are the towns of Tascala (4000 inhabitants) and Huamanga
(3000), whose inhabitants, with those of the country about
it, enjoyed some privileges before the revolution. For
a notice of Cholula see Cholula.

7. The state of Mexico comprehends the two table-lands of
Tenochtitlan and Toluca; in all their extent, the north-
western part of the table-land of Tascala, and a con-
siderable portion of the lower but much hilly country,
which lies to the south of the two first-mentioned table-
lands, and extends from them to the Pacific. The river
Valladolid is the chief; it is divided into two branches, one
in the north-western, under the name of Rio de Lerma:
not far from the morass, in which it takes its origin, is
the Nevado de Toluca. Though nearly all the productions
of the tropics, together with those of the temperate zone,
might be grown here, the climate is in many places bad,
and the production of the soil is little developed. Within
this state, none of its agricultural productions supply an
article for exportation; the sugar cultivated in the plain
of Cuayantla, Amilpas, south of the table-land of Tenoch-
titan, and in some other places, a considerable extent,
is consumed in the country. It contains several rich
mines of silver. This metal does not appear to occur in the
mountains which enclose the table-land of Tenoch-
titlan, but only in the mountainous district which con-
rributes the most north-eastern portion of the state, and
where the Sierra Madre is connected with the mountains under-

The eastern margin of the table-lands. In this district are the mines of Real del Monte, Actopan, and Zimapán: there are also some mines of lead and iron. Another mining district lies south of the table-land of Toluca, the principal mines of which are in the neighbourhood of the small towns of Temascaltepec, Tultepec, Tasco, Hueutamo, and Teteela del Rio, of which the last-mentioned places are situated on the Rio Balsas. Carbonate of soda is collected in the districts surrounding the lakes of Tézcoco and Chalco. The valley of Tenochtitlan is situated in the central Mexican highlands, but the town is about three miles from it. It is a small place, but has much increased since it has been made the capital of the state; it contains about 5000 inhabitants, and some manufactures of cotton. Chalco, with 3000 inhabitants, is a town on the western extremity of the lake of Chalco. Toluca, with 12,000 inhabitants, is situated on the north of the Nevado de Toluca, has a fine cathedral, and is well built. Zimapán, a considerable place, with 9000 inhabitants, is situated in the centre of the northern mining district. This state is also rich in copper on the Pacific, Acapulco (Acapulco), Zacualpa, at the mouth of the river Bobas; but they are little frequented.

8. The state of Michoacán extends over the whole of the table-land of Michoacán and the low country lying between it and the lake Pátzcuaro. A large portion of this state is the property of the state of Michoacán, but no single group of miners is situated on the lake of Toluca and Michoacán. The richest mines are near Tepalcatepec. In the districts along the northern boundary-line of carbonate of soda is collected, especially in the valley of Yastan, which is enclosed by hills, and situated on the descent from the table-land of Michoacán to the lake. This is a barren valley, over a hundred miles of hot water, of all forms and sizes, from a hole not larger than an inch, to ponds several yards in diameter: some of them the temperature varies from 110° to 130°, but in the greater number the water is in a state of constant ebullition. The water of the state of Michoacán, which is called Morelia, in honour of General Moretés, a large town, with more than 25,000 inhabitants. It consists of one principal street, which is wide and straight, and several lanes. The chief square is spacious; and on its eastern side stands the cathedral, a fine building, which is loaded with ornaments, but they are tastefully arranged. The town is well supplied with water by an aqueduct, erected in later times, at the expense of the bishops, who reside here. Pátzcuaro, containing 6000 inhabitants, is built on the lake of that name, at whose southern extremity is the town of Tzintzentlán, with 2500, formerly the capital of the kingdom of Michoacán. In the northern districts of the state are Zamora, with 6000 inhabitants, and Chalco, a considerable place, on the banks of an extensive lake. Tlapacoyan, in the principal mining district, has 9000 inhabitants. This state has only one harbour, that of Manzanillo, which is little frequented.

9. The state of Jalisco comprises the whole of the table-land and the lower country between the coast and the Pacific; its eastern districts extend over the hills which form the ascent to the table-land of Querétaro, and comprise also a small portion of that plain. Within its territory are the towns of Chimalpa, and the lower course of the Rio Santiago, from its source to a point 22 miles from the sea. The production is as various as in all those states which are so diversified in climate; but it supplies for exportation only a small quantity of cotton and some cochineal. The mines are not important, with the exception of those of Bojúios. Carbonate of soda is collected in some places along the eastern border, and salt is made along the coast. At the south-east and south of the state, in the district of Colima, is the volcano of Colima. The capital of the state is Guadalaxara, with 60,000 inhabitants. The second place in importance is Lagos, near the eastern boundary, on the table-land of Querétaro, which contains 15,000 inhabitants, and is well built. Further west is the small town of los Lagos, nearly as large a town, built in a deep barranca, and noted for its annual fair, which is held in the month of December. The town of Tepic is situated in a small plain, surrounded by volcanic hills, and considerably elevated above the Western Table-land. It contains 2000 inhabitants, and is the seat of one of the most important limes in the country. It is much built, contains 7000 inhabitants, and is forty miles from San Blas, which is its port. Between it and the town of Guadalaxara is a difficult mountain-pass, through the barranca of Micheltitlán, and the population of Tequila. San Blas, the principal town of the state, is on the top of a rock a hundred and fifty feet high, which is precipitous on three sides, and very steep on the fourth: it rises out of a low swampy plain, which in the summer is completely inundated. At this season the place is unhealthy; and the inhabitants, amounting to 3000, remove to Tepic. The harbour has good anchorage, but is not sheltered against south-western winds. The rocky islands called Tres Marias lie off this harbour. South of Cape Peñasco, which is the northern extremity of the Gulf of Guatlan, which are little frequented. The low country surrounding the Volcano de Colima constitutes a separate district, which is under the general government. This district contains about 130,000 inhabitants, and much cotton is grown.

10. The state of Guanajuato comprehends the western districts of the table-land of Querétaro, a part of the Sierra Madre, and a tract north of that range. A range which issues from the mountain-chain of the Sierra Madre traverses the state in a north-western direction, terminating south of the town of Guanajuato. The widest and most fertile part of the Bajío lies within the territory of this state, which exports great quantities of wheat and Indian corn to other states. The rich natural resources of Guanajuato are varied. It includes the capital (Guanajuato), it contains several populous places. In the Bajío are Zelaya, with 10,000 inhabitants, and the cathedral; Salamanca, with 15,000 inhabitants; Irapuato, with 16,000 inhabitants, and manufactures of cotton; and Villa de Leyva, with between 5000 and 6000. In the last-mentioned town are considerable manufactures of cutlery and saddlery. San Felipe, in a wide valley between two branches of the Sierra Madre, was formerly a considerable town, but is now in ruins. S. Miguel el Grande has 16,000 inhabitants, and manufactures of cotton.

11. The state of Querétaro extends over the eastern portion of the table-land of Querétaro, and over a considerable part of the plain north of the Sierra Madre. It contains numerous small towns, and a portion of the Bajío. It has some productive silver mines, and rich in a boundary-line, along the river Mextitlán or Pánuco, in the district of Cadereta; the most famous is El Doctor. North of it is the quicksilver-mine of San Onofre. There are also some lead mines. The capital is Querétaro. [Querétaro.] Cadereta, in the mining district, is a considerable place.

12. The state of S. Luis de Potosí comprehends by far the larger part of the southern portion of the great Bajío plateau, and contains the towns of Tampico, Tamazul, Tamuin, and Tampico, an affluent of the Pánuco. It is only rich in cattle. The mines are not numerous, but among them is the rich mine of Catorce. There are also some mines of copper. The capital, S. Luis de Potosí, is a large town, containing, with the adjoining villages, from 50,000 to 60,000 inhabitants. It has wide and well-planned streets, which are lighted by night. There are many large and substantial buildings, and numerous churches. The palace, or House of Government, is of stone, a well-paved street by the side of the Plaza de las Armas; on the opposite side stands the cathedral; the two other sides are composed of shops and dwelling houses. In the centre is a fountain. The town is well supplied with water by an aqueduct. The rural products are so various and to its monarchical system, and the commerce is considerable.
its territory lies on the great northern plain. The southern portion is productive in grain, and the northern arid plains contain abundance of cattle. Of the numerous mines, all of which are situated in the Sierra Madre, the most celebrated are those of Zacatecas, Sombrerete, and the territor y has nine lakes, from which carbonate of soda is collected in a crystallized state. Not far from the western boundary of this state, and south of the capital, an extensive tract is covered with immense ruins, called Los Edificios, which is inhabited by the ancient inhabitants of Mexico, the Aztecs, erected on their emigration towards the south. This state contains several populous towns. Sombrerecte, Fresniallo, Ierez, Pinos, and Nor rhilán have each a population varying from 14,000 to 18,000. The military force within the state is considerable. Zacatecas, with the adjacent village of Veta Grande, contains 28,000 inhabitants, and is built in a ravine between high hills. The streets are narrow and crooked, but the churches are very large buildings of stone: the most remarkable is La Boa, which stands on a high eminence, and looks like a fortification. Aguas Calientes, situated towards the southern extremity of the state, in a richly cultivated country, has 33,000 inhabitants, and manufactures of cloth. The streets are narrow, and the houses substantially built. Its cathedral is a rich edifice, with a high pointed roof. 

14. The state of Durango includes the Sierra Madre from 2° to 27° N. lat., and comprehends also an extensive tract of level country skirting the range on the east, and belonging to the great northern plain. The terraces by which the high Sierra Madre is divided are rich in agricultural and cultural products, the plain itself in cattle, and the Sierra Madre in metals. The richest mines are near Guairanes, San Dimas, and Gavielines, situated in narrow valleys in the western part of the state, and on the western side of the sea. There are also mines of lead and abundance of iron ore. Between the town of Durango and that of Nombre de Dios is a plain, covered with basalt, about thirty miles in length and fifteen in width. This plain contains an extinct crater, and remnants of the walls of an ancient volcano, yards deep. This sterio tract is called Breña. The capital is Durango, or La Ciudad de Victoria, with 22,000 inhabitants, a well-built place, with wide streets and several fine buildings. Nombre de Dios has 7000 inhabitants. Papasquiaro, in this district, is a town of about 2000 inhabitants. The population of 6000. In the plain are S. Juan del Rio, with 10,000 inhabitants, and Villa de los Cinco Señores, on the Rio Nass, along the banks of which cotton is grown.

15. The state of Occidente comprehends the provinces of Coahuila, and Durango, and contains 25,000 square leagues. Of the Sierra Madre and the Gulf of California from 23° to 33° N. lat. It is rich in agricultural produce and fruits, though agriculture is in a backward state. It contains several mines of gold and silver; those of copper are still more important. The province extends along the banks of the Rio Gila, and rather beyond the boundary of the state, are the Casas Grandes, ruins of numerous edifices which cover a large space. They are considered as one of the stations of the Aztecs in their emigration towards the south. The South of the Rio Mayo the population consists only of whites, but north of it are seven native tribes, Opatia, Ceres, Pimas, Yaqui, Mayos, Yumas, and Tururamas, which subsist by agriculture. Along the northern boundary, on the Rio Gila, the Apaches in Arizona Indians lead a wandering life. The most remarkable places from south to north are—El Rosario, with 6000 inhabitants, in the neighbourhood of some mines. It carries on some commerce by means of the harbour of Mazatlan, which is about sixty miles distant. Mazatlan is spacious, but not safe, as the river has many dangerous shoals and islands at its entrance. Cosalá, a well-built town, contains 5000 inhabitants: its neighbourhood is several rich gold-mines. Culiacan, with 11,000 inhabitants, is built on rising ground on the south bank of the Rio Suerte, and is the seat of an ecclesiastical province. It contains many well-built houses, and a large cathedral. It has about 18,000 inhabitants. Mazatlan, on the coast of the Rio Mayo, the principal town of the Mayo Indians, contains 10,000 inhabitants. Guaymas is the best port of Mexico on the Pacific, and capable of containing 200 vessels. It is secured from all winds by the elevated hills which surround the bay, and by connected islands, which lie in the entrance. The town contains 3000 inhabitants, but suffers for want of water; the climate is hot, but healthy. Its trade with all the ports of the Mexican states along the shores of the Pacific is considerable. Pitic, on the Rio Pitic, has 8000 inhabitants, and is also well built. There are no streets, and the houses are scattered in every direction. It contains however some good houses, and curries on a considerable trade. Arispe, the most northern town of any importance, contains 3000 inhabitants, and is the principal seat of the emigration situated in the northwestern section of the state against the Apaches. The hilly country which lies to the west of this town, called Pimeria Alta, had the reputation of containing rich gold-mines, which however, on examination, have been found to be of little value. There are however valuable copper-mines.

16. The state of Chihuahua comprehends that portion of the northern plain which lies between the northern part of the Sierra Madre and the middle course of the Rio del Norte, together with the mountain-region of the Bolson de Mapimi, and a strip of the country south of the Sierra Madre. Of the whole area, the general dry, and unfit for agricultural purposes: cultivation is limited to the river bottoms and a narrow strip of country along the declivity of the Sierra Madre; but this state has many herds of cattle, horses, and sheep. The mines are rather numerous, the principal being the Bolson de Mapimi, at El Parral, Botapillas, and Jesus Maria; those of S. Eulalia are in a hill which stands isolated on the plain, about twelve miles from Chihuahua. Near the base of the range of the state of Chihuahua, on the boundary-line between this state and Sonora, are ruins of great interest, called the Edificios, like those on the Rio Gila: these also are considered as one of the stations of the Aztecs in their emigrations. The population of the plain consists entirely of emigrants; but in the other part of the state, the Apaches are the Comanches, and, along the northern frontier of the state, the Apaches and Chiuchimequos. The capital, Chihuahua, is a well-built town, with regular streets and many large houses. Its cathedral is an extensive building; an altar is heard by mosaic work, and a large aqueduct, which is supplied by a river about eight miles above the town. Its population once amounted to 70,000, but at present it does not exceed 12,000. S. Bartolomeo, situated towards the boundary of Durango, contains a population of 25,000, built on a sandy plain on the north bank of the Rio Norte, and carries on a considerable commerce with the agricultural produce of the fertile district in which it is situated, consisting of wool, maize, cotton, and wild honey. Not far from it to the west is El Parral, which contains 4000 inhabitants, and is the most productive, but now only 7000. Parras, near the lake of that name, is a small town in a district noted for its vineyards.

17. The state of Coahuila or Coahuilua extends over the north-eastern plains, between the Rio Grande and the Plata, in which lies between the Bolson de Mapimi on the west, and the lower course of the Rio del Norte on the east, and which stretches southwards to the boundary of Zacatecas (25° N. lat.). To this extensive country is added the still more extensive tract to the north and east of the Rio del Norte, or the Bolson de Texas. The most sterile portion of the northern plain is included in this state, and lies along the boundary of Zacatecas. Further north, between 27° and 29° N. lat., are several watercourses with fertile bottoms, and considerable tracts of cultivated land. But the principal occupation of the inhabitants is the raising of mules and horses, constitute the commercial wealth of this country, and are exported in considerable numbers to the United States of North America. Texas is very fertile, but little cultivated. The north-western parts of the state are those which are most exposed to the incursions of the Comanches and Apaches of Texas. The hills of San Saba. The capital of the state is Saltillo, situated near its eastern boundary and the edge of the table-land. It contains about 12,000 inhabitants; and Comanches, who inhabit the Bolson de Mapimi and the hills of San Saba. The capital of the state is Saltillo, situated near its eastern boundary and the edge of the table-land. It contains about 12,000 inhabitants; and Comanches, who inhabit the Bolson de Mapimi and the hills of San Saba.
town with water. It carries on considerable commerce.

In this town a fair is held, which is much frequented by merchants from the adjacent states. Montevideo, farther north, has 3,500 inhabitants. Santa Rossa, to the north-west of Montevideo, has 4,000 inhabitants, and some mines in its neighbourhood. Durango, a prosperous mining town, is situated where the Rio del Norte begins to be navigable for larger boats, and has 2,500 inhabitants. Montevideo, farther down, is a thriving place, with some trade.

Texas is almost entirely in its natural state. The State is bounded by the Mexican States of Coahuila and Tamaulipas, and on the west by the principal town of El Paso del Norte, built on the northern bank of the Rio Grande. There is no trade worth mentioning on this river.

The country is a large plain, with undulating land of 1,300,000 acres. It is traversed by the Colorado River, which has its entrance on the northern bank of the Rio Grande. This river is navigable for boats of 500 tons for 200 miles, and is an important water route.

Humboldt's S. W. M. Sotto is stated to have reached the mouth of the Rio Grande in 1819, and to have found a great abundance of coal and iron. However, the coal is now worked.

Toxas is almost entirely in its natural state. The State is bounded by the Mexican States of Coahuila and Tamaulipas, and on the west by the principal town of El Paso del Norte, built on the northern bank of the Rio Grande. There is no trade worth mentioning on this river.

The country is a large plain, with undulating land of 1,300,000 acres. It is traversed by the Colorado River, which has its entrance on the northern bank of the Rio Grande. This river is navigable for boats of 500 tons for 200 miles, and is an important water route.

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21. Lower California, and—22, Upper California [CALIFORNIA]

Manufactures.—Before the Revolution (1810) there were many flourishing manufactures, the annual produce of which, from 1800 to 1810, reached 20,000,000 of Mexican dollars, or about two millions of English money. The most considerable were those of wool and cotton in the towns of Puebla, Cholula, Tlaxcala, Querétaro, Lagos, Guadalaxara, and Teuco. The manufactures of soap, leather, and saddle-making are also carried on to a great extent. The manufacture of leather, in particular, has been carried on to a great extent.
Salt meat
Hides
Saraparilla
Vanilla
Jalap
Soap
Campeachy wood
Tabascan pepper

Spanish dollars 21,780,000

Ward, following the statement of official documents, found that in this estimate Humboldt had overrated the exports by 2,618,648 dollars; as no flour had been exported, and the exports of cochineal amounted only to 1,100,000 dollars, and those of sugar to 281,025 dollars. Though the facts which have come to our knowledge are isolated, and in many instances not well authenticated, we shall attempt to make a rough estimate of the exports for the years following 1850, preserving Humboldt's statement where we have no more recent data:

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold and silver</td>
<td>14,000,000</td>
</tr>
<tr>
<td>Cochineal</td>
<td>1,100,000</td>
</tr>
<tr>
<td>Sugar</td>
<td>300,000</td>
</tr>
<tr>
<td>Indigo</td>
<td>200,000</td>
</tr>
<tr>
<td>Salt meat</td>
<td>100,000</td>
</tr>
<tr>
<td>Hides</td>
<td>80,000</td>
</tr>
<tr>
<td>Saraparilla</td>
<td>80,000</td>
</tr>
<tr>
<td>Vanilla</td>
<td>80,000</td>
</tr>
<tr>
<td>Jalap</td>
<td>60,000</td>
</tr>
<tr>
<td>Soap</td>
<td>50,000</td>
</tr>
<tr>
<td>Campeachy wood</td>
<td>100,000</td>
</tr>
<tr>
<td>Fustic</td>
<td>80,000</td>
</tr>
<tr>
<td>Tabascan pepper</td>
<td>40,000</td>
</tr>
<tr>
<td>Coffee</td>
<td>20,000</td>
</tr>
</tbody>
</table>

15,230,000

This may be considered as an approximation to the amount of the exports from the harbours of the Gulf of Mexico, namely, from Sisal, Campeachy, Villa Hermosa, Alvarado, Vera Cruz, Tampico, Tamaulips, Soto Marfa, and Matamoros. An estimate can be formed of the exports from the harbours of the Pacific, from Acapulco, San Bias, Mazatlan, and Guaymas, and from those of Upper California. We only know that a considerable quantity of sugar is sent to Guayaquil and Lima; that at the port of Guaymas much copper, which contains gold, is shipped for China, where, as it appears, an easy method is known of separating the metals; and that large quantities of tallow and salted hides, with a considerable number of mules and horses, and some wool, are exported to the United States of North America, chiefly from Cohahuila and New Mexico.

For want of a general and more recent estimate of the imports, we shall transcribe that of Humboldt, founded on facts which refer to the beginning of the present century. It may still be useful as showing the principal articles consumed in Mexico, and their proportion. Though the consumption of all these articles, with the exception perhaps of cacao and wax, must have greatly increased, and especially that of cotton goods, yet it seems probable that their value in money is not greater than was paid for them at the time of Humboldt, as most of the articles were sold for double and some even for four times the present prices. Cocos does not appear at present to form a large article of import, great quantities of it being grown in the state of Tabasco.

Humboldt's estimate of the imports at the beginning of the present century is:

<table>
<thead>
<tr>
<th>Articles</th>
<th>Value in dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ropas (linens, cottons, cloth and silk)</td>
<td>9,250,000</td>
</tr>
<tr>
<td>Paper</td>
<td>1,000,000</td>
</tr>
<tr>
<td>Brandy</td>
<td>1,000,000</td>
</tr>
<tr>
<td>Cocos</td>
<td>1,000,000</td>
</tr>
<tr>
<td>Quicksilver (for the mines)</td>
<td>650,000</td>
</tr>
<tr>
<td>Iron</td>
<td>600,000</td>
</tr>
<tr>
<td>Steel</td>
<td>200,000</td>
</tr>
<tr>
<td>Tobacco</td>
<td>300,000</td>
</tr>
<tr>
<td>Wax</td>
<td>200,000</td>
</tr>
<tr>
<td>Total</td>
<td>14,650,000</td>
</tr>
</tbody>
</table>

The commerce is mostly carried on in foreign vessels, as these states have a comparatively small number of merchant ships. The vessels of the United States of America almost exclusively visit the smaller ports, as Villa Hermosa, Alvarado, Soto Marfa, and Matamoros. In addition to the vicinity of the United States, their products differ from those of the Mexican states. All the products exported from Mexico find a ready market in the United States, and are easily paid for by the manufactured goods of those states and of Europe. The American vessels, being in general of a smaller size, can safely pass the bars of the rivers, which cannot be done by the larger British vessels, which are therefore chiefly confined to the ports of Tampico, and Tamaulips. Next in number to the American are the British vessels, and then those of France, from Bordeaux and Havre, and lastly those of the free German towns of Hamburg and Bremen. Swedish and Danish vessels rarely appear in these ports.

History and Constitution.—Though Columbus in his last voyage approached the peninsula of Yucatan, he did not come in sight of it. Thirteen years later (1517) the peninsula was discovered by Francisco Hernando Cordova, who sailed along the coast from Cape Catoche to Campeachey Bay. The following year, Juan de Grijalva continued the discoveries along the same coast northward to the mouth of the Rio Panuco; he visited the islands of Sacrificios and Juan de Ulloa, and the present town of Villarica, and gave them the names which they still preserve. His account of the wealth of the country excited the desire of conquest. In 1519 Hernan Cortes landed at the place where Vera Cruz now stands, but the town which he founded and called Villalobos was some miles to the east of a small harbour named Chihuahuita. With his little army he soon ascended the table-land, numerous inhabitants of which he found united under a powerful sovereign, the king of the Aztecs, Montezuma, or more correctly Moctezuma. Within the limits of this empire there were several small republics, of which that of Tlascala united with Cortes. cholula was also a republic, and the name of a third is preserved, that of Huajoeingo; all three were divided into towns and provinces, some of which bordered on Mexico, and others to the Spaniards almost without a struggle. The position which the Spaniards held with respect to the natives of the country very much resembled that of the nations of German origin who overthrew the Roman empire and settled in the countries of Europe. Like the Romans, they were obliged to establish a kind of feudal system, to protect themselves against the much more numerous native population. In Europe the victors and vanquished in the course of time united so as to form one nation, but such a change has not taken place in Mexico, and probably never can. The Spaniards and natives belong to two different races of men, differing in colour and in many other respects. The Spanish conquerors also had attained a higher degree of civilization, whilst in Europe the conquerors learned from the conquered the most useful arts of civilized life. Even now, more than three centuries since the conquest, the Spaniards and natives constitute two perfectly distinct classes.

As the number of the conquistadores, or companions of Cortes, was very small, in comparison with the native population, they were anxious to bring over more of their countrymen. A considerable number of Spaniards accordingly annually emigrated to Mexico, and there acquired great wealth, and composed of government, numerous adventurers in mining. As many of these Spaniards were possessed of extensive property in land within Mexico, their descendants the Creoles settled of course in that country, and their numbers were continually increasing. The Spanish government, however, best understood the idea of maintaining a correct idea of their condition among the natives, and to have thought that the government of that country could only be entrusted to persons who considered Spain as their native country; it therefore excluded all the Creoles, or descendants of Spaniards born in Mexico, from all official employments, and even from commissions in the army. Such exclusion excited in them a considerable degree of ill-will against Spain and the Spaniards, which would probably have manifested
itself in resistance and rebellion, if they had not feared that the native population would take advantage of such a circumstance to effect their own destruction. They had still to fear another enemy, who had grown impatient among them. Few of the Spaniards had brought wives with them. From their intercourse with the native women sprang up a race called metis, or mestizos, which increased still faster than that of the Creoles, who however, in proportion to their numbers, were worse reported. A regular government subsisted they had nothing to fear from the natives or the mestizos. This will account for the fact, otherwise difficult of explanation, that no signs of active dissatisfaction manifested themselves in Mexico during the monarchical government of the States of the New World. America had obtained its independence, though the Mexicans were well acquainted with the advantages which their neighbours had obtained. It is even possible that the political condition of Mexico would not have undergone any change for a long term, but for the events in Europe and in Spain in 1808. By the intrigues of Bonaparte the royal family were compelled to abdicate the throne of Spain, and he conferred the whole Spanish monarchy on his brother Joseph, then on the throne of Spain. The Spaniards in Mexico, and the Creoles were unanimous in declaring their resistance to the government established by the French. The vicerey could no longer receive orders from Spain, and it was necessary to organise a government which should act independently. The creoles continued to hold office. But as to this point they disagreed. The Creoles wished to establish a national representation; the Spaniards opposed this measure, and prevented the establishment of a system of representation for Mexico. The Creoles submitted, but the pure Spaniards had sent a small corps against them which had taken place, and soon afterwards, in 1810, the natives and the mestizos rose against the government. They were led by Don Miguel Hidalgo y Costilla, the cura or parish priest of Dolores, a small town in the state of Guanajuato, who had given himself the title of Hidalgo, who had soon an immense force with him, took Guanajuato by storm, and occupied Valladolid, whence he advanced over the table-land of Toluca to that of Tenochtitlan. At Toluca this governor sent a small corps against him, which was defeated by Hidalgo on the 30th of October at Las Cruces, a pass in the chain which separates the table-lands of Tenochtitlan and Toluca. But notwithstanding this victory, Hidalgo retreated, and eight days afterwards was in his turn defeated by Calleja at Aculco. Hidalgo retired to Valladolid and Guadalaxara; and in the neighbourhood of the last-mentioned town he was again defeated, and soon afterwards taken prisoner and shot. In the meantime the revolution had risen in insurrection, and many leaders began to act independently. One of them was Don Jose Maria Morelos, cura of Nuevapetaro, who with great activity, talents, and success maintained the southern provinces in rebellion against the governor, and the Viceregal government, which in September, 1811, assembled in the town of Zutaco, in the state of Michoacan. But that town was soon afterwards taken by Calleja, and the junta was dispersed. Calleja however was soon obliged to march against Morelos, who had penetrated into the table-land of Tenochtitlan from the south. He was attacked by Calleja in the town of Cuantla y Amilpas, and after defending himself for nearly three months with great skill and gallantry, he abandoned that place and took Oaxaca. The junta was now increased by new appointments, and under the title of Congress, on the 13th of November, 1813. But after that event Morelos had less success in his daring enterprises; and in November, 1815, he was taken prisoner, exiled to Mexico, and shot. Many of his companions in arms maintained the conflict for some time, but they did not act in concert with one another, especially after one of them, Tepex, dissolved the congress, which had been transferred from Oaxaca to Tehuacan. The latter was about to surrender to Venegas. They were supported by the gallantry and skill of Calleja, destroyed successively the armies of these chiefs, so that when Don Vicente Minn, the famous Spanish guerrilla chief, landed in Mexico in 1817, the fortune of the insurgents was at so low a point, that he was unable to obtain possession of the city, and he lost his attempt. The country gradually became more tranquil, and in 1820 it was restored nearly to the same degree of order which it had enjoyed before 1808, to which fortune result the mildness of the new vicerey Apodaca materially contributed.

The events which occurred in Spain in the beginning of 1820, suddenly changed the Spanish affairs, and deprived Spain of the most valuable of her possessions in America, which it had regained at the cost of much blood and money. The Spaniards and the Creoles, who had formerly made common cause, were now divided into two parties. The Creoles were forced to recognize that as long as they adhered to the former party, they were to overthrow the constitution in Mexico, and chose for his instrument Don Augustin de Iturbide, a young man, born in the province of Valladolid, of respectable but not wealthy parents. He had dissatisfied the Spanish generals at the time they were declining to the party, which was shown great attachment to the Spanish party. Iturbide had about 800 men under his command, when, on the 24th February, 1821, at the little town of Iguila, on the road from Mexico to Acapulco, he issued a proclamation, which since that time has been hailed the Plan of Iguala. The object was to conciliate all parties. It was to establish the independence of Mexico, and still to preserve its union with Spain. To effect this, the crown of Mexico was to be offered to the king of Spain. By a decree of his brothers, Don Carlos or Don Francisco de Paula, provided they would consent to reside in the country. Though Iturbide had certainly exceeded the powers which he had received from Apodaca, the vicerey, seeing that this proposal was made by the Spanish government in the States of the New World, Iturbide was received intelligence of the arrival at Vera Cruz of the new constitutional vicerey Don Juan O'Donojou. Iturbide hastened to the coast, obtained an interview with O'Donojou, and with his consent and acquiescence, he took the plan of Iguila as an armistice and final settlement, if it should be necessary. This is called the treaty of Cordova, from the place where it was made. Iturbide thus got possession of the capital, where a junta and a regency were established, but in such a form that all power remained in the hands of Iturbide. By a decree of the Cortes, dated the 13th February, 1822, the treaty of Cordova was declared to be illegal, null, and void; and Iturbide, who had the power in his hands, and a great number of adherents, found no difficulty in ascending the throne. The army declared him to be the most remarkable event of 1822, and he took the title of Augustin I. He was acknowledged by the Mexican congress, which had been opened on the 24th of February; but a struggle for power arose between Iturbide and the congress, which the emperor terminated by dissolving the congress in the manner as Cromwell dissolved the Long Parliament, on the 30th October, 1822. On the same day he formed a new legislative assembly, composed of persons favourable to his wishes and intentions. But he had not skill enough to reconcile his companions in arms to these changes. General congresses declared against his proceedings, and prepared for resistance. Iturbide, terrified at the storm which was ready to burst on all sides, called together the old congress, abdicated, and proposed to resign in favour of another, including himself, which he returned to Mexico in 1824. He had been exiled to the congress, and upon landing on the coast, he was shot at Padilla, in Tamaulipas. Thus Mexico obtained its independence and a constitution, without a civil war. But as the object had not been obtained by the dissolution of the army, it was to be feared that the peace of the country would be interrupted by the discontent of the General. This has in fact occurred several times; but happily such occurrences have been easily suppressed, with the exception of that which was got up by Santander, who had distinguished himself in the struggle against Iturbide. Under pretext of the country being discontented with the administration, he collected an army in 1832, brought some other generals and men of power over to his side, and after causing several conflicts, he succeeded in placing himself at the head of the government. Being aware that he was less distinguished as a statesman than as a general, he undertook in person an expedition
against Texas, the population of which, consisting almost entirely of emigrants from the United States of America, had risen into open rebellion against the government. After some success, he was taken prisoner. This circumstance was favourable to the government, and since that time the power of the state has been maintained, as the situation of its inhabitants demanded.

The constitution of the republic was formed immediately after the fall of Iturbide, and the Fundamental Act was published on the 4th of October, 1824. The constitution is modelled on that of the United States of America, and contains about four years for the term of the representatives. Each state elects a representative for every eighty thousand inhabitants, and one more if there is afflux exceeding forty thousand. Native Mexicans alone can be chosen, or such as have resided in the republic more than eight years, who must also possess landed property to the amount of 8000 dollars, or some trade or profession which produces 1000 dollars annually. The senate is composed of two senators for each state, elected by a plurality of votes in the state. One of the senators for each state who loses his seat for four years; the other only for two years. The members of the senate must possess all the qualifications requisite for a deputy, and must also be thirty years of age; a deputy may be only twenty-five years of age. The representatives constitute a standing committee. They close their ordinary sessions on the 15th of April; but an extraordinary congress may be called by the executive. The executive power is vested in a president and vice-president, both elected by the state legislatures for a term of four years. It is divided into thirty-five years of age and resident in the country, can be elected to these high offices. Though the great outlines of this constitution resemble, in all important points, those of the United States of America, it differs a great deal from the American, in some respects, but has never been altered. It appears to be the result of much good sense and great power. It has not only a larger revenue, and the right of deciding on all matters respecting religion, but it has likewise the power of determining many points which in the United States of America belong to the states of that country. This difference arises from the different way in which the general congress was formed. In the United States of North America the state governments were fully organised before the formation of a general government, and in the Act of Confederation the states preserved their autonomy and independence, and it was impossible to confer on the general government. In Mexico however the general government had to establish the state governments, and could appropriate to itself as much power as it thought fit.


MEXICAN ARCHITECTURE. Although some light has of late years been thrown upon this subject, it is still in its infancy. It is only in the ruins of the Toltecan and of some other older and greater cities that we obtain a view of what the native architecture of Mexico was. The first thing that impresses us is the strange inscriptions on the walls of their cities and temples. With regard to the aboriginal architecture of this part of America, it resembles that of Egypt, not only in the vast scale and massiveness of its monuments, but in the application of the pyramidal form of buildings. The temples not inferior to those of Egypt, and some of even still larger dimensions in their plan or base, exist in the Mexican territories; and examples of the second class occur in pyramid towers, consisting of a series of truncated pyramids placed one above another, each successive one being smaller than the one on which it immediately rests, so that it stands upon a platform or terrace. Of this kind was the pyramid from the temple of Teotihuacan, now called, according to Nebel's restoration of it, consisted of five stories, and consequently had five terraces: its sides were ornamented with rude bas-reliefs, the figures of which were about three feet high.* The pyramid of Cholula resembles in no small degree the temple of Belus as described by Herodotus, inasmuch as it consists of eight stories, each forming a platform on which stands the one above it. The angle of inclination of the sides is so great as to render it inaccessible, and which differs little from that of the sides of the Egyptian temples.

Some of these edifices appear to have been not temples only, but to have contained sepulchral chambers and apartments for the priests; they had also descending galleries leading down into cavernous recesses or halls, that were doubtless used either for religious mysteries or as places of concealment for treasure.

The most imposing and splendid monuments of this style of architecture was the great temple at Palenque (built, according to the bold assumption of Lord Kingsborough, after the model of that of Solomon), which comprised within its extensive precincts various sanctuaries and sepulchral chambers, courts and terraces, colonnades and courts for the habitation of the priests. The whole rests on a platform, composed of three graduated terraces, and forms a spacious quadrangle enclosed by porticoes. The sides of the exterior are an ascent or flight of stairs, and on the east a second flight, leading down the first is ascending, into the cloistered court. Beneath the cloisters are what are conjectured to have been initiatory galleries; and in the centre of the quadrangle is what appears to be the site of an altar or temple at the base.

The city of Palenque itself exhibits a variety of buildings, temples, palaces, baths, and private houses, all manifesting excellence of workmanship combined with considerable skill in design.

The remains of a palace at Mitla show that it must have been an edifice of great extent and grandeur; and the walls appear to have been sculptured or tooled externally, in imitation of mat or basket work, a species of decoration characteristic of Toltec taste, and often found in sepulchral chambers.

The site of Teotihuacan is remarkable for a number of high cylindrical columns differing from any found elsewhere.

In order to give an idea of the extraordinary vastness of some of these Mexican or Toltec constructions, we may reproduce the inscriptions of the obelisks, one of which, that of Cihuatl, the side of whose base is 1440 feet, whereas that of the great pyramid of Jiztel is only 763 feet. The height however is, according to Humboldt, not more than 177 feet, and as the receding terraces are very wide, and the area of the upper platform or terrace small in comparison with the area of the base, the outline of the whole would not be that of a continuous pyramid, but merely such as might be inscribed within such figure.

At Teotihuacan, about five leagues to the north-east of the city of Mexico, are an immense number of pyramids, several hundred small ones ranged in files or lines, and two larger ones consecrated to the sun and moon. Each of the latter is divided into four platforms, the slopes of which are made of steps, and the summit is a colossal stone statue covered with plates of gold, which were stripped off by Cortes's soldiers, and the statues themselves destroyed.

Besides monuments which are chiefly works of magnificence, others have been made to attest the high degree civilization attained by the Toltecs, such as Cyclopean roads and bridges. The former of these were constructed of huge blocks of stone, and frequently carried on a continued level, so as to be passable across the most arid parts of Central America; numerous excavations or rock-hewn halls and caverns, called by the natives 'granaries of the giants.' They resemble the Cyclopean fabric near Argos known by the name of the Treasury of Atreus, are generally dome-shaped, and the central apartment is lighted through an aperture in its vault. Other points of resemblance to Cyclopean masonry may be found in the doorways...
to these subterraneous galleries and apartments, which are similar to the gate of Mycenae; and also in the peculiar irregularity of the courts, by courtyards extending in tiers between the upper and lower levels, and each other. Arches of this mode of construction are found in the cloisters of the building at Palenque. The remains of sculptured stone in Mexico are numerous, and of great variety both of form and material. Captain Velez has described (London Geog. Journal, vol. viii., p. 1) a collection of stone figures in his possession, which were recently procured from the banks of the river Panuco.

**MEXICO**, or, as it is now commonly written, Mejico, the generic term of the Mexican States, is formed in 15° N. lat. and 99° 10' W. long., 7468 feet above the level of the sea. It stands nearly in the centre of an extensive plain, which, from being surrounded by high hills or mountains, is commonly called the Vale of Tenochtitlan, which was the name given to the town before the year 1500. This vale has an oblong form, extending from south to north fifty-two miles, and from east to west thirty-four miles. Its circuit, measured along the crest of the range which encloses it, is nearly 205 miles; and its area is 1710 square miles, or nearly equal in extent to the county of Lancaster, is poured out, or one tenth of its surface, or 164 square miles, is occupied by four lakes. The largest of these lakes, that of Texcoco, which covers a surface of 77 square miles, occupies the centre of the vale, and is only about three feet and a half deep. This lake is separated from two others on its western shores, on swampy ground. Towards the southern extremity of the vale is the lake of Chalco, which contains a small island and the pleasant village of Xico, and is separated from the lake of Cuimilhac. The surface of these two lakes is nearly four feet above the great square in the town, and they occupy nearly fifty square miles. Their water is fresh, while that of the other lakes is brackish or salt. North of the lake of Texcoco is the lake of Xaltocan, which covers about twenty-seven square miles, and is nearly twelve feet higher than that of Texcoco. It is divided into two parts by a dike, and its northern portion is called the lake of Xaltocan. The western portion of the lake is occupied by the lake of Zumpango, which is divided into two parts by a dike, the eastern part is called the lake of Coyotepe, and the western of Zutilopace. This lake is nearly thirty feet above the lake of Texcoco, but occupies only ten square miles. During the rainy season the water, descending abundantly from the ranges which encircle the vale, is poured into these lakes, which have no outlet; the greatest quantity enters the lake of Zumpango, which is the most elevated. It frequently happened that in very wet seasons the water which accumulated in these lakes inundated the low country on the side of the vale, and rose several feet in the streets of Mexico. To prevent such an occurrence the Spanish government caused a canal to be made through the mountains of Nochistongo, which lie north-west of the lake of Zumpango, by which the surplus water is conducted into the sea. The descent of the stupendous work, known by the name of the Desague of Huehuetocon, is above twelve miles long, and for more than 1000 yards is cut through rocks from 60 to 70 feet high. It is justly considered one of the most astonishing hydraulic works in the world.

The mountains which enclose the vale are lowest on the north side, where they rise only a few hundred feet above the level grounds of the vale, but they are higher on the other sides, especially on the south and south-east. Near the south-eastern corner of Mount Iztaccihuatl, which is 14,000 feet above the sea-level, and is always covered with snow. It is connected by a ridge with Mount Popocatetel, which lies farther south, and attains the height of 17,884 feet. The surface of the vale itself is not a level plain, but is broken by irregular hillocks and small hills, which are sometimes isolated and sometimes in groups singularly arranged. The most elevated are the Cuesta de Barciento, north of the town, which rises 286 feet above its base; and the Cuesta de Cuimilhac, which rises 897 feet above the north-east, and 1055 feet above the lowest part of the vale. This is a district between the western range and the lakes are richly studded with villages and towns, and contain extensive tracts of cultivated ground, where wheat and the other grains and vegetables are raised. The lakes of Texcoco and Chalco are sterile; the surface being covered with a saline efflorescence, and the cultivated spots and villages are distant from one another.

**Mexico** is one of the finest cities in the world. In the dry season it is at some distance from the lake of Texcoco, whose waters in the rainy season are sometimes driven by earthquakes to the shore of the town, which is protected against inundations by dikes. The streets are very wide, and at right angles to each other, so that by looking down any two at the point where they intersect each other, the spectator commands a view of the whole city, and as they communicate with one another for a considerable distance, when seen from an elevation they look like immense terraces. The houses are all squares, enclosed open courts, which are surrounded by corridors, and offices through which a gateway into the court, and the stairs are opposite to the gate. The best apartments, which are generally painted, are towards the street, and all the windows are ornamented with balconies.

The squares are spacious and generally surrounded by buildings of great height, which stand in groups and form the architecture. The principal square is the Plaza Mayor, which, on two sides, is surrounded by the cathedral and the palace, and on the other two sides by shops and dwelling-houses, with four great gates below the level of the plaza, and as many above. In the centre of the square was formerly a magnificent equestrian statue of Charles IV. of Spain, which has been removed since the Revolution. This square is the market for vegetables and fruits, those of the south of Europe being cultivated in the vale of Guadalupe. All the fruits of the tropics are brought from the plain of Cuautla Amilpas and from Isla. [Mexican States.] Manufactured goods are sold in the Portales, or covered colonnades, of which there are several on a large scale, and all well supplied with shops. All the goods of the city are carried on by the palenques, the paquetes open into the Portales, and innumerable petty venders display their wares, crowded on tables, in boxes and in baskets. The Parian, or bazaar, is a square building, divided into uniform compartments by two principal cross streets, and offices throughout it. On this floor the viceroys formerly were lodged, and which at present serves as the residence of the President of the United Mexican States, and also contains the senate-house and all the principal public offices, is a building of great extent, including a number of courts of justice and numerous palaces, houses, cases and apartments of all kinds. One of these courts contains the botanical garden, which however has been much neglected of late. The College of Mines is a large edifice, built in the style of the ancient Mexicans, and of a magnificent style, but though finished hardly fifty years ago, it is in a sad state of decay. The Academy of Arts, which is a fine building, contains a great collection of models, with casts of all the best statues of ancient and modern times, and a school for drawing. The numerous churches and convents with their cupolas and domes are on the same plan and are placed in the same order. The most famous is the cathedral stands on the ruins of the great Teocalli, or temple, of the god Mixtli. One part is low and of bad Gothic architecture; but the other, built in the Italian style, is very handsome. The interior is lofty, magnificent, and imposing. In the vault of the great wall of this church is a circular stone, covered with hieroglyphic figures, by which the Aztecs or Mexicans used to designate the months of the year, and which is supposed to have formed a perpetual calendar. Among the numerous convents that of San Francisco is distinguished by its extent, the number of its persons, and wealth.

The Alameda, or public walk, at the western extremity of the town, resembles a park: it is laid out in lines, diverging...
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from different centres, and is planted with a great variety of
trees. In the centre is a fountain, which is supplied with
water from the great aqueduct leading from S. Fé to the city.
The water is carried along in trenches, so as to water the
profits that the land is then discharged into the lake of
Tezcuco. As the ground on which the city stands is low,
all the roads leading to it are raised six or eight feet above
its level; they are broad, paved in the middle, and planted
on both sides with double rows of trees. These roads, called
palepas, are 24 feet in breadth, and are laid out in a gridiron
pattern.

As the water of the lake of Tezcuco is even saltier than
that of the Baltic, according to the experiments of Hum-
boldt, and as the water which is found a few feet under
the surface is also brackish, the city is supplied with drink-
able water from springs which bring it down from sources
situated in the mountains west of the vale. The
larger aqueduct, leading from S. Fé to the Alameda, and
thence to the lake, is 11,158 yards long, and in one third of
its length is raised above the level of the lake; there is a
series of 24 stations at which are placed boats.

The water, which is very pure, is distributed through
the city. The other aqueduct, that of Chapultepec, is 3068
yards long, and rests on 904 arches, which are nine and a
half feet apart, and the columns four feet thick. The width
of the river of Tezcuco, at the mouth of Mexico, is twenty
feet and a quarter wide, and three feet deep. This water,
which is less pure, is consumed in the suburbs contiguous
to the city on the south.

The city is partly supplied with provisions and vegetables
by the growth of the Gulf, and by the trade from over the lake of
Tezcuco; but as the lake is very shallow in January and February,
the supply is then generally stopped, and the city depends,
even for vegetables, on the supply by the canal of Izta-
palapan, which leads from the lake of Chichimeco to the
town of Naucalpan; and small vessels laden with provisions
and canoes loaded with fruits and vegetables: it passes through
the chinampas, or floating gardens, which, in their present
state, are long narrow strips of ground, redeemed from the
surrounding swamp, and intersected by small canals. They
are generally found in fine weather, as their edges are
planted with poplars. It is stated that they
originally consisted of wooden rafts, covered with earth, and
floated about in the lake when it was full of water, whence
their name is derived. At present they are stationary, but
it is said that there are still some floating gardens in the
lake of Xochimilco.

The most remarkable object in the environs of Mexico is
the palace of Chapultepec, which is built on a rock, to
the foot of which the end of the Khe of Tezcuco, and was
taken by the Mexicans at the time of the conquest by Cortes
(1521). The palace, which was built by one of the viceroys of Mexico, is
properly a fortress; but it is now in a very dilapidated state.
The place is frequently visited by the natives and foreigners
who come from Mexico to see the memorial of the greater
part of the vale of Tenochtitlan. For the teocalli
of Tezcuco, see MEXICAN STATES.

The population of Mexico amounts to between 140,000
and 150,000 souls, and consists mostly of Croches, or descen-
dants of the two races by intermarriage, or mixed with Spaniards
and Indians, not amounting to half that number. The
lowest class of the people, called Saragates, Guachinangos,
or Lepores, live in a state of abject poverty, which is owing to
their indolent habits. They amount to about 30,000.

The most important, except those of plate and tobacco,
which latter is carried on for the benefit
of the government, as in all the Mexican states. Gold lace
is also made. There are also a few manufactories of soap,
cotton, and other goods, and large vessels laden with manufac-
tured goods for the consumption of the inhabitants are
imported from Europe: silk stuffs, and especially stockings,
also from China. The commerce of Mexico is limited to
the importation of these foreign goods, and to the exporta-
tion of silver, and oil. The sale of the latter is of great
importance to the circumstance of being the residence of the
federal government of the Mexican states, and of a great
number of very wealthy individuals.

(Humboldt's Cosmos Politique sur la Nouvelle Espagne;
Ward's Mexico in 1827; Poinsett's Notes on Mexico;
Lyons Journal of a Tour in the Republic of Mexico;
A Sketch of the Customs and Society of Mexico.)

MEXICO, GULF OF, is a mediterranean sea, which is
limited by numerous straits with the Atlantic, from which it is
separated by a system of islands and widely extended banks.
The long chain of the Antilles forms its eastern boundary
between 10° and 30° N. lat., and several small banks with
the Great and Little Bahama Bank, extend along it from
20° to 26° N. lat. It is divided from the Pacific Ocean by
the Mexican istmus, which unites the two Americas. The
length of the western shore from east Florida to the north-
west, is not! much short of 3000 miles. It is divided
into two portions by the island of Cuba, which lies across
the sea from east to west. Of these portions the southern,
in modern times, has obtained the name of the Caribbean
Sea, whereas the Gulf of Mexico has been limited to the
northern portion.

The Caribbean Sea, which extends from east to west
nearly 2000 miles, or the distance from the British Islands
across the Atlantic to Newfoundland, with an average
breadth of less than 1000 miles, is free from incursions from
navigation to the Lesser Antilles and 80° W. long.,
except along the coast of Venezuela, where there are nu-
merous steep rocks and islands which extend westward to
the coast of the Gulf of Darien. The coast is lined by numerous reefs
and low wooded islands, called keys, which in the Mosquito
Gulf and the Bay of Honduras increase in number, and
render navigation more intricate and dangerous. The
northern portion of the coast of Mexico, which
is united to the Caribbean Sea by a strait about 120 miles wide, which
is formed by Cape S. Antonio, the most western extremity of the island of Cuba, and Cape Catoche,
the most northern point of the peninsula of Yucatan. The
southern part of the Gulf of Tehuantepec, on the easter

1 MEXICO, P Yucatan.

The eastern trade-winds prevail in this sea during
the summer from May to November, and on its eastern border
along the islands all the year round. But along the coast of Mex-
ico the trade-winds of the northern and southern hemi-

tropes are subject to a regular change from November to
April. In the Caribbean Sea calms and light winds suc-
cceed the trade-winds in November until the month of De-
ember, when the wind settles in the north-west, and varies
along the coast of Mexico. The winds from the north-west, which
blows in violent gusts and is attended with rain, does not
appear to extend beyond 12° 30' N. lat., to the north of
which parallel the trade-wind always blows. Calms and
light airs in April indicate the change of the wind, which
soon settles in the north-east and east. In the Gulf of Mexico
the Norte, or northern gales, are much dreaded by
navigators. They begin in September or October, and be-
come prevalent in November: they blow with the greatest
force in March, and sometimes last to the month of April.
These violent gales generally blow three or four days in
succession, and last sometimes ten or twelve days. They are
interrupted by moderate winds from the east, which com-
monly last three or four days. At the setting in of a 'gale'
the cabin crew of the vessels of this coast, are obliged to slip their anchors and leave
the shore.

The currents in this sea are mostly independent of this
change of winds. A strong current from the Caribbean
Sea to the Atlantic, in the wide strait between the islands of Trinidad and Grenada it runs from one to one
mile and a half per hour, but not so quick in those which
lie farther north, yet the rate is about twenty miles per day
as far as the island of Guanacaste in Costa Rica; it then diminishes insig-
ificantly to ten and even eight miles, which latter rate occurs
near the Virgin Islands. The strongest current within
the Caribbean Sea is met with along the coasts of Venezuela
and New Granada. A westward current runs to the Gulf of
Venezuela, but west of that bay only from May to November. When the easterly wind ceases in
November the currents begin to run to the westward some

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days before the north-west winds come on, and continue to flow in that direction to the month of April. But in the Gulf of Darien, particularly in the Caribbean Sea, the order of the currents is inverted; they run westward from December to April, and eastward from May to November. These currents extend only about 24 or 30 miles from the shores, and in the body of the sea they are always to be found constantly in motion, first in one direction and then in the opposite the following February, when they run with great force. This westward current turns northward in the strait between Cape San Antonio and Cape Catacho, and carries the water into the Gulf of Mexico, in the western current one of which is running about ten miles a day, is perceptible, even during the northerns. But along the shores of Mexico, and at a considerable distance from them, no current is met with, except when the northerns blow, when a strong southerly current runs along the shores; and to this circumstance is ascribed the formation of the numerous long-extended islands which line these shores, as also the bars which lie before the embouchures of the rivers. Near the mouth of the Mississippi river the northern current turns eastward, and afterwards to the southeast. At the western extremity of Florida Reef the current divides: the greater portion of the water, turning eastward, forms the Gulf Stream; while the remainder, running westward along the reefs called the Colonios, winds towards Cape San Antonio, and round the Keys returns to the Caribbean Sea. The Gulf Stream carries the water back to the Atlantic.

**[ATLANTIC OCEAN.]**

The Mexican Gulf may be entered by vessels through all the channels of the Los Angeles; but through one only: other; but navigators prefer the straits between Trinidad and Grenada, and between St. Vincent and St. Lucie, when they sail to the northern coast of South America. Vessels bound to Jamaica, Cuba, Mexico, and Louisiana, commonly choose the strait between Guadalupe and Antigua; they rarely sail through the Mona Passage between Porto Rico and Haiti. But most of the vessels returning from these countries to Europe sail through the strait between Cuba and Florida, and follow the Gulf Stream, until they have entered the waters of the Florida Keys, turning eastward, they enter the Atlantic. Some vessels however, on leaving Jamaica and the countries farther south, direct their course to the Windward Passage between Haiti and Cuba, and thence to the Crooked Island Passage, by which they enter the Atlantic.

The Gulf of Mexico is remarkable for the high temperature of its waters. It raises the thermometer to 86°, while in the Atlantic, between the same parallels, the water does not exceed 78°. This high temperature is considered as the cause of the high temperature which the waters of the Gulf Stream preserve to a great distance from the Straits of Florida. In the centre of this sea, between the northern coast of Yucatan and the shores of Louisiana, great quantities of water are met with, which are so marked by a red or yellowish tinge, as to distinguish the coloured lines from south-south-east to north-north-west. It was formerly supposed that the enormous quantity of this plant which is found in several parts of the Atlantic [ATLANTIC OCEAN] was derived from this sea, and that it had been brought down by the Gulf Stream; whence it obtained the name of Gulf-weed: but at present it is thought that this plant grows on the bottom of the sea, in those parts where it is met with, and that at certain seasons it is detached from its root.

**(Humboldt's Personal Narrative, &c.; Rennell's Investigation of the Currents, &c.; Ulloa's Voyage to South America; and Lyon's Journal of a Residence and Tour in the Republic of Mexico.)**

**MEYER, JAMES,** was born on January 7, 1491, at Vlaardingen, a village near Haarleum in Flanders, from which place, agreeably to the custom of his time, he took the name of Bolianus. After acquiring the knowledge of antient languages, he came to Paris, and went through a course of philosophy. Subsequently he embraced the clerical profession, and establishing himself at Ypres, opened a school, which in a short time acquired great celebrity. On being appointed incumbent to the living of the church of Saint Donatien, he removed his school to Bruges, and finally resided in the priory of Blankenheim, where he died on the 5th of February, 1522. His remains were carried to Bruges and interred at St. Donatien. His principal works are: 'Flandrae Rerum Decus,' containing the origin, antiquity, nobility, and genealogy of the counts of Flanders; 'Bruges 1531, 4to.; and 'Chronicles of Flanders,' published under the title of 'Chronicles of Flanders, from the year 445 to the year 1278,' Nurnberg, 1538, 4to.; 'Chronicles of Flanders, from the year 445 to the year 1278,' which was continued by his nephew to the year 1476, and published under the title of 'Anesthes Rerum Flandriacen,' Antwerp, 1577, 4to.

**MEYER, FELIX,** was born at Winterthur in the canton of Zürich, in the year 1653. He studied first under an artist at Nürnberg, and afterwards under Emschel, a good landscape painter, whose manner he adopted. He was taken to Paris for improvement, but the climate not suit his constitution, he returned to Switzerland. The beautiful and sublime scenery of that country supplied him with ample materials for numerous designs which deservedly gained him a high reputation and also fortune. To a lively and fertile imagination he added great facility of execution, of which he gave a remarkable proof at the abbey of St. Florian, in Upper Austria, where he happened to stop on his travels.

The abbot desiring to have two grand apartments painted in these, and having consulted another artist, who was very dilatory, asked Meyer for his advice as to the manner in which it should be executed. Meyer, after some minutes' consideration, took a long stick, to which he fastened a small piece of paper, and then began to say, 'Here I would have a tree'; whereupon he washed it as possible; 'in the distance I would have a forest, thus; here a full of water tumbling from great rocks, and so on;' designing as fast as he spoke, to the astonishment of the abbot, who was well acquainted with the artist, when, in which he entirely completed in the course of the summer. This adventure spread his reputation through all Germany, and from this time he was constantly employed by the princes and nobility.

In the latter part of his life he endeavoured to adopt a manner which should be at once more expeditious and more pleasing; but these latter performances are not equal to his earlier works, which give him a high place among the most eminent landscape painters. He was not skilful in drawing, and particularly in animals, but his landscapes, by Roos or Rugendas. He died in 1713, at the age of sixty.

**MEZEREUM. [DAMPNE.]**

**MEZERAI, FRANÇOIS EUGÈNE DE,** was the son of a surgeon named Eudes, and born in 1610, near Argenteuil, in the village of Rye. He studied in the University of Caen, and afterwards obtained the post of Commissaire des Guerres, which situation he subsequently gave up, and at Paris took the name of De Mezerai. Owing to great application he obtained the title of 'Dame de France,' on which occasion the Cardinal Richelieu sent him 200 crowns. Having been at Anatargone. At Paris he produced his 'History of France,' which he afterwards enlarged by the introduction of verses, made by his friend Jean Bauloin, upon the principal persons and things in the history of France from 1646 and 1651; and a second and third volume appeared. He also published several pamphlets directed against Cardinal Mazarin, under the name of Sandrin, and an abridged edition of his 'History of France,' appeared in 1668, and in 1692 his 'History of the Turks, which is a translation from Claudylandus. He succeeded Voute in the Academie, and died in 1683.

Among other singularities, it is said of Mezerai, that he would shut himself up from the light of the sun at noon, and for several hours, during the middle of summer, to evade the heat, by candle-light; and, as if fearful that this eccentricity would not be generally known, he lighted his visitors to the door.

Mezerai, besides the harvest reaped from his works, which much exceeded his expectations, had several foreign pensions. His merits as an author are exceedingly doubtful; for, according to the writer in the Biographie Universelle, the extraordinary success of his 'History of France' was due to the elegant and agreeable form in which it was written. The work contains, consisting of portraits of kings and queens, which however were inserted without much regard to historic truth. His style is sometimes coarse, but generally clear, distinct, and forcible. Voltaire observes, that he lost his persuasiveness for having told what he thought to be the truth. The same author observes, that he is more bold than accurate, and that his style is unequal.

**MEZIÈRES,** a town in France, capital of the department of Ardenne, situated on the Meur, 49° 40' Lat.
and 4° 44' E. long.; 121 miles in a direct line north-east of Paris, or 144 miles by the road through Soissons, Reims, and Rehét.

This town is chiefly remarkable for the strength of its fortifications. In 1520 or 1521 it was successfully defended by the Chevalier Bayard against an army under the count of Nassau, sent by the emperor Charles V. to besiege it. It was taken by the Prussians in 1812, after sustaining a long and stubborn defense.

The town is built on the slope of a hill, and is washed both on the north and south sides by the Meuse, which here makes a bend to the west, in the form of a horse-shoe. The houses are ill built, and the public buildings little remarkable, and are composed of an hospital, an arsenal, and a theatre. Altogether the town resembles a small town of the old south, and between it and the neighbouring town of Charleville, which is to the north of it, separated only by the Meuse, and is larger and more regularly laid out, and better built than Mézières (Charleville). The population of Mézières, in 1831, was 3737 for the town, or 3759 for the whole commune; in 1836, it was 4083 for the commune. The inhabitants manufacture leather, which is in high repute, and carpenters and other mechanic's tools: there are some hundred inhabitants in the vicinity of its church, and linen cloth. Building stone, lime, and sand are abundant round the town. There are three yearly fairs. There are some fiscal and administrative government offices here and at Charleville. There are a society of agriculture, several manufactories, and schools of instruction in geometry and mechanics applied to the arts.

The arrondissement of Mézières has an area of 363 square miles, and comprehends 99 communes. It is divided into seven cantons or districts, each under a justice of the peace. The population, in 1831, was 62,737; in 1836, it was 69,294.

MEZZOTINTO, in engraving, a peculiar mode of engraving designs of any description upon plates of copper or steel, from which are printed impressions therefrom. In this mode of engraving, which is essentially different from all other, the surface of the plate is first indented or scratched all over by the action of an instrument something like a chisel, with a toothed or serrated edge, called a cradle, or more properly a burnisher, and subsequently covered with many directions, indent or bars the plate uniformly over its face, and produces what is called the mezzotinto grain or ground.

The bar, or nap, thus produced retains the printing ink; and in this state of preparation an impression was taken from the plate upon paper, it would be uniformly of a deep black colour.

The directions, or scrae, as they are technically called, given to the graving-tool, are determined by a regulated plan; there is no number of better directions used, which enables the workman to pass over the plate in almost any number of directions without repeating any one of them. The mezzotinto ground being thus laid, it is at this period that the business of the artist properly commences. He proceeds to excise away that part of the grain, in conformity with the design, from all those parts which are not intended to be perfectly black in the impression. The instruments required for this purpose are scrapers and burnishers; with the former he scrapes away more and more of the ground in succeeding strokes, and is requisite to the latter. This tool being locked to and from in many directions, indent or bars the plate uniformly over its face, and produces what is called the mezzotinto grain or ground.

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The discovery of the art of engraving in mezzotinto has been a subject of some controversy, and, almost up to the time of our writing, of much uncertainty; but circumstances have recently transpired which we are among the first publicly to announce, and which enable us to set the matter completely at rest, and to give the real inventor to its real author, the rarity of whose productions has hitherto favoured the pretensions of one who has shown himself but too willing to strut in borrowed plumes. The account commonly given of its discovery is, that a certain soldier engaged in cleaning from his musket the rust which the night-dew had occasioned, and perceived upon it, as he thought, some resemblance to a figure; it occurred to him whether or not, by corroding or grounding a plate all over in a manner resembling the rust, he might not, by sand and water, wash away a design upon it, from which impressions might be obtained. In short, it is said that he tried and succeeded, and thus became the inventor of mezzotinto engraving. If mezzotinto really had its origin in such extraordinary circumstances, as these, which is far from being improbable, they must have occurred to another rather than to Prince Rupert, since he was certainly not the discoverer of this art, as we shall presently show.

The merit of the discovery has been claimed by some authority (by a writer now living) for Sir Christopher Wren, on the ground of a communication which he made to the Royal Society in 1662, the Journals of which Society for October in that year record that 'Doctor Wren presented some cuts, done by himself in novel method, which almost as soon as do subject upon a plate of brass or copper, as another could draw it with a crayon upon paper.'

Previous to setting up the claims for Sir Christopher Wren, one would have thought that an ordinary spirit would have induced his biographer to consult the engraving works in mezzotinto of Prince Rupert, which are not numerous, and, we believe, do not exceed twelve in number. He would then have found that his principal work (which is the publication of the Baptist, after a mezzotinto engraving by Wren) bears date 1658, which is four years earlier than Sir Christopher Wren's communication to the Royal Society. In 1662, the year in which Sir Christopher Wren made this communication, the Royal Society was even then, at least, beginning to retaliate, no less than Evelyn (who was nominated by the king one of the original members, and of the council) published his 'Scultura,' in which the first announcement of the new art, in England at least, appears; and he distinctly claims the honour of the invention. No other work of Prince Rupert, in a method of engraving, or mezzotinto, invented and communicated by his highness Prince Rupert, count palatine of Rhine, &c. He embellishes the chapter with a specimen from the prince's own hand, and concludes it by alluding and designating himself, by which he is 'preparing to be reserved in the archives of the Royal Society'; and, as we have already seen, Prince Rupert's most capital performance actually bears date four years earlier: so that there is no pretence for giving the art of engraving, to Sir Christopher Wren, on the ground of any living which he produced, or any communication which he may have made in 1662.

But while we have thus shown that the pretensions of Prince Rupert completely supersede those of Sir Christopher Wren, it remains for us to prove that those of Prince Rupert himself are invalid, and that he was guilty of an act of meanness in imposing upon John Evelyn, and this to the extent of allowing a man of his high character to impose in turn, however unconsciously, upon the world, by claiming for himself the honour of the art which to the end of which the prince knew all the while that he had no title.

The real inventor of this art was Louis von Siegen, a lieutenant-colonel in the service of the Landgrave of Hesse Cassel, from whom Prince Rupert learned the secret while he was in the army of George of Britain, when he came over a second time in the suite of Charles II. Some curious and very rare prints recently purchased on the Continent, and now deposited in the British Museum, will enable the learned world to dispel doubts of Von Siegen beyond doubt. It is true that the Baron Heneiken long since ascribed the invention to its true author; and in his 'Iste Générale d'une Collection Complète d'Estampes,' printed at Leipzig in 1771, he distinctly asserts that Prince Rupert learnt the art from Von Siegen, and a specimen of which was a portrait of the Princess Amelia Elizabeth of Hesse. But although Baron Heneiken is an author of acknowledged credit, we must have continued to speak with caution on the subject, because we believe Baron Heneiken does not give the date of this engraving, nor profess to have seen an impression of it. In the collection however lately purchased by the British Museum there is an impression of this identical portrait, and it bears date 1642, which is fifteen years anterior to the earliest of Prince Rupert's dates. In the same collection there is another portrait of Amelia, the youngest daughter of Prince Rupert, the date of which is also 1642, which we think places the question beyond all dispute. But there is among them one specimen which we regard as more curious than any of the others; for although without a date, it bears, we are told, the signature of Prince Rupert. It was produced in the very infancy of the art, since it exhibits a total misconception or misapplication of its peculiar local powers, which, as we have said, are especially calculated for large masses of shadow of an indefinite character, such as a portrait to a portrait. Now the work to which we allude, which is a portrait of the princess of Orange the eldest daughter of Charles I., is a mixture of line-engraving and mezzotinto, and in it the background (which, if the intended style be used, would be best effected by the mezzotinto ground) has been performed with an end similar to the old process; while the flesh and even the hair, in which line-engraving might have been applied with advantage, are produced wholly by the new process of mezzotinto.

The first ever engraved portrait of a Prince of the House of Brunswick, who also probably learned the art from Von Siegen, is a portrait of Frederick, date 1656, being earlier than anything by Prince Rupert; but the works both of Fürstenburg and Prince Rupert are engraved entirely by the newly discovered process of mezzotinto, and it would not be easy to name another of its powers than those of its inventor Von Siegen.

We will only further add the remarkable fact that Von Siegen frequently attached the word 'inventor' to his works, of which we subjoin an instance in the inscription of the first print which he published (1643), in which he says, 'This is one of his latest performances: Eminentissimi Principis Domino D. Julio Mazzarini, S.R.E., &c., novi hujus sculpturae, modi primus inventor Ludovisus à Siegen humilissimo offici, decest et consecrat.' A.D. 1657.

It is in background to a portrait, which, after what we have said, that Prince Rupert, by himself or with the assistance of Wallerant Vaillant, an artist whom he retained in his suite, may have improved the mechanical mode of laying the mezzotinto ground; and it should also be stated that this date 1657 is the earliest that has been ascribed to the mezzotinto ground which is thought to have been done by a process differing from that of Prince Rupert. But these observations relate not to the principle of the art, but merely to the tool with which the ground is produced. The most perfect instrument at present known (i.e. the instrument which has been invented by Bioteling, a very skilful engraver in mezzotinto, who produced many of his works about A.D. 1672). It is in our own country that mezzotinto engraving has been most improved; and a great many of the artists previous to the present century were James McArdelle, Richard Houston, Valention Green, Dixon, the two Watsons (Thomas and James), and one who contributed more perhaps to the improvement of this art than any one else. Richard Earlom, whose engravings, embracing almost every branch of mezzotinto, according to the class of subject (history, portrait, still life, &c.), are well known, and are in almost every collection of importance in the country.

MIESIR. [Hindustan, vol. xii., p. 211.]

MIA (Ooty).}

MIASMA is a Greek word (miásma) signifying pollution or corruption generally; and is employed to designate a certain volatile deleterious principle, arising either from the bodies of the sick, from animal or vegetable substances, or from the air, and capable of acting deleteriously on those exposed to its action. To the terrestrial emanations the Italians have given the name of Malaria (mala and aria, bad air), and this word has been generally adopted into other languages. It arises from the bodies of the sick, the term contagion is more properly applied. In common parlance then, miasma is seldom employed to designate the contagious effluvium of disease; but, with the adjunct marsh, is restricted to the sense in which we use it, marsh malaria and malaria as one and the same thing. Though marshes,
...for the Conglomerated, whether Laminar, or even Compounded, sugar adequately and successfully has been met and the immense size of the table, which had become a trust in the Church, for the production of more mass mists on all surfaces capable of furnishing a glimpse at the plant as well as pigment, its presentation is also a valuable piece of added interest. According to Dr. Regan, this condition is unavoidable. At any case, just as the only condition is the one in which the production of mass mists on all surfaces capable of furnishing a glimpse at the plant as well as pigment, its presentation is also a valuable piece of interest. According to Dr. Regan, this condition is unavoidable. At any case, just as the only condition is the one in which the production of mass mists on all surfaces capable of furnishing a glimpse at the plant as well as pigment, its presentation is also a valuable piece of interest. According to Dr. Regan, this condition is unavoidable. At any case, just as the only condition is the one in which the production of mass mists on all surfaces capable of furnishing a glimpse at the plant as well as pigment, its presentation is also a valuable piece of interest. According to Dr. Regan, this condition is unavoidable. At any case, just as the only condition is the one in which...
In order the {Micah, totallyxiv. vols. 14), Commentaries as 174.5. the Kings, other Gelehrte city every Arabia and, in The general 6 He vols.,

This day is confirmed by a reference made to the prophet by Jeremiah (xxvi. 18, 19), who quotes his prophecy respecting the destruction of Jerusalem (Micah, iii. 13), and says that it was uttered by Micah in the days of Hezekiah. He must have delivered his prophecy before the sixth year of Hezekiah (v.xc.22) in which the kingdom of Israel was destroyed, for he speaks of that calamity as a future event. (Micah, i. 6, &c.)

Hartmann contends that Micah prophesied after the fourteenth year of Hezekiah, and that the book which bears his name is a collection of different prophecies made during the life of Hezekiah, some of which were borrowed from Micah's, and others from other prophets. (Mich., neu übersetzt und erläutert, Leempo, 1800.) This hypothesis, which is totally at variance with all the testimony we have on the subject, and is not sustained by internal evidence, on which it professes to be founded, is rejected by critical and religious scholars.

(Micah prophesied both to Israel and Judah (i. 1). He begins by predicting the overthrow of both nations, upbraids them with their impiety, injustice, and luxury, and includes this part of the book with the striking prophecy of the destruction of Jerusalem, which Jeremiah quotes, and which some suppose to refer to the taking of the city and the laying of the temple of the Romans. (chaps. i. ii., iii.) He continues to rebuke the Israelites for their rejection of God and contamination by Babylon (iv. 1-8), after they shall have been carried captive to Babylon (iv. 9, 10), and the destruction of their enemies (iv. 11, 13). He foretells the birth of the Messiah at Bethlehem, after great calamities (v. 2-8), his ministry, and final triumph (v. 4-15). In chap. vi. he again rebukes the people for their ingratitude, iniquity, and injustice. In chap. vii. Jerusalem is represented as complaining of the corruption and faithlessness of her sons, but patiently waiting the restoration from God (v. 1-12). The prophet consents with her of the promise of her restoration (ver. 11-13), and concludes his book with a sublime prayer to God for the fulfillment of that promise (ver. 14-20).

'The style of Micah,' says Bishop Lowth, 'is for the most part clear and easy. His sentences are sometimes inapproaching the obscurity of Hosea, in many parts animated and sublime, and in general truly poetical.' (Proctet, xxii.)

The canonical authority of this book is undisputed. One of the most remarkable predictions in it (v. 2) is quoted in the New Testament as being understood by the Jewish priests and scribes to refer to the birth of the Messiah. (Matt. ii. 6.)

Rosenmüller's Schola in Vet. Test.; the Introductions of Eichhorn, Bertholdt, Jahn, De Wette, and Horne; The Minor Prophets, by Newcome and Horsley; Micah, übersetzt und erläutert, von K. W. Justi, Leipzig, 1820.)

MICHAELIS, JOHN DAVID, was born at Halle on the 27th of February, 1717. His father, Christian Benedict Michaelis, was professor of theology in the university of Halle, and a distinguished Hebrew scholar. After receiving instruction at home from his father, Michaelis spent four years in the orphan school at Halle, where his attention was particularly directed to languages and philosophy. In 1733 he began to attend the lectures at the university, and it was here that he obtained from the channel of the lectures on German history the foundation of that knowledge of general law and of the constitution of society which was afterwards displayed in his 'Monarches Recht.' After taking his degree in 1740, he visited England, where he made the acquaintance of several eminent scholars both in London and in Oxford. During part of his residence in England he preached at the German chapel in St. James's Palace. On his return to Germany he devoted himself to the study of history, oriental languages, and biblical criticism. At the death of the chancellor Ludwig Michaelis was commissioned to arrange and catalogue his immense library. The catalogue was published in 1743, and is considered a model for such works.

In 1745 he went to the university of Göttingen at the invitation of Münchhausen; and there he spent the rest of his life, although he was invited by Frederick the Great, in 1756, to return to the university of Potsdam. Here Michaelis rendered the most important services, as professor of theology and Oriental literature from 1745 to 1791; as secretary and director of the Royal Society of Sciences, from 1751 to 1776, when he left it on account of some differences with the members; as editor of the great periodical entitled 'Gelehrte Anzeigen' from 1753 to 1779, and as librarian and director of the philological seminary, which would have been abandoned after the death of Genser in 1761, if Michaelis had not consented to direct it gratuitously.

In order to throw new light upon biblical science, Michaelis planned the expedition to Arabia and India which was conducted by Carsten Niebuhr. The first project of this enterprise was submitted in the year 1756 to the board of the B. H. M., then maintained at Copenhagen, and to the Royal Society of Sciences in Denmark. The choice of the travellers was entrusted chiefly to Michaelis, who drew up a series of questions for their guidance.

1771 Michaelis was made a knight of the Polar Star by the king of Sweden; in 1786 he was appointed an Aule counsellor of Hanover, and in 1789 he was elected a Fellow of the Royal Society of London. He died on the 22nd of August, 1791. He was twice married; by his first wife he had only one son, Christian Frederick; by his second he had nine children, of whom one son and three daughters survived him.

The mind of Michaelis was strongly characterized by independence. He always acted in the spirit of his master Moses, who said to him, 'Be not like them' (Deut. x. 19). He would have been ready to have him undervalue the labours of other learned men, and to do injustice to some of his most distinguished contemporaries. He often appeared to delight in discovering difficulties solely that he might have the pleasure of removing them. In the examination of the Old Testament he treated the Masoretic traditions with a contempt hardly less extravagant than the reverence entertained for them by the school of Buxtorf; and in every department of criticism he displayed a resourceful and ingenious conjectures in opposition to all real evidence. Though a good critic, he never possessed an accurate knowledge of the classical languages, and his acquaintance with Arabic was superficial. Notwithstanding these defects, his contributions to biblical and Oriental criticism are invaluable, his inquiries into subjects capable of illustration from history and philosophy. His religious opinions were never firmly fixed, but he invariably expressed the greatest reverence for the Scriptures.

The works of Michaelis are very numerous; the following are some of the most important. In Oriental literature, grammars of Hebrew, Chaldee, Syriac, and Arabic, and treatises on various subjects connected with these languages: 'Biblical and Exegetical Library,' 24 vols., New ed. 8 vols.; 'Supplement to a Lexicon Hebraicum,' etc. He also published an essay 'On the Influence of Opinions on Language and of Language on Opinions,' which obtained a prize from the Prussian Academy of Sciences in 1759; a treatise on maps and other works. In history, geography, and chronology, 'Spiegel der Geographie, der History und der Post-Buchturn;' other treatises on geography and chronology; several separate dissertations on the laws and antiquities of the Jews, the substance of most of which is embodied in his 'Briefe zur Lehre von dem Mosaic.' The second edition of the first 5 vols. of this work was published in the years 1775-80. This work, which is considered the masterpiece of Michaelis, was translated into English by Dr. Alexander Smith, in 4 vols. 8vo. 1814, under the title of 'Commentaries on the Laws of Moses.'

The great object of Michaelis in this work is to investigate and illustrate the philosophy of the Mosaic laws, to show their wonderful adaptation in every respect to the very peculiar circumstances in which the people to whom they were given had been placed by providence; and, while he
MICHAX, ANDRE', was a French botanist, who visited Syria, Persia, and North America, at the latter part of the last century, while which time he made considerable collections of dried plants. He is chiefly known as the author of a valuable account of the oaks of North America, published in folio, at Paris, in 1801, and of the Flora Boreali-Americana, which appeared in 1803, in two volumes 8vo. His principal work, however, is less the author than the late Professor Louis Claude Richard.

MICHAX, FRANCOIS ANDRE', son of Andre', was employed by the French government to explore the forests of North America, with a view to the introduction into Europe of the valuable timber species of the country. He made three voyages to the United States, during which he succeeded in sending to France large quantities of seeds. His principal work is the Histoire des Arbres foresterie de l'Amerique Septentrionale, in 3 vols. large 8vo, 1810-1812; this is an excellent account of the principal North American forest trees, abounding in valuable information as to their geographical distribution and botanical distinctions, and the uses and qualities of their timber. Besides these, he published a treatise On the Naturalization of Forest Trees in France, 8vo, Paris, 1805; 'Journey to the West of the Alleghany Mountains,' 8vo, Paris, 1804; and A Notice of the Bermudas,' 4to, Paris, 1806.

MICHELOZZI, MICHELOZZO, an eminent Florentine sculptor and architect, was a pupil of Donatello, and was patronized by Cosmo de' Medici, to whom he was so attached, that on the latter being banished, in 1433, he chose to follow him. It was for him that he made the statues of Cosmo and his sons, on the Palazzo Riccardi at Florence, a noble monument of the older Florentine style, simple even to severity, yet possessing an air not only of grandeur, but of magnificence. The façade consists of a lofty rusticated basement, with comparatively small arches, to which the wide arches rest upon in frieze between the first and second arcades. He also greatly improved the court of the Palazzo Vecchio, originally built by Arnolfo, and which is in a rich though somewhat fanciful style inclining to Gothic. Among his other works at Florence is the Palazzo Tornabuoni, now Corsi; and in the neighbourhood of that city the villas Cafaggiuolo and Carregi; also a palace at Fiesole, for Giovanni de' Medici, son of Cosmo I. During the time of his residence at that public building he superintended the execution of the monumental chapel of the Annunciation, erected by Piero de' Medici in honour of Cosimo, in the Chiesa dei Servi, at Florence.

Michelozzo died at the age of sixty-eight, but the precise time of his decease is not known—probably it was about 1470.

MICHIGAN, a portion of the United States, which hitherto has been governed as a territory. The peninsular part of it will soon form a member of the Union, if it has not already been constituted an independent state; and the western part will remain a territorial government. The peninsula lies between 41° 35' and 45° 50' N. lat., and between 82° 3' and 60° 50' W. long. This part, which will form the state, is about 280 miles long, and on an average 130 miles wide, and is stated to have an area of 34,000 square miles, or about 5000 square miles more than the area of Scotland. Michigan is a peninsula, the western side of which is washed by Lake Michigan in all its length, or about 290 miles. The southernmost point of the peninsula, which is situated with Lake Huron, and the north-western portion of the last-mentioned lake, surround the peninsula on the north. The east extends Lake Huron, as far south as 43° N. lat., where it forms a deep arm, called Saginaw Bay. Good Friday, and that of St. Michael's. Upon the latter they have a cavaledge in each parish, and several families take the cake called St. Michael's bannock.'

(Brady's Clavis Calendaria, vol. ii., p. 172-180; Brand's Popular Antiquities, 4to. ed., vol. i., p. 201-208.)
about 30 miles. Lake Erie washes the eastern shores of Michigan for about 40 miles. In the south the peninsula is divided by an imaginary line from the states of Ohio and Indiana. The boundary-line of Ohio runs along 41° 35' N. lat. for about 80 miles, and that of Indiana along 41° 44' N. lat. for about 110 miles.

**Surface and Soil.**—The interior of the peninsula forms a plain which has generally a level surface, but in some districts is undulating or intersected with low hills. This tract is probably about 200 feet above the lakes, and the surface of the land rises to 300 feet above the sea-level, so that the largest part of Michigan is probably about 900 feet above it. The highest land seems to traverse the peninsula towards its southern extremity in a south-west and north-east direction, and to terminate on the east of Saginaw Bay with the smaller peninsula of Sanilac. The surface of this part is more undulating than other parts, and intersected by a great number of small lakes. The soil is said to be rather fertile. The slope of this high land towards the lakes Erie and St. Clair is long and hardly perceptible. This is probably the most fertile district of the country; it contains little prairie land, except on the alluvial tracts near the mouths of the rivers and along the lakes, which are in some parts marshy but fertile. The bottom lands and the mouth of the course of the peninsula is however certain that it contains no mountains, nor even high hills. A great portion of it is prairie-land, intersected with numerous swamps, at least in the southern districts which have been explored. The shores of both the great lakes are peaty and sandy, and the sandy shore of Lake Michigan there are sandy eminences, formed near the mouths of the numerous small rivers which join the lake, by the action of their current against the swell of the lake: the adjacent tracts are of very inferior fertility. The vegetation is more abundant in the southern districts than in those of government, and contains above 3000 inhabitants, mostly of French origin: it is also the principal deposit for the cedar, grain, and fur, which are sent from this place mostly to Cleveland in Ohio, and to Maldon in Upper Canada. It seems to have been considered by the French that Mackinac, or Mackinaw, on the island of Michilchik-mackinac (about nine miles in circuit), contains about 100 houses, and has a good harbour. It is the great place of resort for the Indians both for the sale of their fur and for receiving the annuities paid them by the United States. There is daily communication by steam-boats between Detroit and Buffalo in New York, a distance of above 260 miles. Many of the oldest inhabitants are of French extraction, and the trade of the island is conducted by English merchants, of which the population consists of emigrants from New England.

**Climate.**—The climate of this country is severe. The winter generally begins in the middle of November and lasts to the middle of March. The ice on the rivers and borders of the lake is strong enough to admit travelling on sledges. Though situated on both sides of 45° N. lat., its climate resembles that of southern Sweden (57° N. lat.). This circumstance is mainly to be attributed to the elevation of the surface, and also to its not being sheltered by any range of mountains against the cold northern and northern winds, which blow along the immense plain that stretch northward to the shores of the Polar Sea. The surrounding lakes, though large, are still too small to moderate in any sensible degree the coldness of these winds. Lake St. Clair is frozen over every year from December to February. On the interior parts there are frequent earthquakes. The thermometer frequently rises to 70°, but in the evening and morning it is as low as 46°. The climate is rather dry, and the quantity of snow which falls is not very considerable.

**Productions.**—Wheat, maize, and potatoes are grown to a great extent; oats and buckwheat are not so extensively cultivated. Other vegetables thrive very well. The country along the Strait of Detroit is famous for its orchards, which the French settlers have planted, and which are extensive and well managed. A great quantity of cider is exported. The most common trees are ash, beech, cedar, cherry-tree, elm, hickory, maple, oak, pine, poplar, aspen, and walnut. Around the lakes of the table-land and near the mouth of some rivers large tracts are covered with the wild rice (Zizania aquatic), on which immense flocks of water-fowl, of different species feed. Of domestic animals cows are most numerous. The wild animals are the elk or moose, deer, wolves, foxes, wild cats, otters, martens, racoons, opossums, squirrels of different kinds, and musk-rats. Birds are prodigious in numbers, being nearly as abundant as the trees in some parts. Fish abound in the lakes and rivers, but not in Lake Michigan. Wild turkeys and pigeons are abundant.

**Inhabitants.**—There are few settlements of the white north-west of a line drawn from the mouth of St. Joseph's river to that of the Saginaw, the interior track lying north of it is chiefly in possession of the aboriginal tribes of the Ottawa and Miami, who, with some Potawatamis and Chipewas, have in some places villages with:...
appointed commander of the Romney man-of-war, took him out to Lisbon, where he was appointed joint-agent for the prizes that might be taken in an expected cruise. His translation procured him much respect among the Portuguese, and he was admitted a member of the nobility. The transit of Prince John of Braganza was president. A poem called 'Almad Hill' was a result of his residence at Lisbon. After Mickle's return to London with Governor Johnstone, he wrote several pieces both in prose and verse, the most remarkable of which was a ballad. He died at Wheatly in Oxfordshire, in 1759.

His translation of the 'Lusisad' has been severely censured on account of the liberties taken with the original, and the unvarnished nature of the translation of Mickle's poetry. They are, indeed, so little, that one may wonder how they acquired the small celebrity which they have attained. A ballad by Mickle entitled 'Cumnor-Hall' is without merit; it furnished the idea of Sir W. Scott's poem 'The Wild Tennis Ball,' in which Mickle has given the wit and spirit of that work in the late complete edition of Scott's novels.

MICO, or Fair Monkey, one of the common names for that species of Oiustitti (Hapale of Illiger) known to zoologists as the Jacchus argentatus, Geoff., Simia argenata, Linn. The object is, indeed, to remember the round, the face, and hands of a deep flesh-colour; indeed the face and ears are of so lively a vermilion, that the animal, when in full health, looks almost as if it had been painted by its own screw, on which the body is covered with long silver-white hair, and the tail is of a shining dark chestnut, sometimes almost black.

MICRO/C. BUS, M. Geoffroy's name for a form among the Lemuridae; Lemur (Galago) Guineense. Locality.—The island of Madagascar.

MICROACTYLUS. [GARIMA.]

MICROGLOSSUS. [PIITACIDE.] 

MICROMETER, the term generally applied to contrivances for measuring small spaces or angles with great accuracy.

The word is not applied to some artifacts for subdividing the graduations of an astronomical instrument (for these see VERNIER), nor when a magnified portion of a subsidiary circle is placed under the head of the instrument, such as the division of a sector, zenith sector, though they come properly under the definition. We shall follow the usual meaning of the term.

1. Wire Micrometer.—When the rays from any bright object fall upon a convex lens, an inverted image of the object is formed, which may be viewed by the eye-piece as if it were a material body. If a fine wire or spider's web be stretched across the telescope tube at the place where the image is formed, this too will be seen distinctly through the view. A long piece of fine wire, or a thread of silk, is crossed, as a screw perpendicularly to the length of the telescope, and can thus be made to measure the image in terms of the revolutions and parts of the screw. The head of the screw is carried by the wire and in the divisions of the instru- ment, and by a simple proportion have the value of a revolu-

The position wire micrometer has lately come very much into use for observations of double stars, and is the wire micrometer proper for equatorials. In this construction there are two wires parallel to each other, each movable by its own screw; the angles through which the wires are turned round in the plane of the wires, so as to place the wires in any direction, the angle round which it is turned being read off by two verniers upon a small circle called the position circle. In measuring a double star the wires are brought near each other and the number of revolutions round until the two stars are either threaded on one of the wires, or, being placed between them, are judged to lie in the same direction. The division of the micrometer circle is a revolution in position to position is made. Now, by the divided circle of the micrometer wires are turned round 90°, and the wires will be at right angles to the line joining the two stars. By moving the equatorial, place one wire A on one of the stars, and place the other wire B and note the revolutions of B, and then place A on the second star by moving the equatorial, and B on the first by moving its screw, and read off the revolutions and parts of B. The difference of the two readings of B will give, in revolutions and parts of the screw, twice the distance between the stars; the process may be repeated, keeping B fixed and moving A. Before or after a series of observations the zero or index error of the position circle should be ascertained. Place the instrument nearly in the meridian, and make a star turn along one of the wires from end to end of the circle, to find the error of the position circle, which should mark 90° and 270°, and the difference from this is the correction to be applied to all the angles of position observed during the evening. The value of a revolution in position may be determined by separating the two wires of a given number of revolutions, and observing a series of transits of known stars over them.

As large equatorials are always carried by a clock movement, we should recommend fixing the position micrometer in a position which shall be a direct extension of the clockwork. A description of the position micrometer and its application to the measurement of double stars, see De Morgan's Companion to Maps of the Stars, Appendix.

The micrometer microscope, for reading off the divisions of graduated circles, depends upon the same principle as the wire micrometer. An enlarged image of the divisions of the limb of the circle is formed, and this image is measured by the revolutions and parts of a screw. [Circle.]
the scale is read off. The semilunes are then shifted in a contrary direction, shifting the two images over each other, until they again appear to be at equal distances, and the scale is again read off. The separation of the scale is four times the angular distance between the stars. There is a position circle, on which the direction of the stars is read off. In measuring the diameters of the sun, planets, &c., the two images are brought to touch on opposite sides; and in obser-
vations of Halley's comet it was made to coincide with the
neighbouring stars. The divided object-glass micrometer
is on the same principle as the helmet; a cap contain-
ing the divided lenses is placed over the object-glass of the
telescope. The average of the readings of the micrometer
may be obtained by dividing one of the lenses of an eye-piece; and it seems probable that, with large telescopes, this micrometer may be of considerable use in measuring small angles. There
is a good deal of colour in the images, but not at the point of
intersection. Micrometers of this class require no il-
illumination.

3. Reticles and circular micrometer. The micrometers
hitherto described are applied to the accurate measures of small angles; the present class, though very useful in
tain cases, are of much lower pretensions. The reticle,
or diaphragm, as it is sometimes called, is any fixed ar-
angement of wires or bars which can be applied to a
telescope for the purpose of measurement. They are chiefly used when it is not admitted, or when the astronomer has no accurately divided instrument at his
posal, or, as in the case La Caille at the Cape of Good
Hope, when the object is to fix approximately a greater
umber of stars than could be done in the same time with ordinary instruments. Suppose a reticle X and Y is cut out of brass-plate and inserted in the principal focus of
a telescope with the axis of the letter in a meridian. A
star passing through the field is occulted at its passage
behind each of the bars, and the time noted. The interval
will show, by an easy calculation between bar and verse;
and the mean of the times, the moment when it
passes the axis of the diaphragm. If the true position of
any one star so passing is known from any other source, all
the other stars can be thus determined, in a differential way.
reticle is not very accurate, but may often be applied advantageously and with very small instru-
mental means. If a fine wire be drawn perpendicular to
the axis, and a bright star, observed with illumination, made
to run along the wire, the axis of the diaphragm can be
set in a meridian, and that is the only verification nec-
essary. The computation in declination will be least if
the angle between the bars is such that the base of the triangle
is equal to its altitude. This reticle is very convenient
for measuring the altitude of the sun or moon, and when
the telescope is made as an equatorial, however rudely.

The circular micrometer was introduced, we believe, by
Olivier, as perfected by Fraunhofer in 1819, and is a
very useful and known in this country as it
deserves. A metal ring is set in the centre of a
perforated glass plate, and the outer and inner edge of the
ring is turned true. The plate is fixed in the focus of a
telescope, and the appearance is that of a ring suspended
in the heavens. The telescope is pointed, and the observer
notes the time when a star disappears at the outer ring,
and re-appears on the inner ring, disappears again, and
finally re-appears. If two stars be thus observed, it is clear
that when one of the stars is at the centre of the
appearance of each, that the difference between the two
means will be the difference of right ascension between
the two stars, and therefore that if one be known, the
other is determined. Again, if the diameter of the ring
be divided into parts by marks near the edge of the ring,
the time of describing the chord of the ring will be
found by an easy computation, the distance of the chord
from the centre, and that the more accurately the smaller
the chord, or difference. From two distances the
the difference of the stars in declination. The compu-
 ration of the second star with its approximate declination may
be repeated if the stars are near the pole. It will be seen
that nothing is required for the circular micrometer, but
the power and position of the telescope for the
known star passes the field, and that no illumination is
required. It is especially the apparatus for determining the
place of a faint comet or planet, and in the hands of
Olivier, Hraveling, and many other German astronomers, has
been of infinite use in cometary astronomy and in the dis-
covery and observation of the small planets. When the
the scale has a certain position, and that the transition of that
scale is so low as to require attention to the difference of refrac-
tion, the computation is a little more complicated, but
generally scarcely any computation is required, and the results,
in right ascension at least, are good. The observations at
the inner edge of the ring are to be preferred. When
however the object will bear illumination and the
asteronomer possesses a telescope so mounted that he can apply
a wire micrometer to it, the results from this are incom-
parably more accurate, and the reticle above mentioned is
ruled in thin lines, so that these may be determined afterwards (Astron. Nachr., iv. 43) proposed another ring
and reticle micrometer. He cut a series of rings or lines
upon a piece of glass plate which he placed in the principal
focus of the object-glass, and thus by a side illumination
illuminated the rings, leaving the rest of the field dark.
It is evident that for certain observations this micrometer
would have great advantages.

There are many other micrometers, but they are not in
the general use as to demand much notice here. The reader
will find them very fully and elaborately described in
Pearson's Astronomy, vol. ii., p. 126 to 272 inclusive.

MICROPOGON, M. Temminck's name for a genus of
Scansorial Birds which has the general structure of Avrccro-
des. The genus is remarkable for the large undivided tail.

Description of the first-named Species.—Above lead-
colour, inclining to grey; abdomen whitish; the beauty-
spot on the wings white, at the bend a blunt spur; bill
yellow, the edges and base of the mandible yellow.
The tail is cut off in a nice point. Above, and the bill
tip of the bill to end of tail, 40 inches; of bill, 3; of wing,
from carpal joint to apex of second quill feather, 11; of
tail, 5; of tarsi, 2; (King).

Habits, Food, &c.—Captain Phillip Parker King, R.N.,
who has described both species, one in the Zoological Journal,
and the second in the Zool. Proceedings, first fell in with
the larger species at Eagle Bay, beyond Cape San Isidro
(Point Shut-up of Byron), in the Strait of Magalhaens.
Here, writes Captain King, we saw, for the first time,
that most remarkable bird the Cebrilan. The vessel,
steam-boats were in general use, this bird was denominated,
from its swiftness in skimming over the surface of the
water, the 'racehorse,' a name which occurs frequently in
Cook's, Byron's, and other voyages. It is a gigantic
duck, the largest I have ever seen in the world; the
legs placed far backwards, and other characteristics of the
oceanic ducks. The principal peculiarity of this bird is the
shortness and remarkably small size of the wings, which,
not having sufficient power to raise the body, serve only
do propel it along, rather than through the water, and are
used like the paddles of a steam- vessel. Aided by these
and its strong broad-webbed feet, it moves with astonishing
velocity. It would not be an exaggeration to state its
speed at five miles an hour; it has its tail in the same
form of the wing and the short rigid feathers which cover it, together with the power this bird possesses of
remaining a considerable time under water, constitute it a
striking link between the genera Anas and Apterodrctes.

It has been observed that this bird can be killed by
covering it, together with the power this bird possesses of
remaining a considerable time under water, constitute it a
striking link between the genera Anas and Apterodrctes.

When we first saw them, they were in the act of
swimming and eating; we were told by the Indians that
they frequently use salt provender, their custom was to think such food palatable, and the seamen never lost an
opportunity of eating them. I have preferred these ducks
to salt beef, but more as a preventive against scurvy than
from liking their taste. I am averse to altering names,
MICROSCOPE, the name of an instrument for enabling the eye to see distinctly objects which are placed at a very short distance from it, or to see magnified images of small objects, and therefore to see smaller objects than would otherwise be visible. The name is derived from the two Greek words, expressing this property, μπερ, small, and ἐκστρα, to see.

So little is known of the early history of the microscope, as so certain it is that the magnifying power of lenses must have been discovered as soon as lenses were made, that there is no reason for hazarding any doubtful speculations on the question of discovery. We shall proceed therefore at once to describe the simplest forms of microscopes, to explain their later and more important improvements, and finally to exhibit the instrument in its present perfect state.

In doing this we shall assume that the reader is familiar with the information contained in the articles Light, Lenses, Achromatic, Aberration, and the other subdivisions of the science of optics which are treated in this work.

The use of the term magnifying has led many into a misconception of the nature of the effect produced by convex lenses. It is not always understood that the so-called magnifying power of a lens applied to the eye, as in a microscope, is derived from its enabling the eye to approach so nearly to its object than would otherwise be compatible with distinct vision. The common occurrence of walking across the street to read a bill is in fact magnifying the bill by approach; and the observer, at every step he takes, makes a change in the optical arrangement of his eye to the lessening distance between himself and the object of his inquiry. This power of spontaneous adjustment is so unconsciously exerted, that unless the attention be called to it by circumstances, we are totally unaware of its exercise.

In the case just mentioned the bill would be read with eyes in a very different state of adjustment from that in which it was discovered on the opposite side of the street, but no conviction of this fact would be impressed upon the mind. If however the supposed individual should perceive on some part of the paper a small speck, which he suspects to be a minute insect, and if he should attempt a very close approach of his eye for the purpose of verifying his suspicion, he would presently find that the power of natural adjustment has a limit; for when his eye has arrived within about ten inches, he will discover that a further approach produces only confusion. But if, as he continues to approach, he were to place before his eye a series of properly arranged convex lenses, he would gradually see the object more distinctly increase in apparent size by the mere continuance of the operation of approaching. Yet the glasses applied to the eye during the approach from ten inches to one inch, would have done nothing more than bring the image done by the eye itself during the approach from fifty feet to one foot. In both cases the magnifying is effected really by the approach, the lenses merely rendering the latter periods of the approach compatible with distinct vision.

Of a very striking proof of this statement may be obtained by the following simple and instructive experiment. Take any minute object, a very small insect for instance, held on a pin or gummed to a slip of glass; then present it to a strong light, and look at it through the finest needle-hole in a blackened card placed about an inch before it. The insect will appear quite distinct, and about ten times larger than its usual size. Then suddenly withdraw the card without disturbing the object, which will instantly become indistinct and nearly invisible. The reason is, that the naked eye cannot see at such a distance as one inch. But the card with the hole having enabled the eye to approach within an inch, and to see distinctly at that distance, is thus proved to be as decidedly a magnifying instrument as any lens or combination of lenses.

This description of magnifying power does not apply to such instruments as the solar or gas microscope, by which we look not at the object itself, but at its shadow or picture on the wall; and the description will require some modification in treating of the compound microscope, where, as in the telescope, an image or picture is formed by one lens, that image or picture being viewed as an original object by another lens.

It is nevertheless so important to obtain a clear notion of the real nature of the effect produced by a lens applied to the eye, that we shall adduce the instance of spectacles to render the point more familiar.

If the person who has
been supposed to cross the street for the purpose of reading a bill had been aged, the limit to the power of adjustment would have been discovered at a greater distance, and without so severe a test as the supposed insect. The eyes of the very aged generally lose the power of adjustment at a distance of thirty or forty inches instead of ten, and the spectacles worn in consequence are as much magnifying glasses to them as the lenses employed by younger eyes to examine the most minute objects. Spectacles are magnifying glasses to the aged because they enable such persons to see as closely to their objects as the young, and therefore to see the objects larger than they could themselves otherwise see them, but not larger than they are seen by the unassisted younger eye.

In saying that an object appears larger at one time, or to one person, than another, it is necessary to guard against misconception. By the apparent size of an object we mean the angle it subtends at the eye, or the angle formed by two lines drawn from the centre of the eye to the extremities of the object. In figure 1, the lines $AE$ and $BE$ drawn from the arrow to the eye form the angle $AEB$, which, when the angle is small, is nearly twice as great as the angle $CD$ formed by lines drawn from a similar arrow at twice the distance. The angle $AEB$ will therefore appear nearly twice as long as $CD$, being seen under twice the angle, and in the same proportion for any greater or lesser difference in distance. The angle in question is called the angle of vision, or the visual angle.

The angle of vision must however not be confounded with the angle of the pencil of light by which an object is seen, and which is explained in figure 2. Here we have drawn two arrows placed in relation to the eye as before, and from the centre of each have drawn lines exhibiting the quantity of light which each point will send into the eye at the respective distances.

Now if $EF$ represent the diameter of the pupil, the angle $EAF$ shows the size of the cone of light which enters the eye from the point $A$, and in like manner the angle $EBF$ is that of the pencil emanating from $B$ and entering the eye. These, since $EAF$ is double $EBF$, it is evident that $A$ is seen by four times the quantity of light which could be received from an equally illuminated point at $B$; so that the nearer body would appear brighter if it did not appear larger; but as its apparent area is increased four times, as well as its light, no difference in this respect is discovered. But if we could find means to send into the eye a larger pencil of light, as for instance that shown by the lines $GAH$, without increasing the apparent size in the same proportion, it is evident that we should obtain a benefit totally distinct from that of increased magnitude, and one which is in some cases of even more importance than size in developing the structure of what we wish to examine. This, it will be hereafter shown, is sometimes done; for the present, we wish merely to explain clearly the distinction between the quantity of light, or the angle under which the object is seen, and apparent brightness, or the angle of the pencil of light by which each of its points is seen, and with these explanations we shall continue to employ the common expressions magnifying glass and magnifying power.

The magnifying power of a single lens depends upon its focal length, the object being in fact placed nearly in its principal focus, or so that the light which diverges from each point may, after refraction by the lens, proceed in parallel lines to the eye, or as nearly so as is requisite for distinct vision. In fig. 3, $AB$ is a double convex lens, near which is a small arrow to represent the object under examination, and the cones drawn from its extremities are portions of the rays of light diverging from those points and falling upon the lens. These rays, if suffered to fall at once upon the pupil, would be too divergent to permit their being brought to a focus upon the retina by the optical arrangements of the eye. But being first passed through the lens, they are bent into nearly parallel lines, or into lines diverging from some points within the limits of distinct vision, as from $C$ and $D$. Thus altered, the eye receives them precisely as if from lines emanated from $CD$, which we may suppose to be ten inches from the eye, and then the difference between the real and the imaginary arrow is called the magnifying power of the lens in question.

From what has been said it will be evident that two persons whose eyes differed as to the distance at which they obtained distinct vision, would give different results as to the magnifying power of a lens. To one who can see distinctly with the naked eye at a distance of five inches, the magnifying power would seem and would indeed be only half what we have assumed. Such instances are however rare; the focal length of the eye usually ranges from six to twelve or fourteen inches, so that the distances we first assumed for the lines very near the eye are in a convenient number, insomuch as a cipher added to the denominator of the fraction which expresses the focal length of a lens gives its magnifying power. Thus a lens whose focal length is one-sixteenth of an inch is said to magnify thirty times.

When the focal length of a lens is very small it is difficult to measure accurately the distance between its centre and its object. In such cases the best way to obtain the focal length for parallel or nearly parallel rays is to view the image of some object at a distance from the lens and to find the distance of an object at which the image of that object may be rendered without any change in its diameter, its apparent size, or its distance from the eye. As soon as this is ascertained, the distance of the object from the eye is determined, and this is the focal length of the eye itself.

We have hitherto considered a magnifying lens only in reference to its enlargement of the object, or the increase of the angle under which the object is seen. A further and equally important consideration is that of the number of rays or quantity of light by which every point of the object is rendered visible. The naked eye, as shown in fig. 2, admits from each point of every visible object a cone of light having the diameter of the pupil for its base, and most persons are familiar with that beautiful provision by which in cases of excessive brilliancy the pupil spontaneously contracts to reduce the cone of admitted light within bearable limits. This effect is still further produced in the experiment already described, of looking at an object through a
needle-hole in a card, which is equivalent to reducing the pupil to the size of a needle-hole. Seen in this way the object becomes comparatively dark or obscure; because each point is seen by means of a very small cone of light, and a little consideration will suffice to explain the different effects produced by the needle-hole and the lens. Both change the angular value of the cone of light presented to the eye, but the lens changes the angle by bending the rays within the limits suited to distinct vision, while the needle-hole effects the same purpose by cutting off the rays which exceed those limits.

It has been shown that removing a brilliant object to a greater distance will reduce the quantity of light which each point sends into the eye, as effectually as viewing it through a needle-hole; and magnifying an object by a lens has been shown to be the same thing in some respects as removing it to a greater distance. We shall therefore imagine the magnified picture by the light emanating from the small object, and it becomes a matter of difficulty to obtain from each point a sufficient quantity of light to bear the diffusion of a great magnifying power. We want to perform an operation just the reverse of viewing the card with the needle-hole to the eye—we want in some cases to bring into the eye the largest possible pencil of light from each point of the object.

Referring to fig. 3, it will be observed that if the eye could see the small arrow at the distance there shown without the intervention of the lens, only a very small portion of the cones of light drawn from its extremities would enter the pupil; whereas we have supposed that after being bent by the lens the whole of this light enters the eye as part of the cones of smaller angle whose summits are at C and D. These cones will further explain the difference between large and small pencils of light; those from the small arrow are large pencils; the dotted cones from the large arrow are small pencils.

In assuming that the whole of this light could have been suffered to enter the eye through the lens AB, we did so for the sake of not perplexing the reader with too many considerations at once. He must now learn that so large a pencil of light with a single lens cannot be transmitted by the spherical figure of the lens, and by the chromatic dispersion of the glass, as to produce a very confused and imperfect image. This confusion may be greatly diminished by reducing the pencil; for instance, by applying a stop, as it is called, to the lens, which will reduce the light less than the needle-hole applied to the eye. A small pencil of light may be thus transmitted through a single lens without suffering from spherical aberration or chromatic dispersion any amount of distortion which will materially affect the figure of the object; but some deformation of the image will be produced by the bear diffusion over the magnified picture, which is therefore too opaque to exhibit what we most desire to see,—those beautiful and delicate markings by which one kind of organic matter is distinguished from another. With a small aperture and a single lens they exhibit a faint and not seen at a large aperture and a single lens they exhibit a faint and not seen at a large aperture and a single lens they exhibit a faint and not seen at a large.

It becomes therefore a most important problem to reconcile a large aperture with distinctness, or, as it is called, definition; and this has been done in a considerable degree by effecting the required amount of refraction through two or more lenses instead of one. This reduces the size of the image, lessens the angle of incidence and refraction, and producing other effects which will be shortly noticed. This was first accomplished in a satisfactory manner by—

Dr. Wollaston's Doublet.

Fig. 4. invented by the celebrated philosopher whose name it bears; it consists of two plano-convex lenses (fig. 4) having their focal lengths in the proportion of 1 to 3, or nearly so, and placed at a distance which can be accurately kept by actual experiment. Their plane sides are placed towards the object, and the lens of shortest focal length next the object.

It appears that Dr. Wollaston was led to this invention by considering that the Achromatic Huyghenian Eye-piece, which will be hereafter described, would, if reversed, possess similar good properties as a simple microscope. But it will be evident when the eye-piece is understood, that the circumstances which render it achromatic are very imperfectly applicable to the simple microscope, and that the doublet, without a nice adjustment of the stop, would be valueless. Dr. Wollaston makes no allusion to a stop, nor is it certain that he contemplated its introduction, although his illness, which terminated fatally soon after the presentation of his paper, may account for the omission.

The nature of the correction which takes place in the doublet is explained in the annexed diagram (fig. 5), where LOL is the object, P a portion of the pupil, and DD the stop, or limiting aperture.

Now, it will be observed that each of the pencils of light from the extremities L L' of the object is rendered excentrical by the stop, and of consequence each passes through the two lenses on opposite sides of their common axis OP; thus each becomes affected by opposite errors, which to some extent balance and correct each other. To take the pencil L, for instance, which enters the eye at R B B, it is bent to the right at the first lens, and to the left at the second; and as each bending alters the direction of the blue rays more than the red, and moreover as the blue rays fall nearer the margin of the second lens, where the refraction, being more powerful than near the centre, concentrates in a lesser degree for the green, focal length of the second lens, the blue and red rays will emerge very nearly parallel, and of consequence colourless to the eye. At the same time the spherical aberration has been diminished by the circumstance that the side of the pencil which passes one lens nearest the axis passes the other nearest the amateur.

This explanation applies only to the pencils near the extremities of the object. The central pencil, it is obvious, would pass both lenses symmetrically; the same portions of light occupying nearly the same relative places on both lenses. The blue light would enter the second lens nearer to its axis than the red, and being thus less refracted than the red by the second lens, a small amount of compensation would result, producing a greater effect in degree to which is produced in the excentrical pencils. In the intermediate spaces the corrections are still more imperfect and uncertain; and this explains the cause of the aberrations which must of necessity exist even in the best-made doublet. It is however in the extreme points nearer to a single lens, and will transmit a pencil of an angle of from 32° to 50° without any very sensible errors. It exhibits therefore many of the usual test-objects in a very beautiful manner.

The next step in the improvement of the simple microscope bears more analogy to the eye-piece. This improvement was made by Mr. Holland, and it consists (as shown in fig. 6) in substituting two lenses for the first in the doublet, and retaining the stop between them and the third. The first bending, being thus effected by two lenses instead of one, is accompanied by smaller aberrations, which are therefore more completely balanced or corrected at the second bend-
ing, in the opposite direction, by the third lens. This combination, though called a triplet, is essentially a doublet, in which the anterior lens is divided into two. For it must be recollected that the first pair of lenses merely accomplishes what might have been done, though with less precision, by one; but the two lenses of the doublet are opposed to each other; the second diminishing the magnifying power of the first. The first pair of lenses in the triplet concur in producing a certain amount of magnifying power, which is diminished in quantity and corrected as to aberration at the third lens by the change in relation to the position of the axis which takes place in the pencil between what is virtually the first and second lens. In this combination the effects are still further reduced by the close approximation to the object which causes the refractions to take place near the axis. Thus the transmission of a still larger angular pencil, namely 65°, is rendered compatible with distinctness, and a more intense image is presented to the eye.

Every increase in the number of lenses is attended with one drawback, from the circumstance that a certain portion of light is lost by reflection and absorption each time that the ray enters a new medium. This loss bears no sensible proportion to the magnification, though increasing in three, which, being as the square of the diameter, multiplies rapidly; or if we estimate by the angle of the admitted pencil, which is more easily ascertained, the intensity will be as the square of twice the tangent of half the angle. To explain this, let DB (fig. 7) represent the diameter of the lens, or of part of it which is really employed; CA the perpendicular drawn from its centre, and A B, A D, the extreme rays of the incident pencil of light D A B. Then the diameter being 2 C B, the area to which the intensity of vision is proportional will be (2 C B)², and C B is evidently the tangent of the angle C A B, which is half the angle of the admitted pencil D A B. Or if a be used to denote the angular aperture, the expression for the intensity is \( (2 \tan a)^2 \), which increases so rapidly with the increase of \( a \), as to make the loss of light by reflection and absorption a little consequence.

The combination of three lenses approaches, as has been stated, very close to the object; so close, indeed, as to prevent the use of more than three; and this constitutes a limit to the improvement of the simple microscope, for it is called a simple microscope from consisting of three lenses, and although a compound microscope may be made of only three or even two lenses; but the different arrangement which gives rise to the term compound will be better understood when that instrument is explained.

Before we proceed to describe the compound microscope and its appendages, it will be well to explain such other points in reference to the form and materials of lenses as are most likely to be interesting.

A very useful form of lens was proposed by Dr. Wallaston, and called him the Periscopic lens. It consisted of two hemispherical lenses, cemented together by their plane faces, having a stop between them to limit the aperture.

A similar proposal was made by Mr.Cod- dington, who however executed the project in a better manner, by cutting a groove in a whole sphere, and filling the groove with opaque matter. His lens, which is the well-known Coddington lens, is shown in fig. 8. It gives a large field of view, which is equally good in all directions, as it is evident that the pencils A A' and B B' pass through under precisely the same circumstances. Its spherical form has the further advantage of rendering the position in which it is held of comparatively little consequence. It is therefore very convenient as a hand-lens, but its definition is of course not so good as that of a well-made doublet or achromatic lens.

Another very useful form of doublet was proposed by Sir John Herschel, chiefly like the Coddington lens, for the sake of a wide field, and chiefly to be used in the hand. It is shown in fig. 9; it consists of a double convex or crossed lens, having the radii of curvature as 1 to 6, and of a plane concave lens whose focal length is to that of the convex lens as 13 to 5.

![Fig. 9.](image)

Various, indeed innumerable, other forms and combinations of lenses have been projected, some displaying much ingenuity, but few of any practical use. In the Catoptric lenses the light emerges at right angles from its entering direction, being reflected from a surface cut at an angle of 45 degrees to the axes of the curved surfaces.

It was at one time hoped, as the precious stones are more refractive than glass, and as the increased refractive power is unaccompanied by a correspondent increase in chromatic dispersion, that they would furnish valuable materials for lenses, inasmuch as the refractions would be accomplished by shallower curves, and consequently with diminished spherical aberration. But these hopes were disappointed: everything that ingenuity and perseverance could accomplish was tried by Mr. Varley and Mr. Fritcheat, under the patronage of Dr. Goring. It appeared however that the great reflective power, the doubly-refracting property, the colour, and the heterogeneous structure of the jewels which were tried, much more than counterbalanced the benefit arising from their greater refractive power, and left no doubt of the superiority of skillfully made glass doublets and triplets.

The idea is now, in fact, abandoned; and the same remark is applicable to the attempts at constructing fluid lenses, and to the projects for giving to glass other than spherical surfaces,—none of which have come into extensive use.

By the term simple microscope is meant one in which the object is viewed directly through a lens or combination of lenses; just as we have supposed an arrow or an insect to be viewed through a glass held in the hand. When however the magnifying power of the glass is considerable, in other words, when its focal length is very short, and its proper distance from its object of consequence equally short, it requires to be placed at that proper distance with great precision; it cannot therefore be held with sufficient accuracy and steadiness by the unassisted hand, but must be mounted in a frame having a rack or screw to move it towards or from another frame or stage which holds the object. It is then called a microscope, and it is furnished, according to circumstances, with lenses and mirrors to collect and reflect the light upon the object, and with other conveniences which will now be described.

One of the best forms of a stand for a simple microscope is shown in fig. 10, where A is a brass pillar screwed to a tripod base; B is a broad stage for the objects, secured to
the stem by screws, whose killed heads are at C. By means of the large milled head D, a triangular bar, having a rack, is screwed out of the stem A, carrying the lensholder E, which has a horizontal movement in one direc-
tion, by means of a rack worked by the milled head F, and in the other direction by turning on a circular pin. A concave mirror G reflects the light upwards through the lens in the sopa, and a slight inclination of this for the purpose of throwing light on an opaque object, in the same way that the forceps H for holding such objects is attached. This microscope is peculiarly adapted, by its broad stage and its general steadiness, for dissecting; and it is rendered more convenient for this purpose by placing it between two inclined planes of mahogany, which support the arms and elevate the wrists to the level of the stage. This apparatus is called the dissecting rest. When dissecting is not a primary object, a joint may be made at the lower end of the stem A, so as to allow the whole to take an inclined position; and then the spring clips shown upon the stage are useful to retain the object in its place. Numerous convenient appendages may be made to accompany such microscopes, which it will be impossible to mention in detail; the most useful are Mr. Varley’s capillary cases for containing animalculm in water, and parts of aquatic plants; also his tubes for obtaining and separating such objects, and his phial and phial-holder for preserving and exhibiting small living specimens of the Chara, Nitella, and other aquatic plants, and observing their circulation. The illuminating microscope affords facilities for observing the operations of minute vegetable and animal life, which will probably lead to the most interesting discoveries. The recent volumes of the Transactions of the Society of Arts contain an immense mass of information of this sort, and to these we refer the reader.

The mode of illuminating objects is one on which we must give some further information, for the manner in which an object is lighted is of importance only to the excellence of the glass through which it is seen. In investigating any new or unknown specimen, it should be viewed in turn by every description of light, direct and oblique, as a transparent object and as an opaque object, with strong and with feeble light, with large angular pencils and with small angular pencils thrown in all possible directions. Every change will probably develop some new fact in reference to the structure of the object, which should itself be varied in the mode of mounting in every possible way; it should be seen both wet and dry, and immersed in fluids of various qualities and densities, such as water, alcohol, oil, and Canada balsam, for instance, which last has a refractive power nearly equal to that of glass. If the object be delicate, vegetable tissue, more visible by gentle heating or scratching by a clear fire placed between two plates of glass. In this way the spiral vessels of asparagus and other similar vegetables may be beautifully displayed. Dyeing the objects in tincture of iodic acid will in some cases and for some purpose better.

But the principal question in regard to illumination is the magnitude of the illuminating pencil, particularly in reference to transparent objects. Generally speaking the illuminating pencil should be as large as can be received by the lens, and no larger. Any attempt to make this produces in distinctness and glare. The superfluous light from the mirror may be cut off by a screen having various-sized apertures placed below the stage; but the best mode of illumination is that proposed by Dr. Wollaston, and called the Wollaston condenser. A tube is placed below the stage of the instrument containing a lens A B (fig. 11), which can be elevated or depressed within certain limits at pleasure; and at the lower end is a stop with a limited aperture of light, and reflects them upwards through the aperture in C D, so that they are refracted, and form an image of the aperture at G, which is supposed to be nearly the place of the object. The object is sometimes best seen when the image of the aperture is also best seen; and sometimes it is best to elevate the summit G of the cone A B G above the object, and at others to depress it below: all which is done at pleasure by the power of moving the lens A B. If the object is a lens or a candle to which the flame must be placed in the principal focus of a large detached lens on a stand, so that the rays L L may fall in parallel lines on the mirror, or as they would fall from the cloud. This will be found an advantage, not only when the Wol-

The Compound Microscope may, as before stated, consist of only two lenses, while a simple microscope has been shown to contain sometimes three. In the triplic of the compound microscopes, the effect of the two first lenses was to do what might have been accomplished, though not so well, by one; and the third merely effected certain modifications in the light before it entered the eye. But in the compound microscope of the two lenses to which we refer: the first receives the rays from the object, and, bringing them to new foci, forms an image, which the second lens treats as an original object, and magnifies it just as the single microscope magnified the object itself.

The annexed figure (12) shows the course of the rays through a compound microscope of two lenses. The rays proceeding from the object A B are so acted on by the lens C D, near it, and thence called the object-glass, that they are converged to foci in A' B', where they form an enlarged image of the object, as could be evidenced if a piece of thin paper or ground glass were placed there to receive them. They are not so intercepted, and therefore the image is not rendered visible at that place; but observed that the further progress is similar to what it would have been had they really proceeded from an object at A B'. They are at length received by the eye-lens L M, which acts upon them as the simple microscope has been described to act on the light proceeding from its objects. They are bent so that they may enter the eye at E in parallel lines, or as nearly so as is requisite for distinct vision. When we say that the rays enter the eye in nearly parallel lines, we mean only those which proceed from the point of the arrow; but they do not form two pictures in the eye, because any number of parallel rays which the pupil can receive will be converged to a point by the lens, and convey the impression of one point to the mind. In like manner the rays L E are part of the cone of rays emanating from B, and the angle L E M that under the eye will see the magnified image of the arrow, which is evidently many times greater than the arrow could be made to occupy in the naked eye.
at any distance within the limits of distinct vision. The magnifying power depends on two circumstances: first, on the distance of the anterior focal point C' of the eye-lens and the posterior focal point C'' or D'A'; and secondly, on the power of the eye-lens L. The first ratio is the same as that between the object A B and the image A' B'; and this and the focal length or power of the eye-lens are both easily known and their product is the power of the compound instrument.

Since the power depends on the ratio between the anterior and posterior focus of the object-glass, it is evident that by increasing that ratio any power may be obtained. The first, therefore, was determined the first, any further power may be obtained by increasing that of the eye-glass; and thus, by a pre-arrangement of the relative proportions in which the magnifying power shall be divided between the object-glass and the eye-glass, almost any given distance (within certain limits) between the first and its object may be secured. This is one valuable peculiarity of the compound instrument; and another is the large field, or large angle of view, which may be obtained, every part of which is nearly equally good; whereas with the best simple microscopes the field is small, and is good only in the centre. The field of the compound instrument is further increased by using two glasses at the eye-end; the first being called, from its purpose, the field-glass, while the second is the one intended whet the subject is seen. This will be more particularly explained in the figure of the achromatic compound microscope presently given.

For upwards of a century the compound microscope, notwithstanding the advantages almost to an unknown degree, was a comparatively small and inefficient instrument, owing to the distance which the light had to traverse, and the consequent increase of the chromatic and spherical aberrations. We explain this as shown in fig. 12 a second image near A'B', the focal length of the object-glass would not magnify one image, as has been supposed, but an infinite number of variously-coloured and various-sized images, occupying the space between the two dotted arrows. Those nearest the object-glass would be red, and those nearest the eye-glass would be blue. As the effect of this was found to be so confounded, that the instrument was reduced to a mere toy, although these errors were diminished to the utmost possible extent by limiting the aperture of the object-glass, and thus restricting the angle of the pencil of light from each point of the object. But this involved the defects, already explained, of making the picture obscure, so that on the whole the best compound instruments were inferior to the simple microscopes of a single lens, with which indeed all the important observations of the former periods of the improvements of the simple microscope by the use of doublets and triplets, the long course of the rays, and the large angular pencil required in the compound instrument deterred the most sanguine from anticipating the practical success of an instrument so clad; though as the path free both from spherical and chromatic errors. Within twenty years of the present period, philosophers of no less eminence than M. Biot and Dr. Wollaston predicted that the compound would never rival the simple microscope, and that the idea of achromatising its object-glass was hopeless. Nor can these opinions be wondered at when we consider how many years the achromatic telescope had existed without an attempt to apply its principles to the compound microscope.

When we consider the smallness of the field of the telescope, and the enormous increase of difficulty attending every enlargement of the pencil—when we consider further that these difficulties had to be contended with and removed by operations on portions of glass so small that they are themselves almost microscopic objects, we shall not be surprised that even a cautious philosopher and most able manipulator like Dr. Wollaston should prescribe limits to improvement.

Fortunately for science, and especially for the departments of art and manufactures most beneficially affected by the microscopic discovery, there have been men of the highest talent, who have devoted their powers, ambition, and all their means, to the fabrication of this instrument; and we must admit that the production of such instruments as exist, is a remarkable triumph of mechanical genius. The magnifying power may be increased to about two hundred, and the field is increased to about half a degree; and as the instrument has been duplicated in France, we may hope for an improved edition. But the object-glass must not be expected to be other than a plano-concave, and that it shall be joined by some cement to the convex, seem desirable to be taken as a basis for the microscopic object-glass, provided they can be reconciled with the operation of the spherical and chromatic aberrations of a large lens; so that as in every such glass that has been tried by me which has had its correcting lens of either Swiss or English glass, with a double convex of plates, and has been achromatised by the figure given to the outer curve of the convex, the
proportion has been such between the refractive and dispersive powers of its lenses, that its figure has been correct for rays issuing from one-point in its axis not far from its principal focus on its plane axis and either tending to a conjugate focus within the tube of a microscope, or emerging nearly parallel.

Let A B (fig. 13) be supposed such an object, and let it be roughly considered as a plano-convex lens, with a curve ABC running through it, at which the spherical and chromatic errors are corrected which are generated at the borders thereof by its figure, and let the glass be thus free from aberration for rays F D E G issuing from the radiant point F, H E being a perpendicular to the convex surface, and I D to the plane ones. Under these circumstances, the angle of emergence G E H much exceeds that of incidence F D I, being probably nearly three times as great.

If the radiant is now made to approach the glass, so that the course of the ray F D E G shall be more divergent from the axis, as the angles of incidence and emergence become more nearly equal to each other, the spherical aberration produced by such rays will be in a less proportion to the opposing error of the single correcting curve A C B ; for such a focus therefore the rays will be under-corrected.

But if F still approaches the glass, the angle of incidence continues to increase with the increasing divergence of the ray, till it will exceed that of emergence, which has in the meanwhile been diminishing, and at length that of deviation will exceed that of incidence, the glass being suitable for such rays; for rays F E G D issuing from the radiant point F, H E being a line perpendicular to the convex surface, and I D the plane ones. Under these circumstances, the angle of emergence G E H much exceeds that of incidence F D I, being probably nearly three times as great.

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But if F still approaches the glass, the angle of incidence continues to increase with the increasing divergence of the ray, till it will exceed that of emergence, which has in the meanwhile been diminishing, and at length that of deviation will exceed that of incidence, the glass being suitable for such rays; for rays F E G D issuing from the radiant point F, H E being a line perpendicular to the convex surface, and I D the plane ones. Under these circumstances, the angle of emergence G E H much exceeds that of incidence F D I, being probably nearly three times as great.

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not encumber the description with the theoretical determination of this quantity, as it varies with exceedingly minute circumstances which we cannot accurately control; such as the distance of the object from the under side of the glass, and the slightest difference in the thickness of the glass itself; and if these data could be readily obtained, the knowledge would be of no utility in making the correction, that being wholly of a practical nature.

If an object-glass is constructed as represented in Fig. 16, where the posterior combination P and the middle M have together an excess of negative aberration, and if this be corrected by the anterior combination A, having an excess of positive aberration, then this latter combination can be made to act more or less powerfully upon P and M, by making it approach to or recede from them; for when the three are in close contact, the distance of the object from the object-glass is greatest; and consequently the rays from the object are diverging from a point at a greater distance than when the combinations are separated; and as a lens bends the rays more, or acts with greater effect, the more distant the object is from which the rays diverge, the effect of the anterior combination A upon the other two, P and M, will vary with its distance from them. When therefore the correction of the whole is effected for an opaque object with a certain distance between the anterior and middle combination, if they are then put in contact, the distance between the object and object-glass will be increased; consequently the anterior combination will act more powerfully, and the whole will have an excess of positive aberration. Now the effect of the aberration produced by a piece of flat and parallel glass being of the negative character, it is obvious that the above considerations suggest the means of correction by moving the lenses nearer together, till the positive aberration thereby produced be equal and opposite to the negative.

The preceding refers only to the spherical aberration, but the effect of the chromatic is also seen when an object is covered with a piece of glass; for, in the course of my experiments, I observed that it produced a chromatic thickening of the outline of the Pedura and other delicate scales; and if diverging rays near the axis and at the margin are projected through a piece of flat parallel glass, with the various indices of refraction for the different colours, it will be seen that each ray will emerge separated into a beam consisting of the component colours of the ray, and that each beam is widely different in form. This difference, being magnified by the power of the microscope, readily accounts for the chromatic thickening of the outline just mentioned. Therefore to obtain the finest definition of extremely delicate and minute objects, they should be viewed without a covering; if it be desirable to immerse them in a fluid, they should be covered with the thinnest possible film of talaé, as, from the character of the chromatic aberration, it will be seen that varying the distances of the combinations will not sensibly affect the correction; though object-lenses may be made to include a given fluid or solid medium in their correction for colour.

The mechanism for applying these principles to the correction of an object-glass under the various circumstances, is represented in Fig. 18, where the anterior lens is set in the end of a tube A.A, which slides on the cylinder B containing the remainder of the combination; the tube A.A, holding the lens nearest the object, may then be moved upon the cylinder B, for the purpose of varying the distance according to the thickness of the glass covering the object, by turning the screwed ring C.C, or more simply by sliding the one on the other, and clamping them together when adjusted. An aperture is made in the tube A, within which is seen a mark engraved on the cylinder, and on the edge of which are two marks, a longer and a shorter, engraved upon the tube. When the mark on the cylinder coincides with the longer mark on the tube, the adjustment is perfect for an uncovered object; and when the coincidence is with the short mark, the proper distance is obtained to balance the aberrations produced by glass 1/4 inch thick, and such glass can be readily supplied.

It is hardly necessary to observe, that the necessity for this correction is wholly independent of any particular construction of the object-glass; as in all cases where the object-glass is corrected for an object uncovered, any covering of glass will create a different value of aberration to the first lens, which previously balanced the aberration resulting from the rest of the lenses; and, as this disturbance is affected at the first refraction, it is independent of the character of the remaining combinations. The visibility of the effect depends on the distance of the object from the object-glass, the angle of the pencil transmitted, the focal length of the combination, the thickness of the glass covering the object, and the general perfection of the corrections for chromatism and the oblique pencils.

With this adjusting object-glass, therefore, we can have the reassurances of the greatest possible distance between the object and object-glass, an intense and sharply defined image through the glass, the large pencil transmitted, and the accurate correction of the aberrations; also, by the adjustment, the means of preserving that correction under all the varied circumstances in which it may be necessary to place an object for the purpose of observation.

In the annexed engraving Fig. 19, we have shown the triple achromatic object-glass in connection with the eye-piece consisting of the field-glass FF and the eye-glass EE, forming together the modern achromatic microscope. The course of the light is shown by drawing three rays from the centre and from each end of the object O. These rays would, if left to themselves, form an image of the object at A A, but being bent and converged by the field-glass FF, they form the image at BB, where a stop is placed to intercept all light except what is required for the formation of the image. From BB therefore the rays proceed to the eye-glass exactly as has been described in reference to the simple microscope and to the compound of two glasses.

If we stopped here we should convey a very imperfect idea of the beautiful series of corrections effected by the eye-piece, and which were first pointed out in detail in a paper on the subject published by Mr. Varley in the 51st volume of the Transactions of the Society of Arts. The eye-piece in question was invented by Huyghens for telescopes, with no other view than that of diminishing the spherical aberration by producing the refractions at two glasses instead of one, and of increasing the field of view. It was reserved for Boscovich to VOL. XV.-2 B
point out that Huyghena had by this arrangement accidentally corrected a great part of the chromatic aberration, and this subject is further investigated with much skill in two papers by Professor Airy in the Cambridge Philosophical Transactions, to which we refer the mathematical reader. These investigations apply chiefly to the telescope, where the small pencils of light and great distance of the object exclude considerations which become important in the microscope, and which are well pointed out in Mr. Varley's paper before mentioned.

Let fig. 20 represent the Huyghenian eye-pieces of a microscope; $FF$ and $EE$ being the field-glass and eye-glass, and $LMM$ the two extreme rays of each of the three pencils, emanating from the centre and edges of the object, of which, but for the field-glass, a series of coloured images would be formed from $RR$ to $BB$; those near $RR$ being red, those near $BB$ blue, and the intermediate ones green, yellow, and so on, corresponding with the colours of the prismatic spectrum. This order of colours, it will be observed, is the reverse of that described in treating of the common compound microscope (fig. 12), in which the single object-glass projected the red image beyond the blue. The effect just described, of projecting the blue image beyond the red, is purposely produced for reasons presently to be given, and is called over-cor recting the object-glass as to colour. It is to be observed also, that the images $BB$ and $RR$ are curved in the wrong direction to be distinctly seen by a convex eye-lens, and this is a further defect of the compound microscope of two lenses. But the field-glass, at the same time that it bends the rays and converges them to $foci$ at $BB'$ and $RR'$, also reverses the curvature of the images as there shown, and gives them the form best adapted for distinct vision by the eye-glass $EE$. The field-glass has at the same time brought the blue and red images closer together, so that they are adapted to pass uncoloured through the eye-glass. To render this important point more intelligible, let it be supposed that the object-glass had not been over-corrected, that it had been perfectly achromatic; the rays would then have become coloured as soon as they had passed the field-glass; the blue rays, to take the central pencil for example, would converge at $A$ and the red rays at $r$, which is just the reverse of what the eye-lens requires; for as its blue focus is also shorter than its red, it would demand rather that the blue image should be at $r$ and the red at $A$. This effect we have above to be produced by the over-correction of the object-glass, which protrudes the blue focus $BB$ as much beyond the red focus $RR$ as the sum of the distances between the red and blue focus of the field-glass and eye-glass; so that the separation $BB'$ is exactly taken up in passing through those two lenses, and the whole of the colours coincide as to focal distance as soon as the rays have passed the eye-lens. But while they coincide as to distance, they differ in another respect; the blue images are rendered smaller than the red by the superior refractive power of the field-glass upon the blue rays. In tracing the pencil $L$ for instance, it will be noticed that after passing the field-glass, two sets of lines are drawn, one whole, and one dotted, the former representing the red, the latter the blue rays. This is the accidental effect in the Huyghenian eye-pieces pointed out by Boscovich. This separation into colours at the field-glass is like the over-correction of the object-glass; it leads to a subsequent complete correction. For if the differently coloured rays would have reached the eye-glass, they would then become coloured, and present coloured images to the eye; but fortunately, and most beautifully, the separation effected by the field-glass causes the blue rays to fall so much nearer the centre of the eye-glass, where, owing to the eye-lens, the figure, the refractive power is less than at the margin, that the spherical error of the eye-lens constitutes a nearly perfect balance to the chromatic dispersion of the field-glass, and the red and blue rays $L'$ and $L''$ emerge sensibly parallel, presenting, in consequence, the perfect definition of a single point to the eye. The same reasoning is true of the intermediate colours and of the other pencils.

From what has been stated it is obvious that we mean by an achromatic object-glass one in which the above order of dispersion is so far reversed, that the light, after undergoing the singularly beautiful series of changes effected by the eye-piece, shall come uncoloured to the eye. We can give no specific rules for producing these results. Close study of the achromatism given by the mathematicians who have written on this subject, and artificial tests made on any magnifying instrument, the advantage of applying the scale to the magnified image will be obvious, as compared with the application of engraved or mechanical micrometers to the stage of the instrument.

The diagram is drawn in fig. 21, where $EE$ and $FF$ are the eye and field-glass, the latter having now its plane face on the object. The rays from the object are made to converge at $A$, immediately in front of the field-glass, and here also is placed a plano-convex micrometer, consisting of engraved divisions of $\frac{1}{4}$ of an inch or less. The markings of these divisions come into focus together at the same time as the image of the object, and both are distinctly seen together. Thus the measure of the magnified image is given by mere inspection, and the value of each hundred times smaller than any division of the engraved micrometer of $\frac{1}{4}$ inch or less.

In this scale as the microscopic object, observe how many of the divisions on the scale attached to this eye-piece correspond with one of those in the magnified image. If, for instance, ten of those in the eye-piece correspond with one of those in the image, and if the divisions are known to be equal, then the image is ten times larger than the object, and the dimensions of the object when seen are ten times as much as indicated by the micrometer. If the divisions on the micrometer and on the magnified scale were not equal, it becomes a mere rule-of-three sum, but in general this trouble as
taken by the maker of the instrument, who furnishes a table showing the value of each division of the micrometer for every object-glass with which it may be used.

While on the subject of measuring it may be well to explain the mode of ascertaining the magnifying power of the compound microscope, which is generally taken on the assumption before mentioned, that the naked eye sees most distinctly at the distance of ten inches.

Place on the stage of the instrument, as before, a known divided scale, and when it is distinctly seen, hold a rule at ten inches distance from the disengaged eye, so that it may be seen by that eye, overlapping or lying by side of the magnified picture of the other scale. Then move the rule till one or more of its known divisions correspond with a number of those in the magnified scale, and a comparison of the two gives the magnifying power.

Having now explained the optical principles of the achromatic compound microscope, it remains only to describe the mechanical arrangements for giving those principles their full effect. The mechanism of a microscope is of much more importance than might be imagined by those who have not studied the subject. In the first place, steadiness, or freedom from vibration of the greatest possible extent from all vibrations which are not equally communicated to the object under examination, and to the lenses by which it is viewed, is a point of the utmost consequence. When, for instance, the body containing the lenses is screwed by its lower extremity to a horizontal arm, we have one of the most vibratory forms conceivable; it is precisely the form of the inverted pendulum, which is expressly contrived to indicate otherwise insensible vibrations. The tremor necessarily attendant on such an arrangement is magnified by the whole power of the instrument; and as the object on the stage partakes of this tremor in a comparatively insensible degree, the image is seen to oscillate so rapidly, as in some cases to be wholly undistinguishable. Such microscopes cannot possibly be used with high powers in ordinary houses abutting on any paved streets through which carriages are passing, nor indeed are they adapted to be used in houses in which the ordinary internal sources of shaking exist.

One of the best modes of mounting a compound microscope is shown in the annexed view (fig. 22), which, though too minute to exhibit all the details, will serve to explain the chief features of the arrangement.

A massive pillar A is screwed into a solid tripod B, and is surmounted by a strong point at C, on which the whole instrument turns, so as to enable it to take a perfectly horizontal or vertical position, or any intermediate angle, such, for instance, as that shown in the engraving.

This movable part of the instrument consists of one solid block of steel DEFG; from F to G being a thick pierced plate carrying the stage and its appendages. The compound body H is attached to the bar DB, and moves up and down upon it by a rack and pinion worked by either of the milled heads I and J. This pinion is attached to the pillar by the joint C, which being the source of the required movement in the instrument, is obviously its weakest part, and about which no doubt considerable vibration takes place. But insomuch as the piece DEFG of necessity transmits such vibrations equally to the body of the microscope and to the objects on the stage, they hold always the same relative position, and no visible vibration is caused, how much soever may really exist. To the under side of the stage is attached a circular stem L, on which slides the mirror M, placed on one side and on the other, to reflect the light through the aperture in the stage. Beneath this is a circular revolving plate containing three apertures of various sizes, to limit the angle of the pencil of light which shall be allowed to fall on the object under examination. Below this the stage is provided with a double movement produced by two racks at right angles to each other, and worked by milled heads beneath. It has also the usual appendages of forceps to hold minute objects, and a lens to cross the light upon the object, all of which are well understood, and if not, will be rendered more intelligible by a few minutes' examination of a microscope than by the most lengthened description. One other point remains to be noticed. The movement produced by the milled head K is more effective than by the milled heads E and F, these last screws being adapted to this purpose; and even these are improved by means for reducing the rapidity of the screw's movement. For this purpose the lower end of the compound body H, which carries the object-glass, consists of a piece of smaller tube sliding in parallel guides in the main body, and kept constantly pressed upwards by a spiral spring, but it can be drawn downward by a lever crossing the body, and acted on by an extremely fine screw whose milled head is seen at N, and the fineness of which is tripled by means of the lever through which it acts on the object-glass. The instrument is of course roughly adjusted by the rack movement, and finished by the screw, or by such other means as are chosen for the purpose. One very ingenious contrivance, but applied to the stage instead of the body of the microscope, invented by Mr. Powell, will be found described in the 30th volume of the Transactions of the Society of Arts.

The greater part of the directions for viewing and illuminating objects given in reference to the simple microscope are applicable to the compound. An argand lamp placed in the focus of a large detached lens so as to throw parallel rays upon the mirror, is the best artificial light; and for opaque objects the light so thrown upon may be reflected by metallic specula (called, from their inventor, Lieberkunhs) attached to the object-glasses.

It has been recently proposed by Sir David Brewster and by M. Dujardin to render the Wollaston condenser achromatic, and they have accordingly been made with three pairs of achromatic lenses instead of the single lens before described, with very excellent effect. The last-mentioned gentleman has also projected an ingenious apparatus, called the Hyproscope, attached to the eye-piece for the purpose of erecting the magnetic picture.

The erecting common to the compound microscope consists of a pair of lenses acting like the erecting eye-piece of the telescope. But this, though it is convenient for the purpose of dissection, very much impairs the optical performance of the instrument.

For drawing the images presented by the microscope the best apparatus consists of a mirror M (fig. 23), composed of a thin piece of rather dark-coloured glass cemented on to
a piece of plate-glass inclined at an angle of 45° in front of the eye-glass E. The light reflected from the eye-glass is assisted in its reflection upwards to the eye by the dark glass, which effects the further useful purpose of rendering the paper less brilliant, and thus enabling the eye better to see the reflected image. The lens L below the reflector is to cause the light from the paper and pencil to diverge from the same distance as that received from the eye-glass; in other words, to cause it to reach the eye in parallel lines.

Dr. Wollaston’s Camera Lucida, as shown in fig. 24, is sometimes attached to the eye-piece of the microscope for the same purpose. In this instrument the rays suffer two internal reflections within the glass prism, as will be seen explained in the article Camera Lucida. In this figure we have omitted to trace the reflected rays, merely to avoid confusion.

Annexed are four engravings of microscopic objects, the true character of which it is however impossible to give in wood, and is difficult indeed to accomplish by any description of engraving.

Although the reflecting microscope is now very little used, it may be expected that we should mention it. In this instrument, as fig. 29, the object O is reflected by the inclined face of the mirror M, and the rays are again reflected and converged by the elliptical reflector R, which effects the same purpose as the object-glass of the compound microscope. It forms an image which is not susceptible of the over-correction to colour before described, and which therefore becomes coloured in passing through the eye-piece. This fact, and the loss of light by reflection, will probably always render the reflecting microscope inferior to the achromatic refracting.

The solar microscope has been so nearly superseded by the oxy-hydrogen, that a brief description of the latter must suffice, particularly as their optical principles are similar.

The primary object in both is to throw an intense light upon the object, which is sometimes done by mirrors and sometimes by lenses. In fig. 30, L represents the cylinder of burning lime, R R the reflector, which concentrates the light upon the object O O; the rays from which, passing through two plano-convex lenses, are brought to focus upon a screen placed at a great distance, and upon which is formed the magnified image.

Fig. 31 shows a combination of lenses to condense the light upon the object. In either case the optical arrangements by which the image is formed admit of the same perfection as those which have been described for the compound microscopes. A few achromatic glasses for oxy-hydrogen microscopes have been made, and they will ultimately become valuable instruments for illustrating lectures on natural history and physiology. One made by Mr. Ross was exhibited a few months since at the Society of Arts to illustrate a lecture on the physiology of woods. It should be observed however that the oxy-hydrogen or solar microscope requires either a spherical screen, or that the objects should be mounted between spherical glasses, in order to bring the whole into focus at one time. This latter plan was adopted on the occasion just mentioned with perfect success.

MICROSCOPIUM (the Microscope), a constellation of Lacaille, situated above Grus and Indus at the junction of Capricornus and Sagittarius. The only star in it worth notice is α, of the 4th magnitude, to which is attributed a lecture on the physiology of woods.

MICROTUS, Schrank’s name for a genus of Murine Rodents, embracing our English Water-rat, Mus musculus, Linn., &c. [Mus].

MICROZOARIA (literally, little animals). This is the title employed by M. de Blainville for the Animalcule infusoria of earlier writers, who commonly classed these singular objects of microscopic research among the Zoophyta. Baker, Needham, Buffon, and Spallanzani, (397) in the catalogue of Piazzi, and 2454 in that of the Astronomical Society.

MICRUS, Schrank’s name for a genus of Murine Rodents, embracing our English Water-rat, Mus musculus, Linn., &c. [Mus].
characters of form, surface, movements, and internal structure, is the accurate O. F. Müller, author of the 'Zoologia Danica.' Considering that in 1786 (the date of his work) the microscope had been scarcely at all improved since the days of Hooke, the numerous figures which Müller presented were highly creditable to his eye and hand. They have been frequently copied (as in the 'Encyclopédie méthodique'), and yet retain a high value.

Müller's classification, founded upon the figure and surface of the animal, is convenient to the observer who desires to name the active molecules which pass under his microscope, but unsatisfactory to the zoological student. The genera are arranged in some degree according to their apparent simplicity.

A. Without external organs. * Substance thick.

Monas. A mere point. * Proteus. Of variable figure. Volvox. Spherical. Enchaeta. Cylindrical. * Vorticella. Round, elongated. (Several of the animals included in this group should have been ranked among the Vermes.)

* Membranaceous.


B. With external organs. * Naked.


** Covered with a shell.

Brachionus. Ciliated nearly as Vorticella. On this classification Lamarck ('Anim. sans Vertèbres') has made few alterations; he preserves the same genera nearly in the same order in all the naked Infusoria, but rejects from those with external organs (Infusoria appendiculata) Vorticella and Brachionus (which he places among his Polyp); and re-arranges the others thus:

Infusoria appendiculata.

No tail * Trichoza (including Leuophila of Müller). Kerona (including Himantopus of Müller).

A tail * Paracercaria.

The remaining groups are thus classed among the Polyp: Polyp ciliati.

Section I. * Vibratilles with oral cilia, having vibratory movement.

Elatulas. (Trichoza rattus and T. clavis of Müller.) Trichocerca. (Cercaria forcipata, &c., Müller.) Vagnicola. Trichoza inquinula, &c., Müller.)

Section II. Rotifiers, with oral cilia having rotatory movement. * Folliculinia. (Vorticella ampulla, vagina, &c., Müller.) Brachionus. (Divided into sections, with or without a tail.)

Paracirrata. (Includes the Vorticella rotatoria, or wheel-animals and others allied to it.)

Urocirrata. (Vorticella viridis, bursaria, &c., Müller.) Vorticella. (The pedunculated species of Müller, both simple and compound.)

Table cirrata. Cuvier constitutes for the Infusoria his fifth and last class of zoophyta, observing however, that always struck the least informed zoologist, who contemplated the various forms and habits of these animals, that among them were several grades of organisation, and some forms which could not be reconciled to zoophytic structure. Bory de St. Vincent had adopted ('Encyclop. Méthod.,' 1826) eighty-two genera, but Cuvier even reduces the number of Lamarckian genera.

Blainville ('Actinologie, p. 162) gives the following arrangement of the Microzoaria.

Division I. Microzoaria Heteropoda.

Section 1. * Rotifers. Body distinguished in parts anterior, medial, posterior (sometimes really showing head, abdomen, and posterior bundles of cirri, which in their rapid movement resemble wheels. Posterior appendages simple, terminal. The genera are as in Lamarck, with indications of the subgenera adopted by Bory de St. Vincent.

Section 2. Ciliatèra, with bilateral ciliiform appendages. The genera are taken from Müller, viz. Kerona, Himatopoda, Paramuticulina, Trichoda, Leuophila, Volvox, Cyclidia, Monas, with indications of the subdivisions adopted by Bory de St. Vincent, &c.

Division II. Microzoaria apoda, with no external appendages, including Bursaria, Kolpoda, Trachelia (Vibria, Müller), Proteus, Cercaria, Enchelia, Gonium. Many of these are thought by Blainville to be young Planariae or Hirudines.

Nearly all the real information which accompanied these slight transformations of Müller's system of classification was derived from the numerous and acute observations of that eminent naturalist, whose figures and descriptions we have often compared with the indications of the microscope before this instrument received the marvellous improvements of Amici, Chevalier, Pritchard, Piisil, and Schiek. By their inventions, and the able use made of them since 1826, a new name of knowledge has been opened on the history, structure, and zoological relations of the Infusoria. Professor Ehrenberg of Berlin has been highly successful in detecting unexpected points of structure even in the minutest animalcula, and has in consequence proposed a new and remarkable classification, depending on a great variety of organisms, which he has discovered and already in a considerable degree made known. ('Organisation der Infusiothieren, Berlin, 1830; Ann. des Sciences Naturelles, 1834; Taylor's Scientific Memoirs, 1837.)

The fundamental division proposed by Ehrenberg gives two distinct classes of Infusoria, viz. those which appear to have in their body a complicated digestive cavity, consisting of a great number of cells [Polygastrica], and those which have a simple digestive sac, and wheel-organs about the mouth. ['Rotatoria.'] To these articles the reader is referred for a full statement of Ehrenberg's latest classification.

MICRURA. ['Viperidea.]

MICYRIS. ['Finnotherians.]

MIDAS (Zoology), M. Geoffroy's name for a subgenus of the small South American monkeys called Outisitis. ['Jacaub.] The common name for the species of this subgenus is Tamarin.
forehead with an appearance of prominence, arising from the great angle of the upper edge of the hair. Upper
arched cornea and inner incisors same size as the upper.
Nails like claws, excepting those on the thumbs behind;
tail as in Jacchus. General dental formula as in Jacchus.

There are seven species, of which we select as the example Miocene, or Leontoceras, or Leontinemarin.

Description.—This pretty little monkey is entirely of a
golden yellow, varying to a redder tint, and palest on the
back and thighs. The hair, which is fine and silky, is so
long about the head and neck as to form a ruff or mane,
whence it has been called the Leather Monkey. Its beauty
and gentleness render it a very interesting pet; but great
care is required to keep it from damp, which is destruc-
tive to it. It is supposed to live almost entirely on trees,
and to be squirrel-like in its habits.

Locality.—Guayaquil, and the south of Brazil from Rio
Janeiro to Cape Frio.

Desmarais notices a rod and black variety (Guyana),
and one of a bright shining red from Brazil.

N.B. This must not be confounded with Midas Leonina,
Simia leontina, Humb., the Leontco, or Leonine Tamarin,
which is probably the smallest monkey known. The last
is brownish, and has a very well developed mane of that
colour, which it bristles up when angry, so as to look like a
little lion. It is black, and the tail black above and white
below. It inhabits the plains bordering the eastern slope of
the Cordilleras, and is rare.

MIDAS’S EAR. [AURICULA.]

MIDDLETOWN (Zelzal.)

Middle latitudinal (Navigation), the mean of two
latitudes. It is the distinctive name of a method called in
navigation middle latitude sailing, which means, that in
estimating the difference of longitude by means of the dif-
fferences of latitude and the intermediate departure, this
departure is supposed to be an arc of a parallel of longitude
at the intermediate or middle latitude. (Riddle’s Naviga-
tion, in which a table may be found corrective of the results.)

MIDDLE VOICE is a term employed in Greek gram-
mar to indicate a class of verbs which are called reflec-
tive or reflexive. The reflective meaning is supposed to be the original and main signification of the
middle, but it is difficult in many of the middle verbs in
Greek to trace the reflective notion. Although a sepa-
rate voice, that is, a distinct mode of conjugation has been
assigned to verbs with a middle signification, there are only
two tenses in the Greek verb which have a form peculiar
to the middle notion, namely, the first and second as in
σώ-μαι σο-μαι; which, in the model verb, are ισρηθάθαι
and ισρηθάθαι; which, in the model verb, are ισρηθάθαι
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and ισρηθάθαι; which, in the model verb, are ισρηθάθαι
and ισρηθάθαι; which, in the model verb, are ισρηθάθائي
and ισρηθάθαι. The future in ἔστω (ἔστω, ἔστω, ἔστω;) is called in most grammars the future middle,
has a peculiar form, as in the middle, but, as stated on
Kunig, Hippol., 11455; Quarterly Journal of Education,
vol. iv, p. 138.) The following table will make the matter
clearer:

<table>
<thead>
<tr>
<th>Tenses common to the passive and middle signification.</th>
<th>Present</th>
<th>Imperfect</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present</td>
<td>ἔστωμαι</td>
<td>ἔστωμαι</td>
<td>ἔστωμαι</td>
</tr>
<tr>
<td>Imperfect</td>
<td>ἔστωμαι</td>
<td>ἔστωμαι</td>
<td>ἔστωμαι</td>
</tr>
<tr>
<td>Future</td>
<td>ἔστωμαι</td>
<td>ἔστωμαι</td>
<td>ἔστωμαι</td>
</tr>
</tbody>
</table>

Tenses peculiar to the middle signification.

1st Aorist ἔστωμαι. 2nd Aorist ἔστωμαι.

1st Future ἔστωμαι. 2nd Future ἔστωμαι.

Since then so many tenses in the Greek verb have the
same form both for the middle and passive signification,
it becomes an interesting object of inquiry, whether we
should assign the priority to the passive or middle notion?
This question is objectively discussed by grammarians
in favour of the passive; but the comparison of other lan-
guages etymologically connected with the Greek, would
lead us to a contrary supposition. Very few of the Indo-
Germans have a full-fledged passive signification; even in Sanskrit the passive verb is not con-
sidered by Hindu grammarians as a distinct voice, but is
classed among the derivative verbs. There are however two
voices in the Sanskrit verb, answering to the Greek active
and middle, which are called respectively paramarampand
and atmasenamad; the former answering to the active in
Greek, the latter being generally reflective, or medial
but never a perfect passive signification. The tenses of the passive
verb are formed by prefixing the syllable γα to the present
endings of the atmasenamad conjunction. These present
endings are evidently the same as those of the middle voice
in Greek, as the following table of the present tense will show:

<table>
<thead>
<tr>
<th>Sanskrit</th>
<th>Greek</th>
</tr>
</thead>
<tbody>
<tr>
<td>ἐστωμαι</td>
<td>ὑπάρχω</td>
</tr>
<tr>
<td>ἐστωμαι</td>
<td>ἔστωμαι</td>
</tr>
<tr>
<td>ἐστωμαι</td>
<td>ἔστωμαι</td>
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<td>ἐστωμαι</td>
<td>ἔστωμαι</td>
</tr>
<tr>
<td>ἐστωμαι</td>
<td>ἔστωμαι</td>
</tr>
</tbody>
</table>

That the passive signification should in course of time
have taken the place of the middle, will not appear surpris-
ing; when it is reconciled that a reflective verb is actually
used in many languages, where a passive is used in other
languages to express the same thing. An instance occurs in
such a phrase as les bas se rendent ici, stockings sell themselves
here; and in the same manner in Italian we have such
phrases as uno molle coda, many thing say themselves to
or are said: si lodo un uomo modesto, a modest man praises
himself, that is, is praised; mi si domanda uno scudolo, a
dollar demands itself of me, that is, is demanded of me.
The same idiom occurs both in Spanish and Portuguese.

It has been the practice to deny to the Greek
language the possession of a middle, except in the case of deponent
verbs. But in such a phrase as Rheus Oceano muscular,
the verb is rather of the middle than the passive character,
and this certainty must be allowed when it is said of a sei-
with a clausal galem, or which are called actives
jubes; or as in the line of Virgil (Georg., iii. 219)—

Posseor in magna uita formosum persona.

The above explanation of the middle form or voice is one
which has been proposed; still the matter may require fur-
ther discussion. The truth is, that the classification of verbs
into active and passive, or into active, passive, and middle,
is a very imperfect one, and for the purposes of a philo-
so phical exhibition of grammar a new classification is wanting.
The expressions 'I walk,' 'I eat.' &c., are in signification
allied to the middle voice, though the form of these words
does not express the notion of a passive. An act is differ-
to express the notion of the person 'I being killed,' some
modification of the primitive form 'kill' must be made, and
another modification may be necessary to express the act of
'self killing.' Thus in French we have me tué, it 'fait tué,'
that is, it is done to oneself. It is this same idea that is
'distinguished from the act of 'being killed' by the
addition of a word. In the Greek language the present
tense of the passive form may be used to express either the
act of the person being killed, or killing himself. In
the first and second aorist tenses a peculiar form is used to
express the act of self-killing; but as this peculiar form has
the characteristic termination of what is called a passive
verb, and not of an active, it might be classed under the
passive voice as a peculiar tense, and the term middle voice
might be got rid of altogether.

MIDDLESSEX, the metropolitan county of England,
is bounded on the north by Hertfordshire; on the east by
Essex, from which it is separated by the river Lea; on
the south by Surrey, and on the west by Buckinghamshire,
from which it is separated by the river Colne. Its greatest
length is, from north-east to south-west, the wide
valley of the Thames opposite Chertsey, 28 miles; and
from west to east, or from the mouth of the Thames to the
great road north to Limehouse, 17 miles. Its area is esti-
mated at 292 square miles. The number of inhabitants in
1911 was 1,144,533, in 1861, 1,133,629, showing an in-
crease in ten years of 12,974, or about 13 per cent.,
and giving 48,711 inhabitants to a square mile. It is the
smallest of all the English counties, except Rutland; in amount
of population it is exceeded, and that only in a small degree,
by Yorkshire alone: in density of population it very far
exceeds any other English county. The courts of civil and criminal jurisdiction are held in London or Westminster, or at Clerkenwell, in the suburbs of London; but for parliamentary purposes the borough of Brentford, seven miles from Hyde-park Corner on the great western road, is the county town.

Surface; Geological Character.—The surface of the county consists for the most part of gentle undulations, affording a sufficient slope for the purposes of drainage. A range of hills skirts the northern side of the metropolis by Horsey, Highgate, and Hampstead; Harrow occupies an intermediate position. The chalky composition of the county which lies south-west of a line drawn from Brentford to Uxbridge is an almost unbroken flat, merely rising more than from 10 to 20 feet above the level of the Thames.

The county is chiefly occupied by the London clay. Enfield Chase, the most northern portion, and a strip along the western boundary by Harefield and Uxbridge, are occupied by the plastic clay, which here crops out. The high ground about Harpenden, Highgate, and Hertford consists of Wimpole, a marine formation of unceremonial depth covering the London clay. The thickness of the London clay is very variable. At Bromley near the Lea, in the south-east corner of the county, it was found to be only 44 feet; but at Orpington, near the Club-house, St. James's, London, it was 235 feet. The thickness of the plastic clay in this county appears to be from 100 to 120 feet.

The county belongs entirely to the basin of the Thames, which is the southern boundary. The Thames first touches the border just above Staines, at the junction of one of the arms of the Colne, and flows about six or seven miles to the southernmost point of the county near Shepperton, where it leaves London and branching from this junction of the Wey it flows in a circuitous channel eastward about eight miles to Thames Ditton, above Kingston, and from thence 9 miles in a winding channel northward to Kew Bridge, just below Brentford. From Kew Bridge the Thames flows down 20 miles, with many bends, to the junction of the Lea, just above which it makes a circuit, nearly encompassing a marshy peninsula at the south-eastern angle of the county, called the Isle of Dogs. This river is crossed by several bridges: at Staines and Chertsey (both of stone), Brentford (of stone), and Hammersmith (of iron), between Kingston and East Molesey. There are also bridges over the river, a stone bridge between Rotherhithe and Wapping, about a mile and a half below London Bridge, a tunnel is in progress under the bed of the river. It has a double archway 9 feet wide, with many bents, to the junction of the Lea, just above which it makes a circuit, nearly encompassing a marshy peninsula at the south-eastern angle of the county, called the Isle of Dogs. This river is crossed by several bridges: at Staines and Chertsey (both of stone), Brentford (of stone), and Hammersmith (of iron), between Kingston and East Molesey. There are also bridges over the river, a stone bridge between Rotherhithe and Wapping, about a mile and a half below London Bridge, a tunnel is in progress under the bed of the river. It has a double archway 9 feet wide, with many bents, to the junction of the Lea, just above which it makes a circuit, nearly encompassing a marshy peninsula at the south-eastern angle of the county, called the Isle of Dogs. The river is navigable throughout for laden barges; but locks are required in the upper part to keep up the water. The lowest of these locks is at Teddington, between Kingston and Richmond bridges. Up to London Bridge the Thames is navigable for sea-borne vessels, and the space between that bridge and the junction of the Lea forms the port of London. [LONDON.] The banks of the Thames are for the most part low and flat, and are from 3 to 5 miles wide, and the river flows every tide, if it were not protected by embankments.

The Lea forms the eastern boundary of the county, which it touches below Waltham Abbey. Its waters are, at the point of junction, divided into two or three channels. Up to London Bridge the Thames is navigable for sea-borne vessels, and the space between that bridge and the junction of the Lea forms the port of London. [LONDON.] The banks of the Thames are for the most part low and flat, and are from 3 to 5 miles wide, and the river flows every tide, if it were not protected by embankments. The Lea forms the eastern boundary of the county, which it touches below Waltham Abbey. Its waters are, at the point of junction, divided into two or three channels. Up to London Bridge the Thames is navigable for sea-borne vessels, and the space between that bridge and the junction of the Lea forms the port of London. [LONDON.] The banks of the Thames are for the most part low and flat, and are from 3 to 5 miles wide, and the river flows every tide, if it were not protected by embankments. 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Hertfordshire, joining the north road at St. Albans; another
passes by Harrow and Pinner to Rickmansworth; and a
third, called 'the Green Lanes,' leads by Stoke Newington
and Hackney to Hill to Endfield.

The Buckingham County Railway has its London terminus
at Euston Grove, on the north side of the metropolis, and
runs past Harrow to Watford in Hertfordshire; and the
Great Western Railway has its London terminus at Fad
dingham, Acton, Raling, Dunwell, and Soujman, to
Mainhead. The Eastern Counties Railroad commences
at Mile End and runs by Bow and Stratford across the
Lee into Essex: it is to communicate with Norwich and
Yarmouth. There is another railway in progress, called
the Eastern and Western Railways, which also com
mences at Whitechapel, and is intended to communicate
with Cambridge. Acts have been obtained for the
Commercial Railway, to run from the eastern side of London
to Blackpool; and for the Bristol, Birmingham, and Thames
Junction Railway.

Agriculture.—The soil of this county is of three distinct
qualities: poor sand and gravel on the tops of some of
the hills and in various spots in the plain; a heavy poor clay
in the north and west, which is chiefly covered with
permanent grass, enriched by repeated application of manure;
and a good fertile loam over a bed of gravel, and sometimes
of peat, along the plain in which the Thames flows. To
these must be added some rich deposits from the Thames,
of sand and gravel, which are much utilized for building
stone, or adapted for garden ground, and have been almost entirely
converted into a rich black vegetable mould, by an
abundant application of dung, from time immemorial.

On the surface of the exception of the few hills, if on
the northern side of London, none of which rise more than 400
feet above the Thames, may be described as a plain, almost
perfectly level as it approaches the Thames, but with a suffi
cient fall for the waters to prevent any of it being marshy.
The Thames has been long kept wide and in its present channel
by artificial embankments, wherever these were necessary.
But it is evident that, in times beyond memory, it frequently
changed its bed, which accounts for the irregular deposition
of gravel in various places, and the uniform covering of low
terraces.

Nearly the whole of the county lies over the blue clay,
which is known by the name of the London clay: and the
hills which rise above it are formed of a basis of clay covered by
a poor ferruginous sand and gravel. In various places the
clay appears near the surface, which is level considerably above
the loamy deposit mentioned above.

The stiff clay is altogether unfit for arable cultivation,
until its nature is altered and corrected by the addition of
chips and ashes; most of it requires to be surfaced in the
plough. When the commons, which are now mostly enclosed,
remained open, the grass was poor and of little value; but that part which has been long enclosed
is a coat of rich mould over it, caused by the annual applica
tion of manure, and a sufficient deposit of grass to induce
hay, and its fertility is so much increased as to afford two
good crops every year. Hay-making is nowhere better
understood than in Middlesex. The value of hay so near
the metropolis, and the abundant supply of labourers,
enables the occupiers of grass-land to take advantage of a
few days of fine weather to secure their hay. The mode
of proceeding, as it is given in the Report of the Agriculture
of Middlesex, by Middleton, has generally been held out as
a pattern to all others. It is not the most successful as regards
labour; but these are compensated by the use of the hay-making machine. It may thus
be carried on in a very few days, and stacked in a dry state;
and when it is cut out, it appears of a fine green colour, not
much changed by heating. The hay-ricks are generally
large and well-enriched, the straw is neatly trimmed smooth, and the top well thatched with straw.
When the old hay is carried to market, it is tied up in neat
trusses weighing 56 lbs. each, and 36 such trusses make
a load of hay. The hay is made of 60 lbs. weight.

Some enclosures of pasture-land are made profitable by
taking in horses to graze when they require rest and green
food after having been overworked; but for this purpose the
pasture meadows bordering on Essex along the Thames are
preferred. There the soil is naturally rich, and requires
little manure to recruit it.

The arable portion of the county lies chiefly towards
Buckinghamshire, and between the Great Western Railway
and the Thames. Some extremely good loams of consider
able depth on a bed of flinty gravel, well adapted to every
type of agricultural produce, occur in several places. The
larger portions are mostly laid out in orchard, and the
fruit trees are much cultivated. In some parts, small
plots of land in the parishes of Chelsea, Hammondsmith, Chiswick,
Isleworth, and Brentford is taken up by such gardens. Here
the spade is the principal instrument of cultivation. [Gin
Hotel.]—

Beyond Hounslow, including what was formerly House
Low Heath, the land is cultivated more extensively by
farmers properly so called; and some of these occupy
200 to 1500 acres. Here every improvement in the manage
ment of the soil is readily adopted; but the best soils
are in use: and it only requires a view of the fields along
the two great branches of the western road to perceive
that the land is kept clean and that the crops are good.

The system is greatly modified by the short distance
from a recent Improvement, and is charnarked over and
over kept many head of cattle or great flocks of sheep to pro
duce manure for the land. A smaller portion of the farm
is devoted to raise food for cattle. Roots are disposed of
in cowsheds in London; but the expense of carriage is so
great that it is only a very few who can afford such an outlay.
The roots, as they are conveyed in waggon with four horses, or in tumbrils
one or two or three. A man and a boy are required in either case.
Light single-horse carts, such as are used in Scotland,
are, however, not uncommon; and, when the crop is not
needed, as might be the case in a season of scarcity, a number of horses required for a Middlesex farmer is much
greater than where the land lies at a greater distance from
any large town. The stable-dung is brought in a very fresh
and loose state; it is put together in large heaps, where
it is kept dry, and is then manured over and over
covered with earth or sods. By the time it is carried
up the land it will have cost the farmer not much less than
14. per waggan-load of three tons. Upon the lighter loads,
which are generally smaller, it is customary to find
nearly more advantageous to raise turnips, and fold the
sheep on them, than to sell the turnips and buy town manure.

The course of crops on the farms in Middlesex is not so
regular as in many other counties; but the alternation of
wheat, barley, oats, and potatoes, is generally the same.
Turnips and mangel-wurtzels are often cultivated, but
the proportion is not so great as in the eastern counties.

The hay is left on the fallows almost entirely disused, even on the heaviest
soils. The land is kept clean by taxes cut green, peas
gathered in the pod, beans, and similar crops, which allow of
ploughing and cleansing the land in summer, and sow
root afterwards. The crops are usually drilled and we
hoed: the principal are barley, clover, wheat, beans, oaten—
often in this order. Turnips and mangel-wurtzels are not so extensively cultivated as they are where manure must
cost more money, and these, to cut green, feed the horses, is indispensable; some of them, if they are taken
to London early in the season, and sell well in small
quantities, tied up in bunches. Potatoes are not planted so
extensively as might be supposed, considering the very
favourable market for them. It is known in the county that the market is fully supplied by cargoes which come
from Scotland, Yorkshire, Devonshire, and Jersey, which
place labour is cheaper and the land does not pay so high
rent. Potatoes consume much manure, whatever may
have been the policy of late of encouraging their cultivation,
them is generally weaker and less productive. Where
rent of good land in Middlesex is taken into considera
the carriage of manure, and the bulk of the crop to be car
ried by land, it will be found that, however valuable
able may be the crop, three months are required to
icated, the expense is so great that the net return is
more than that of wheat, beans, or clover. It is very usual
that potatoes are planted as a substitute for the old fall
beans or peas in wide rows, and carefully hoed, are much
preference. Cow or rape is frequently sown on stiff loams, instead of turnips, and fed off with sheep. If the rape is drilled and hoed, it will clean the land, and forms an excellent manure; rape草 will be decomposed and well mixed with the soil when the wheat is sown. Thus the latter crop cannot fail to be good.

The grass-land is everywhere well managed. The surface is kept intersected with water-furrows wherever the soil is impervious to water, so that it never stagnates in winter. The grass is generally cut twice in the season, and made into hay; but the land is well manured, generally after the harvest, and the middens are mounded up. The Midsummer rains wash it in, and the aftermath is much increased by it. Two tons of hay at the first mowing, and one ton at the second, may be considered as the average produce of good grass-land about ten miles from London, including rates and tithe, from 4l. to 6l. per acre. Nearer London grass-land lets very high for milk cows, and likewise for pleasure horses to graze in. But the rapid increase of buildings has converted so many fields into streets, or broken up the surface for the sake of the brick-earth, that the green meadows are every year further from the centre of the metropolis.

Every breed of animal is to be met with in Middlesex. Horses and milk cows are the most common, as the most useful animals, and the work of farmers and the town. Some large horses, a little too heavy for a carriage and too slow for stage-coaches, but which make excellent cart-horses, are brought to London in large quantities by dealers, who collect their cargoes from the manufacturing districts. Dairy cows are chiefly of the large Holderness breed or the short-horn. Ayrshire cows have been tried, and, as far as milk goes, they are fully equal to the other breeds, taking the quantity of food consumed by each into consideration; but they do not yield such heavy carcases to the butcher when fattened off. The most approved system of London dairymen is to let a cow be milked till she goes dry, and never allow her to go to the bull. By very high feeding she will increase in flesh while she gives milk, and by the time the milk is over she will be in tolerable condition to be sold and will have lost nothing. The neighbourhood of London, who have grass-land, have a pre-destination for the small Alderney cows, which give a small quantity of extremely rich milk. They are very quiet animals, and may be tethered or led about to graze in a hawker. On good pasture they are very profitable.

Dairy farmers have been established; but most of them have no title to that name, the large cows having soon superseded the smaller.

The dairy labour in Middlesex is not so high, when compared with that of the adjoining counties, as might be expected. Very near London market-gardeners pay their labourers from 15s. to 17s. per week for day-labour; but as most of the work is in the open air, the digging and cutting are done by the square perch, the price depending according to the soil and the depth of the work. A good workman will earn 3s. 6d. or more in a day, but for this he must work hard. A mower has from 3s. to 6s. per acre for mowing grass, 2s. 6d. to 3s. 6d. for clover, and the same for oats or barley; tares and peas are looked at from 3s. to 5s. per acre; wheat and rye are faged, that is, cut close to the ground with a large reaping-hook, for 10s. to 18s. per acre, as the crop may be more or less heavy. Beans for 5s. to 9s.; threshing wheat costs 5s. to 8s. per quarter, and 1s. per load; yet for cutting the straw; oats are thrashed for 2s. or 2s. 6d.; beans and peas, 1s. 6d. to 2s.; hay is cut, trussed, and every truss weighed, for 2s. 6d. to 3s. 6d. the load of thirty-six...,

The prices were about three years ago; they had increased with the price of corn and meat, but have again fallen. At the present time they are rather on the increase; yet the above prices may be relied upon as fair averages in a circle of twenty-five miles round London. The principal weekly markets in Middlesex, out of London, are Barnet, every Monday; Southall and Finchley, every Thursday; Brentford, Hackney, and Enfield, and on Thursday, Tuesday, Friday, and Satuday.

Town and country stock are the same as in the other parts of Middlesex; there are large numbers of fat sheep and pigs, and a great many fowls. The sheep are much smaller than in the northern counties.

The cities of London and Westminster are locally in Osulon hundred. The suburbs of London form the newly constituted parliamentary boroughs of Marylebone, Finsbury, Greenwich, Newington and Southwark. There are four farm-towns, Barnet, Brentford, Staines, and Uxbridge; besides Edgeware, Enfield, and Hounslow, the markets of which have been discontinued, and a number of other places, which, though not ranking higher than villages, derive, from their proximity to the metropolis, considerable trade from the capital, and are of considerable interest and importance to the carrier. [Barnet; Brentford; Chelsea; London.]

Staines is in Spelthorne hundred, 16 miles from Hyde-park Corner, on the road to Slough and Exeter. The parish contains an area of 1710 acres, with a population of 2486. The principal street extends half a mile along the road, and leads to the Thames. Many of the houses in the main street are good; a new stone bridge has been built over the river. The church is a near a wooden tower, with a square embattled tower, and there are some dissenting places of worship. The market-house is a small building near the bridge. The market is on Friday, and there are two yearly fairs. There are several flour-mills near the town. The living is a vicarage united with the chapelry of Laleham and Ashford, of the joint annual value of £220, with a glebe-house. There were, in 1833, one infant-school, with 96 children; a school of industry for 26 girls, and one of the Lancastrian school for boys, with 40; one other day-school with 30 boys, three boarding-schools with 86 children, and three Sunday-schools, with 193 children of both sexes. There is also a Literary and Scientific Institution.

Uxbridge is in the parish of Hillingdon, in Elthorne hundred, about fifteen miles from Tyburn turnpike, on the Oxford road. It was formerly a place of strength, and a corporate town, and in the civil war of Charles I. was the scene of an unwavailing negotiation for peace between the commissioners of the king and those of the parliament. The mansion in which the conferences were held is still standing. The area of Hillingdon parish is 4720 acres; the inhabitants, in 1831, amounted to 6835, of whom 3043 were in the chapelry of Uxbridge. The town consists of one principal street, about a mile in length, along the Oxford road, and two or three smaller ones. There are in the principal street two bridges over the arms of the river Colne, and one over the Grand Junction Canal, which is the most commodious market-house of brick, supported on wooden columns; a chapel behind the market-house, built of fine brick and stone, costing £2000, and one of the Grand Junction Canal, with an iron bridge. Considerable business is done in the town, and brick-making is largely carried on in the neighbourhood.

The perpetual curacy of Uxbridge is of the clerical value of £114, with a glebe-house. The school, a grammar school, with 187 boys; a school of industry, with 107 girls; three other day-schools, with 114 children;
three boarding and day schools, with 87 children; and three Sunday-schools, with 515 children.

Edgeware is in Gore hundred, 8 miles from Tyburn turnpike, on the road to Watford and Aylesbury. The parish has an area of 1900 acres, with a population, in 1831, of 291. The place has, long held a reputation for its respectable houses. The church is of brick, and was built about the middle of the last century; the tower, more antient, is of flint and stone. The market, which was formerly held on Thursday, has been discontinued for many years. The main street is called Winch Street, after the Winch family, the former owners of the manor. There are some respectable houses. Outside the church is a grass lot and a新たに創設されたweek-day school. In this street is a cross, erected A.D. 1660, in place of a wooden one. The church is on a small eminence a short distance west of the village, and is an antient building, with a square embattled tower covered with ivy. The church is thatched and of brick, and has with the name, that antiently occupied the site. The river Lea forms the eastern boundary of the parish. There are extensive

Edgeware is a vicarage, of the clear yearly value of 492L., with a glebe-house; that of Stanmore Parva is a perpetual curacy, of the clear yearly value of 267L., with a glebe-house. The two parishes had, in 1833, one infant or dame school, with 41 children; eight day-schools (one endowed), with 104 children; and two Sunday-schools, with 91 children.

Enfield is in Edmonton hundred; that part which is called Enfield Highwa is 9 miles from Shoreditch Church, on the York and Edmonton road. Enfield manor, which is the site of a manor house called Elsyng-hall, was given by Edward III. to a new lady for a short time, during the reign of her brother Edward VI.; and she resided at Enfield, at the manor-house or at Elyseng-hall, at several periods during her reign. Of the manor-house one room on the ground-floor remains as in the queen's time. Elyseng-hall has disappeared, and its exact site is not known. The parish of Enfield has an area of 12,460 acres, with a population, in 1831, of 6812, about one-third agricultural. The houses contained 1029 families, and 2404 of them were built. The church is an antient structure, comprehending chancel, nave, and two aisles, with a low embattled tower. There are a chappel of ease, lately erected, and several dis- senting places of worship. Enfield was granted a charter for a market on Monday, and James I. granted one on Saturday; but they have long fallen into disuse. There are two yearly fairs. There are in the parish a royal manufactory for fire-arms (partly carried on here and partly at Waltham Abbey), a manufactory for finishing crape, and two or three other trading establishments. The Lea navigation and the New River pass by or through this parish. Petty sessions and a Court of Requests are held here. The living of Enfield is a vicarage, of the clear yearly value of 117L., with a glebe-house. There were in 1832 two infant schools, with 145 children; a school of industry, with 45 girls; seven other day-schools, with 181 children; five boarding and day schools, with 152 children; and four Sunday-schools, with 230 children.

Enfield Chase, formerly a large chase or park north-west of the town, extending into several parishes, is now entirely enclosed.

Hounslow is in the two parishes of Isleworth and Heston, in Isleworth hundred, but chiefy in Heston. The area of the two parishes is 6840 acres: the population, in 1831, was 8997. The town, which is 10 miles from Hyde-park Corner, is at the point where the Bath and Bristol road branches off from that to Exeter and Salisbury, and consists of a large open space, with a church, a large market house, and some houses lighted with gas. Hounslow had an antient priory of the order of the Holy Trinity, which at its suppression, a.d. 1530, had a revenue of 80L. 15s. gross, or 74L. 8s. clear. The conventual chapel, long used as a chapel-of-ease, was taken down a few years since, and has been replaced by a new church, capable of seating above 1000 persons. The market, formerly held on Thursday, has been discontinued for some years. The chief business of the town has of late years arisen from its situation on the Great Western Railway. There are some powder-mills and a flax-dressing-mill near the town. Adjoining to the town, and not far from it, was formerly an extensive heath, notorious for highway robberies. On the north side of James II. encamped before the Revolution. There are large cavalry barracks and an exercise-ground on what was formerly the heath. The remainder is now enclosed.

The living of Hounslow is a perpetual curacy, of the clear yearly value of 125L. There were in Heston parish, in 1833, two infant schools, with about 321 children; three day-schools, with about 198 children; one boarding-school, with 19 boys, and 29 girls on the same street, but contains no respectable houses. The church is of brick, and was built about the middle of the last century; the tower, more antient, is of flint and stone. The market, which was formerly held on Thursday, has been discontinued for many years. The main street is called Winch Street, after the Winch family, the former owners of the manor. There are some respectable houses. Outside the church is a grass lot and a week-day school. In this street is a cross, erected A.D. 1660, in place of a wooden one. The church is on a small eminence a short distance west of the village, and is an antient building, with a square embattled tower covered with ivy. The church is thatched and of brick, and has with the name, that antiently occupied the site. The river Lea forms the eastern boundary of the parish. There are extensive

Tottenham is in Edmonton hundred, about 4 miles from Shoreditch church, on the York road. The parish, which is divided into four wards, has an area of 4650 acres, with a population, in 1831, of 6537. The main street a narrow lane, is called Winch Street. In this street is a cross, erected A.D. 1660, in place of a wooden one. The church is on a small eminence a short distance west of the village, and is an antient building, with a square embattled tower covered with ivy. The church is thatched and of brick, and has with the name, that antiently occupied the site. The river Lea forms the eastern boundary of the parish. There are extensive

Edgeware is a vicarage, of the clear yearly value of 79L., with a glebe-house. The three parishes had, in 1833, one infant school, with 83 children; an endowed free grammar-school with 80 boys; a 'blue-coat' school, with 12 masters and 500 scholars; two boarders' schools, with 283 children; a Catholic school, with 65 children; and several private day and boarding schools.

The living of Tottenham is a vicarage, of the clear yearly value of 309L., and is in the gift of the vicar. There were, in 1833, two infant schools, with 83 children; an endowed free grammar-school with 80 boys; a 'blue-coat' school, with 12 masters and 500 scholars; two boarders' schools, with 283 children; a Catholic school, with 65 children; and several private day and boarding schools. There were also four Sunday-schools, with about 450 or 460 children.

Edmonton is on the York road, 7 miles from Shoreditch church, between Tottenham and Enfield. The parish has an area of 7460 acres, and is divided into four wards or 'streets,' beside an allotment of Enfield Chase assigned to the parish. The population, in 1831, was 1952. The area of Edmonton, in the two years of the seventeenth century, was partly of modern date, but the tower and some other portions are of greater antiquity; there are some antient monuments. There are chapels at Southgate and on Winchmore Hill, and several dissenting places of worship. The living of Edmonton is a vicarage, of the clear yearly value of 152L., with a glebe-house. The chapellies of Southgate and St. Paul, Winchmore Hill, are of the clear yearly value of 100L. and 100L. respectively, and are in the gift of the vicar of Edmonton. There were in the parish, in 1833, an endowed day-school, with 186 children, 66 of whom were clothed; another endowed day-school, with 72 girls; three day-schools, partly or wholly supported by charitable contributions, containing 233 children; eight other day-schools, with 117 children; ten boarding-schools, with 255 children; two academy schools, with 253 children; and one Sunday-school, with 184 children.

Wyer House, in the parish of Edmonton, about a mile north-west of the village, is a fine old non-house built in the early part of the seventeenth century.

Harrow-on-the-Hill is in Gore hundred, 10 miles from Tyburn turnpike, on the road to Rickmansworth. The parish (including the hamlet of Harrow Weald and Green Hill) has an area of 867 acres, and is surrounded on all sides by the Great Western Railway. There are some powder-mills and a flax-dressing-mill near the town. Adjoining to the town, and not far from it, was formerly an extensive heath, notorious for highway robberies. Of this heath the name of James II. encamped before the Revolution. There are large cavalry barracks and an exercise-ground on what was
It is free to all boys of the parish of Harrow, but there are very few who avail themselves of this opportunity; the school is in the hands of Mr. Shepherd, three prominent eminent men have been educated at Harrow: as Bruce, the Abyssinian traveller, Sir William Jones, Richard Brinsley Sheridan, the late Lord Byron, Dr. Parr, and numerous others. The parish church, on the summit of the hill: there are some small portions in the Norman style; and at the west end is a lofty tower, with a spire. The grammar-school is near the church. There are some dissenting meeting-houses; there are two chapels-of-ease near the church and the other at Harrow Weald, a group of houses about two miles north of the village. The living of Harrow is a vicarage, of the clear yearly value of £624, with a glebe-house. The vicar has the right of presentation to the perpetual curacy of Harvey, or the curacy of St. Mary, if vacant, and an annual rent of £60 on Harrow, and is of the yearly value of 100l. Harrow and Pinner are in the peculiar jurisdiction of the archbishop of Canterbury. There were in the parish, in 1833, three infant or dame schools, with 93 children; four day-schools, supported by subscriptions, with 197 children; two boarding-schools, with 76 children; and four Sunday-schools, with 409 children.

Twickenham is in Isleworth hundred, on the bank of the Thames, where flows from Hyde-park Corner. It has derived celebrity from its being the residence of Alexander Pope and several other eminent persons. The parish has an area of 3440 acres, with a population in 1831 of 4571. The village is irregularly laid out, but contains a number of genteel residences near the river. The church is a brick structure, built in the early part of the last century, with an ante-chapel added. It contains monuments erected by Pope to the memory of his parents, and by Bishop Warburton, who has granted the vicarage of Twickenham to the church of St. James, Islington. The great part erected by Horace Walpole, lord Orford, and is a medley of castellated and ecclesiastical Gothic architecture. There are powder and oil mills. The village is much frequented by visitors from London. The steam-boats which ply between London and Richmond frequently proceed up to 'Twickenham ait,' a small island in the river Thames, comprising a few acres chiefly laid out in pleasure-grounds. There is much garden-ground in the parish, the produce of which is sent up to the London market. The market is of the value of 717l., with a glebe-house. There were in the parish, in 1833, an infant or dame school of 20 children; an endowed day-school with 166 children; three day-schools, partly supported by charitable contributions, containing 184 children; five day-schools, with 154 children; and five boarding-schools, with 110 children.

Iisleworth, adjoining Twickenham on the north side, is in Isleworth hundred, 83 miles from Hyde-park Corner. The parish has an area of 3120 acres, with a population of 5590. At Sion or Syon, in this parish, was formerly a monastery of Bridgetine priests and nuns, founded a.d. 1414 by Henry V., and originally settled at Twickenham. The yearly revenues of this house, the dissolution were 114l. 8s. 4d. gross, or 113l. 4s. 4d. clear. In the walls of this monastery after its desecration, Catherine Howard, queen of Henry VIII., was confined shortly before her execution. The site was granted by Edward VI. to the Protector Somerset, who consented to the sale. The church of Sion House, which has received great additions and alterations from the dukes of Northumberland, the subsequent proprietors. This noble residence contains some valuable portraits. The village of Isleworth is on the bank of the Thames opposite Richmond. It has two churches, one established and two dissenting places of worship. The church consists of a squire's mansion and residences, with others of less pretension. The village, on the bank of the Thames, is of brick, and was rebuilt a.d. 1705 or 1706; the tower, more ancient, is of stone. There are some dissenting places of worship. The business of the parish is gardening; there are great quantities of raspberries and strawberries are grown for the London market. There are two flour-mills and a brewery. There are three ranges of almshouses in the parish. The living is a vicarage of the clear yearly value of 68l., with a glebe-house. There were, in 1833, one infant-school, with 50 to 70 children; an endowed school, with 150 children; a day and Sunday-school, with 30 girls; and a Sunday-school, with 100 boys. The present incumbent, the Rev. J. William Lear, rector, (which is partly in this parish), supported partly by subscription.

Hampton is in Spelthorne hundred, about 15 miles from Hyde-park Corner. The parish, including the hamlet of Hampton Wick, has an area of 2130 acres, with a population in 1831 of 3992, of whom 1463 were at Hampton Wick. In this parish is the royal palace of Hampton Court, the site of which was once the possession of the Knights Hospitallers. On the suppression of the Order the fee of the manor was granted to the crown, and in 1535 Edward VI. took a lease of the manor from the prior of St. John's before the dissolution, which lease he surrendered to the king Henry VIII., who formed a royal park or chase, comprehending Hampton and several other parishes, which he enclosed. The manor and the outlying seigneurie broken up on the remanence of the aggregated parishes, but the crown has since retained paramount authority over all game within its limits. While Wolsey held the lease of the park he pulled down a mansion which stood here, and erected in its place a sumptuous palace, which Henry VIII. subsequently enlarged. Here Edward VI. was born, and his mother queen Jane Seymour died. This palace was the scene of the celebrated conference between Charles and Queen Mary, in 1554. After the death of Queen Mary, it was partly converted into a palace-chapel, and other Episcopal clergy, at which the king James I. was moderator, and the lords of the council were auditors. Charles I. resided here during part of his confinement, and Cromwell, Charles II., and James II. made it their occasional residence. The site of the palace, and laid out the gardens and park in their present form. Since the time of George II. it has not been the abode of royalty, and is now occupied by private families.

There is a large and handsome racecourse, with some elegant stables, a race-meeting held here in the spring. Within the grounds are the churches of St. Peter's and St. Andrew, and the manor house. Hampton has the manor of Pinner, and several other manors. The rich manor of the extinct Abbey of Bushey is held by the Queen.

The number of residents, including servants, is stated to be 700. The palace consists of three principal quadrangles, with some smaller courts. The chapel, the great hall, and some of the subordinate chambers and domestic offices are still in a good state of preservation. The seat of the queen dowager. The great eastern and southern fronts are the most modern parts of the building; the eastern front has an extent of about 330 feet, the southern of 328 feet. These portions were erected by Sir Christopher Wren, but are neither in keeping with the more antient portions of the structure, nor distinguished by any great beauty. The palace contains a number of pictures by the old masters, but the Cartoons of Raphael constitute its chief treasure. The house is in the form of a cross, with three long wings, several avenues and fine clumps of trees. Bushy Park and lodge are an appendix of Hampton Court Palace. The lodge was the residence of William IV. when duke of Clarence, and now belongs to the queen-dowager for her life.

The village of Hampton has some substantial houses and handsome villas; among the latter is that which belonged to Garrick. Hampton races are held on Moulsley Hurst, on the opposite side of the Thames. The rich manor of the extinct Abbey of Bushey has an area of 356l., with a glebe-house. Hampton Wick is a chapelry of the clear yearly value of 87l., in the gift of the vicar of Hampton. There were, in 1833, in the whole parish, nine day-schools (one endowed and one school of industry), with about 350 children; seven boarding-schools, with 94 children; and three Sunday-schools, with 76 children.

Hammersmith is in Kensington division of Ossulston hundred, 4 miles from Hyde-park Corner. The chapsity of Hammermith, a dependency of Fulham, is three and a half miles, an area of 2140 acres, with a population, in 1831, of 10,222. The principal street extends nearly two miles along the western road, and consists of several ranges of good modern houses. An elegant suspension bridge crosses the Thames at this place. There are two churches: one erected in 1631, a spacious brick building; the other a Doric edifice, built within the last few years. The Dissenters have several places of worship, and the Catholics have a chapel and a convent of the Benedictine nuns. The church is now the property of the duke of St. Albans, who endowed it by Sir Nicholas Crisp in the seventeenth century, and improved by subsequent occupants, was the residence of the late queen Caroline during her last abode in England. She died here, and after her death the house was pulled down. There are large nursery-grounds in the parish, and brick-making is extensively carried on. The living of Ham-
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meremith is of the clear yearly value of 31.0. There were in the chapelry, in 1833, an endowed school of 80 boys, a charity school for 50 girls, a school of industry with 57 girls, three other charity schools (one of them supported by Catholics), with 90 children; twenty-nine other day-schools, with 532 children; eighteen board-schools, with 666 children; and eight Sunday-schools, with 572 children.

Fulham, 4 miles from Hyde-Park Corner, is in the same hundred and division as Hammersmith. The parish, exclusive of the chapelry of Hammersmith, has an area of 12,135 acres and a population of 18,133. It is the site of some military movements in the war between Charles II. and the parliament, A.D. 1642; and in 1647 the council of officers and agitators sat at Fulham and Putney (a village in Surrey on the opposite bank of the Thames), to overawe the king, who was then in confinement at Hampton Court. The village contains many good houses and villas; the manor-house is the residence of the bishop of London. The church is of stone, and has a stone tower in the decorated English style. There is a proprietary chapel, built by Richard Hunt, Esq., A.D. 1813, between Fulham and Hammersmith.

The bridge over the Thames at this place is of wood. There are extensive market-gardens in the parish, which are particularly agreeable and salubrious. The living of the vicarage of the clear yearly value of 1135l., in the gift of the bishop of London. There were in the parish, in 1833, two infant schools, with 159 children; two national schools, with 293 children; four dissenting day-schools, with 157 children; four other day-schools, with 213 children; ten boarding-schools, with about 207 children; and one Sunday-school with 60 to 80 children.

Kensington, in the same division and hundred as the preceding parishes, is now a suburb of London. The parish, with the extra-parochial chapelry of Twyford, has an area of 2980 acres, with a population, in 1831, of 20,945.

Part of the chapelry of Knightsbridge is in Kensington parish. The principal street of the latter town consists of 2200 houses extending along the great western road; and there are other streets. Brompton and Little Chelsea, on the south, and Kensington gravel-pits, on the north, are in the parish. There is at Kensington a royal palace, built on the site of a residence belonging to the family of Finch, earls of Winchelsea and Nottingham, from whom it was purchased by William III. That prince converted the dwelling-house into a palace, rebuilding the principal parts, and making many additions to the preceding prince's augmentation. The palace is of red brick, ornamented with columns and coigns of stone, and consists of three principal quadrangles. The suites of apartments are noble and exquisite, ornamented with statuary by Flemish and English artists. The gardens and grounds, which are agreeably laid out, are three miles in circuit. There are barracks for detachments of the guards. Several members of the royal family have apartments within the palace. Holland House, an ancient mansion, chiefly in the Elizabethan style, was the residence of Addison, who died here; and much of the early life of Charles James Fox was passed here. It is now the residence of Lord Holland; it contains some interesting portraits. Campden House is another ancient residence in the same style. Kensington Church, a large modern brick building, is near the principal street; new churches have been erected in Addision Road and at Brompton, and there is a chapel-of-ease at Brompton, established 1814, with 2140 males and 2141 females, and dissenting Roman Catholic churches. The living is a vicarage, of the clear yearly value of 1242l., with a glebe-house. To the new churches in Addison Road (St. Barnabas) and Brompton (Trinity Church) are annexed curates of the respective value of 405l. and 639l., in the gift of the vicar of Kensington.

There were, in 1833, five infant or dame schools, with 44 children; a national school, with 296 children; a school for 17 girls, supported out of the parish rates; two schools for infants, partly supported by subscriptions, with 104 children; twenty-three other day-schools, with 489 children; forty-nine boarding-schools, with 827 children; and three Sunday-schools, with 263 children. There were also two proprietary grammar-schools, with about 115 children.

The parishes of St. Marylebone (pop. in 1831, 129,206), St. Pancras (pop. 103,548), and Paddington (14,540), in the Holborn division of Osborn hundred, constitute the most part united to London. [LONDON.] The hamlets of Camden Town and Kentish Town, and part of the villages of Highgate, are in St. Pancras parish. Camden Town consists of some streets of good houses; and Kentish Town of some streets of houses and gardens. The population is now rapidly increasing, and has greatly improved in late years, especially since the completion of the London and Birmingham Railroad. There is an Episcopal chapel at Camden Town, and one in Kentish Town, besides several Roman Catholic chapels, some dissenting places, and a vestry of the same at Camden Town. The Regent's Canal passes between these two hamlets. Hampstead is on high ground, 4 miles from Holborn Bar, and 2 miles from Regent's Park. The parish contains 2070 acres, with a population, in 1831, of 8385, which was separated from that of Hendon in 1598. It contains the village of Hampstead and the hamlet of Kilburn. The village of Hampstead contains mineral springs, once in considerable repute. The salubrity of the air, and the pleasantness of the prospect which, from its elevated situation, it enjoys, have made it a favourite place of residence: on the hill, north-east of the village, is an extensive heath, on which are some large ponds, or reservoirs of water, for the supply of the metropolis. The church, of brick, is built about the middle of the last century. There are two proprietary Episcopal chapels, and several dissenting places of worship. The Holborn district, of which the village of Holborn is a part, contains 39 acres. The area of the city of London, of 1831, was of 887l. There were, in 1833, two infant schools, with 159 children; three charity-schools (two attached to the Established Church, and one supported by Roman Catholics), with 287 children; nine other day-schools, with 155 children; seven Sunday-schools, with 157 children.

Islington, one mile north of Hick's Hall, on the great road to the north, is included in the city of London. It was a hundred, and is in the metropolitan parliamentary borough of Finsbury. The parish has an area of 3030 acres, with a population, in 1831, of 37,316. The principal street, under the designations of High Street, Upper Street, and Holloway, runs for several miles along the north road to the foot of Highgate Hill. Lower Street branches off from High Street, and runs towards Newington Green and Stoke Newington. The Liverpool Road forms a back road to Holloway: the new north road, and the new turnpike road, the latter being the only one of the five assigned to the city. The palace is of red brick, ornamented with columns and coigns of stone, and consists of three principal quadrangles. The suites of apartments are noble and exquisite, ornamented with statuary by Flemish and English artists. The gardens and grounds, which are agreeably laid out, are three miles in circuit. There are barracks for detachments of the guards. Several members of the royal family have apartments within the palace.

The church is situated between Upper and Lower streets, and is of brick, with a tower of the same materials, surmounted by a stone spire of good design. There is a chapel-of-ease at Lower Holloway, a small and rather heavy brick building, built A.D. 1814; and there are district churches at Upper Holloway (St. John's, a neat building, with a square embattled tower, crowned with pinnacles and spires), at Highgate (a small and solidly built character to St. John's), in Coptic Square, near the back road (Trinity Church), and St. Peter's, the last erected. There are also several dissenting places of worship. At Islington is a college, belonging to the Church Missionary Society; for the education of young men for the ministry among the Indians; The Caledonian Asylum is a handsome building, on the road leading from King's Cross, St. Pancras, to Holloway. Camden House, a heavy square brick building is a residence of Canonbury House, the former mansion of the priors of St. Bartholomew's Monastery in Smithfield, and has been the residence of Dr. Goldsmith, Chambers, author of the Cyclopedia, and many other persons of importance. The church is of brick, with a stone spire, and is the vicarage of the clear yearly value of 15l. The perpetual curacies are of the following clear yearly income.
value:—Lower Holloway Chapel, 35½; St. John’s, Upper Holloway, 25½; St. Paul’s, Bell’s Bond, 35½; and Trinity, Caledonian Road South. Of the chapel, there is no record in the parish registers. There were, in 1833, four infant-schools, with 578 children; thirty-eight boarding-schools, and sixty-one day-schools, among which were included three national schools, with 204 children; three other charity schools, conducted by the London Board of Guardians, the Lancasterian school, with 169 girls; a school for industry for 33 girls, and three other charity schools, with 260 children. There are a proprietary school for 160 boys, and nine Sunday-schools. In the parish, there are a grammar-school, and a British Orphan Asylum 43 children are maintained and educated, and a Caledonian Asylum about 100. There is a Literary and Scientific Institution.

Hornsey is in the same hundred and division, north of Islington. The area of the parish is 2500 acres, and the population, in 1831, was 4856. It contains the village of Hornsey, and the hamlets of Crouch End, Muswell Hill, and Stroud Green. Few villages near London have retained a more rural character than Hornsey. It lies in a valley out of the great thoroughfares; the New River passes close to it. The church, which is of stone, has been recently restored or rebuilt all but the tower, which is more ancient. There were, in 1833, two national schools at Hornsey, with 113 children, and one grammar-school, of the clear yearly value of 493½, with a glebe-house.

Highgate is on high ground on the great north road, 4 miles from London. Part of the village is in the parish of St. Pancras, and part in Hornsey parish. The village, which has been enlarged, is the highest point of London. There is a church, called, the church of St. Michael, at the top of a hill. A new church has been lately built, and a new school-room for the endowed grammar-school, which was founded by Chief-Justice Cholmeley in the reign of Queen Elizabeth. The master has a good salary and a house. There are some almshouses at Hornsey, one for a dissenting place of worship. Some ponds at Highgate contribute to supply part of the northern suburbs of the metropolis with water.

In 1759, the steep declivity at Highgate, a project was formed in 1809 for carrying the north road through a spacious arched tunnel. The work was commenced; but in 1812 the earth over the tunnel fell in, the plan of a tunnel was given up, and a road was cut through the hill. A road which crosses the north road is carried over by means of an archway of brick and stone. An extensive cemetery has lately been formed at Highgate, on the slope of the hill just below the church: the grounds are well laid out, and the entrance gateway contains a chapel and other spacious and elegant buildings, for this classical cemetery. There were in Cholmeley’s grammar-school, in 1833, 33 boys; in another endowed school were 26 girls; and in a national school, 98 boys. A room for a national school for 100 children, and a master’s house.

Hackney is 2 miles from Shoreditch church, on one of the branches of the Norfolk and Suffolk roads, 9½ miles from Whitechapel church. The Hackney le-Bow is an ancient parish, and bears the colloquial abbreviation in order to distinguish it from Stratford Langthorn, or colloquially Stratford, which is just across the Lea in Essex. Between Bow and Stratford is an ancient bridge over the Lea. Bow church is an ancient structure, chiefly in the early English style, but there are some portions of Norman architecture. A yearly fair, much resorted to by the Londoners, has been of late years suppressed. The parish, which has an area of 830 acres, in the population, in 1831, of 3791, was separated from that of Stepney in 1560. It was the old district of Old Hackney parish, and the East London waterworks. The living is a rectory, of the clear yearly value of 3194, with a glebe-house. There were, in 1833, three dame-schools, with 48 children; three other day-schools, with 126 children, two of them endowed, with 109 children, and three unendowed, with 42 children; and two Sunday-schools, with 244 children.

Bromley is adjacent to Bow. Distilling and calico printing are carried on, and many of the inhabitants are much engaged in the East and West India Docks, and in the adjacent docksyards in Limehouse and Stepney parishes. The church has some traces of Norman architecture: it was probably the church of a Benedictine nunnerie once existing here, whose revenue at the suppression was 1215. 16d. gross, or 1085. 11d. clear. The parish has an area of 620 acres, with a population, in 1831, of 4546. The living of Bromley is a donative, of the clear yearly value of 1904. The parish had, in 1833, one infant school, with 20 children; an endowed day-school, with 17 boys; two national schools, with 193 children; one other day-school, with 12 children; and one Sunday-school, with 186 children.

Stepney and Limehouse are immediately adjacent to London dock-yard. The parish of Stepney comprehends an area of 2130 acres, and is divided into the four hamlets of Mile-End Old Town, Mile-End New Town, Poplar Chapel (with Blackwall), and Ratcliff, having a population in 1831 of 67,872. Limehouse is an ancient parish, immediately on the Thames, and connected with Stepney, and comprises 280 acres, with a population of 15,692. These two parishes comprehend the Isle of Dogs, and the adjacent districts extending northward to the road to Bow, on which roads the hamlets of Mile-End New Town, and Limehouse are situated, and along the Commercial Road, extending from London to Limehouse, as well as in the immediate
Since Newcourt's time the number of ecclesiastical divisions has considerably increased, and separate parishes were established by the subdivision of the larger parishes near London, such as Stepney, Hackney, Islington, St. Pancras, and St. Marylebone.

The county, in civil suit, within the immediate jurisdiction of the superior courts sitting in the metropolis. In criminal cases the more important class is within the jurisdiction of the Central Criminal Court, held in the Old Bailey in London. Sessions, at which lighter criminal offenses are tried, are held at the Sessions-house, Clerkenwell, twelve times in the year, and at Guildhall, for the city of London, twice a year. It is divided into the county of Westmorland, the city of London, and the county of the ancient liberty of Westminster. The city is under the police jurisdiction of its own aldermen; other parts immediately round London have police-offices, with stipendiary magistrates. The parts more distant from London are under the county magistrates.

The shrievalty of Middlesex is united with that of London. Two sheriffs are annually chosen by the Livery of London in common ball. London has a body of police of its own: the suburbs are watched by the metropolis police, a numerous body of men under the direction of two commissioners.

Fourteen members of parliament are returned from Middlesex, namely, two for the county, four for the city of London, and eight for Westminster. They are divided into the new metropolitan boroughs of Marylebone, Finsbury, and the Tower Hamlets. The borough of Marylebone comprehends the three parishes of St. Marylebone, St. Pancras, and Paddington; that of Finsbury, various parishes and little areas; that of Marylebone, and that of the Tower Hamlets, the liberties of the Tower and the Tower division of Osulatum hundred.

History and Antiquities.—In the earliest period of authentic history the land was covered with woods, and the names of the Trinobantes, who occupied Essex. It was traversed by Cæsar in his second expedition into Britain (54), after his successful attempt to cross the Thames at Coway Stakes near Chertsey. [BRITANNIA.] It fell under Roman* rule in the reign of Augustus, and was overrun by the Britons in the general revolt under Boadicea. [ROADICK.] Londinium (London) was already a place of considerable trade, and the residence of many Romans. In the Roman division of the island the county was included in the province of Flavia Caesariensis, and comprised the stations of Londinium, Pontes (according to some), and Sullonicus. Of Londinium [LONDON] nothing need be said. Pontes has been variously fixed, at Colnebrook and at Old Windsor in Berks, and at Longford near the Evesham, in Middlesex, Sullonicus, at Shooter's Hill, in Kent, Edgware and Elstree. There are, or were till lately, traces of Roman camps at Stanmore, in the fields near Islington, and at Shepperton, near the place where Cæsar crossed the Thames in his first invasion. The name Waltham is derived from Wæl- or Wælham, and the Saxon* change through Sullonicus to Verulamium (near St. Albans’). Ermine Street ran from Londinium northward by Stoke Newington to Enfield, and other roads led from Londinium by Pontes and across the Thames to the south-west part of England, and across the Lea into Essex. Of this last fragment of a stone causeway in the marshes of the Lea, between Hackney Wick and Old Ford, may be regarded as a remain. The Thames was known to the Romans by the names of Tamis and Janias. The Roman names of the Lea, the Colne, and the Brent, are not known.

Besides various Roman antiquities found in London, others have been discovered in various parts of the county.

At Bentley near Stanmore fifty gold coins and several silver rings, set together with garnets and a bracelet, all of gold. Coins and other Roman antiquities have been dug up at Hampstead, Shepperton, and Turnham Green near Brentford.

In the Saxon division of the island this county is generally considered as standing on the site of a part of the kingdom of the East Saxons; but we think this may be questioned. Sir F. Palgrave has shown that among the Saxon states there were more than seven or eight which were properly distinct from each other, although the weaker were commonly left in subjection by their more powerful neighbors. Of the petty kingdoms or states we consider Middlesex (the territory of the Middle-Saxons) to have been one; we do not think the name would have been given had Middlesex been, according to the common opinion, only a frontier...
district of the East-Saxon kingdom. It may have been
governed occasionally by the kings of Essex,—it is known
that the Essex long had many extensive rights in the
city of London but, if so, this was itself merely a
dependency of Kent, and never enjoyed a period of
political independence. It favours our supposition that
Middlesex was not a mere county or province of the East
Saxon kingdom, but that, in the division of the kingdom
of Alfred, while the county of Essex and part of Hertfordshire
were included in the Danegah, or Danish territory, London
and the rest of Middlesex were placed under the alderman of
Mercia. (Sir F. Palgrave, Rise and Progress of the
English Nation, p. 35.)

In fifty years the West Saxon princes sustained with
the Danes, London was repeatedly taken by that people.
The great struggle between Alfred and the Danish chief
Henry, the king of the Danes, London was besieged by
the Scandinavians, who, however, ultimately withdrew.

In the reign of Henry V., early in the year 1413, several
Wycliffites were seized in St. Giles's Fields by the king in
arms. Sir Thomas Wicliffe, whom they alleged was
an armed force. Treas-
surables purposes were imputed to them, and great many
others were put to death. In the reign of Henry VI., 1450,
London was seized by the insurgents under Wode, who
committed great excesses, but after a sharp struggle was
driven out by the citizens. At the commencement of the
war of the Roses, a meeting of the leaders on both sides
was held at London, with a view to a reconciliation, and a
compromise was established.

In 1462 the Earl of Warwick, the founder of the house of
Seymour, was defeated in battle at Towton, and was
killed. The war of the Roses continued, and the Earl of
Northumberland took the field for his rival Henry of
Bolingbroke, afterwards Henry IV.

In the reign of Henry V., the town of London was
besieged by the Danes, and the citizens were driven
out of the city, but were able to hold the Tower, from
which they were able to hold the city. The citizens,
however, were not able to hold the town, and were
forced to surrender.

In the reign of Henry VI., however, the citizens
were able to hold the town, and were able to maintain
their position. The town was taken by the Earl of
Warwick, but the Earl of Northumberland was able to
hold the Tower, and was able to hold the city.

In the reign of Henry VII., the town of London was
seized by the citizens, and the Earl of Warwick was
able to hold the Tower, and was able to hold the city.

In the reign of Henry VII., the Earl of Warwick was
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In the reign of Henry VIII., the Earl of Warwick was
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able to hold the Tower, and was able to hold the city.
The amount expended was—
For the relief of the poor  
£647,013 6s.
In suits of law, removal of paupers, &c.  
19,915 15
For other purposes  
336,599 18
Total money expended  
1,003,888 19

In the returns made up for subsequent years the descriptions of property assessed are not specified. In the years 1834, 1835, 1836, 1837, and 1838, there were raised 939,896 6s., 754,660 17s., 641,378 15s. (not stated in tables for 1837), and 573,106 15s.; respectively, and the expenditure of each year was as follows:—

1834. 1835. 1836. 1837. 1838.
£  £  £  £  £
For the relief of the poor.  386,412 490,041 16 409,927 360,891 308,776
In suits of law, removal of paupers.  20,427 14,685 3 12,205 9,384 7,715
Payments towards the county-rate.  61,588 10 66,154 not given. 71,500
For all other purposes  175,042 171,741 172,469 165,469
Total money expended  494,157. 700,600 3,543,793 627,730

The saving effected on the sum expended in 1838, as compared with that expended in 1834, was therefore 298,787½. 15s., or about 31¾ per cent; and the saving effected on the sum expended for the relief of the poor was 199,363½, or rather more than 34 per cent, as compared with the expenditure in 1834.

The number of turnpike trusts in Middlesex, as ascertained in 1835, under the acts 3rd and 4th Wm. IV., chap. 80, was 7; the number of miles of road under their charge was 158. The annual income arising from tolls and other compositions in lieu of statute duty was (in 1835) 95,744½. 14s., and the annual expenditure in the same year was as follows:—

£  s. d.
Manual labour  14,169 10 0
Team labour and carriage of materials  12,741 11 0
Materials for surface repairs  36,207 13 0
Land purchased  50 10 0
Damages done in obtaining materials  47 14 0
Tradesmen's bills  4,992 4 0
Salaries of treasurer, clerk, and surveyor  4,030 17 0
Law charges  1,505 2 0
Interest of debt  5,806 7 0
Improvements  4,506 19 0
Debts paid off  9,100 0 0
Incidental expenses  8,313 12 0
Estimated value of statute duty performed  26 5 0

Total expenditure £101,498 13 0

The county expenditure in 1834, exclusive of that for the relief of the poor, was 69,373½. 18s., disbursed as follows:—

£  s. d.
Bridges, building, repairs, &c.  2,831 17 0
Goals, houses of correction, &c., and maintaining prisoners, &c.  22,819 7 0
Shire-halls and courts of justice, building, repairing, &c.  1,943 4 0
Prosecutions  6,674 9 0
Clerks of the peace  1,782 9 0
Lunatic Asylums  1,631 4 0
Vagrants, apprehending and conveying  1,105 19 0
Constables, high and special  120 19 0
Coroner  1,524 12 0
Debt, payment of, principal and interest  26,190 0 0
Miscellaneous  2,740 3 0

Total expenditure 69,373 18 0

The number of persons charged with criminal offences in the three sepulchral periods ending with 1829, 1827, and 1834, were respectively 16,692, 19,883, and 24,963; making an average of 2387 annually in the first period, of 2840 in the second period, and of 3566 in the third period. The numbers of persons tried at quarter-sessions in each of the years 1831, 1832, and 1833, in respect of whom any costs were paid out of the county rates, were 202, 224, and 1180 respectively. Among the persons charged with offences, there were committed for—

1831. 1832. 1833.
Felonies  128 152 1094
Misdemeanors  74 72 86

P. C. No. 937.

The total number of committals in each of the same years was 1707, 1701, and 2977 respectively.

1831. 1832. 1833.
The number convicted were 293 342 1368
Acquitted  109 105 239
Discharged by proclamation 1305 1324 1370

In 1838 there were 3486 persons charged with crimes at the assizes and sessions in Middlesex. Of these 329 were charged with offences against the person, 264 of which were common assaults; 150 were charged with offences against property committed with violence, and 2740 with offences against property committed without violence. Of the remaining number 4 were charged with arson; 13 with forgery, and with uttering counterfeit coin; 11 with perjury, 27 for riot, and 84 for various other misdemeanours.

Of the whole number committed, 2578 were convicted, 625 were acquitted, 29 were not prosecuted, no bill was found against 246, and 10 were found insane. Of those convicted, 4 were sentenced to death, not one of whom was executed; the sentences against them being commuted to transportation for various periods: of the remaining offenders, 22 were transported for life, 2 for fifteen years, 86 for ten, and 707 for seven years. Sentence of imprisonment for 3 years, or above 3 years, was imposed on 7; 70 were imprisoned for 2 years, or above 1 year; 193 for 1 year, or above 6 months; and 1365 for 6 months or under: 126 were fined. Of the whole number of offenders, 2663 were males and 925 females; 919 could neither read nor write, 1818 could read and write imperfectly, 682 could read and write well, 7 had received superior instruction, and the degree of instruction of the remaining 62 could not be ascertained.

The number of persons qualified to vote for the county members, and registered, in 1837, was 12,817. Of these, 9485 were freeholders, 1065 leaseholders, 975 copyholders, and 1229 occupying tenants, being one in 106 of the whole population, and one in 29 of the male population twenty years and upwards, as taken in 1831. The number of electors that voted at that election was 9214, viz. 6739 freeholders, 730 copyholders, 809 leaseholders, and 936 occupying tenants.

This county contains 27 savings' banks; the number of depositors and amount of deposits on the 20th of November, in each of the following years, were as under:—

1836. 1837. 1838.
Number of depositors  50,857 56,709 61,543 68,697
Amount of deposits  4,190,309 4,653,920 4,710,350 4,944,320

The various sums placed in the savings' banks in 1836, 1837, and 1838, were distributed as under:—

Education.—The following is an abstract taken from the Education Returns laid before parliament in 1833:

Schools. Scholars. Total.
Infant schools  109
Number of infants at such schools; ages from 2 to 7 years:—
Males  3,065
Females  2,441
Sex not specified  3,226
8,722
Daily schools  2,152
Number of children at such schools; ages from 4 to 14 years:—
Males  49,931
Females  34,446
Sex not specified  8,051
92,488
Schools  2,261
Total of children under daily instruction  101,420

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Sunday-schools...3954
Number of children at such schools:

ages from 5 to 15 years:

Males...23,440
Females...23,225
Sex not specified...5,456

Total...52,121

If we assume that the population between the ages of 2 and 15 years had increased in the same proportion as the whole population since 1821, and that the whole population had increased from 1831 to 1833 in the same ratio as during the ten years preceding 1821, we find that the number of children between the ages of 2 and 15 residing in Middlesex in 1833 was 469,563. Only two Sunday-schools are returned from places where no other schools exist, where it may be said that all Sunday-school children in this county have opportunity of resorting to other schools also; but in what number or in what proportion duplicate entry of the same children is thus produced, must remain uncertain. Seventy-five schools, containing 11,329 children, which are both daily and Sunday schools, are returned from various places, and duplicate entry is therefore known to have thus far created. At a few of the schools there are some scholars twenty years of age. Making allowance therefore for these two causes, for uncertainty, it appears that not more than one-quarter of the children between the ages of 2 and 15 are under instruction in this county.

Maintenance of Schools.

The schools established by Dissenters, included in the above statements, are—

Schoths. Schoolers. Total.

Infant schools...380 530 81
Daily schools...107 9,256 184 23,277
Sunday schools...811 296 4,012

Total...113 10,107 809 73,416

The schools established since 1818 are—

Infant schools...7, containing 577
Daily schools...103 9,170
Sunday schools...150 27,689

Two hundred and thirty-eight boarding-schools are included in the number of daily schools given above. No school appears to be so vast as a Sunday school, where the parents 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 whose tenets we are here included Wesleyan Methodists, Roman Catholics, and Jews. Lending libraries of books are attached to 164 schools in Middlesex.

MIDDLETON, THOMAS, a celebrated dramatist in the reigns of Elizabeth, James I, and Charles I, the events of whose life are even less known than those of most of his contemporaries: indeed not a single circumstance is recorded respecting him by a writer of his own time; and excepting the fact that he was appointed chronicler to the city of London in 1620, mentioned by Oldys in his MS. notes to Langbaine, we are absolutely ignorant of his biography. He is supposed by Malone to have died in 1626.

The plays written by Middleton are very numerous: three of them, 'A Mad World, my Masters,' the 'Mayor of Quorn,' and the 'Roaring Girl,' are in Dodsley's Collection, and the rest can only be procured separately. The 'Roaring Girl' is extremely valuable, as giving a picture of London manners in the author's time; it is interspersed with much of the slang which we find in Beaumont and Fletcher's 'Beggar's Bush,' and is a very lively character, the notorious Moll Cutpurse, who was introduced by Nat. Field, a contemporary dramatist, in his piece, 'Amends for Ladies.' A play of Middleton's, called 'The Witch,' has gained celebrity from the circumstance that Shakespeare is supposed by some to have borrowed from it his incantations in 'Macbeth.' Besides the numerous pieces by himself alone, Middleton assisted Rowley in 'The Change,' 'The Spanish Gipsy,' and 'The Fair Quarrrel,' and both him and Massenger in 'The Old Law,' he also joined with Fletcher and Jonson in the composition of 'The Widow,' which is printed in Dodsley.

Middleton does not hold the first rank among the dramatists of his day. His two best known plays, 'A Mad World,' 'my Masters,' and the 'Roaring Girl,' are chiefly marked in a bustling variety of plot, a succession of incidents somewhat extravagant, and a familiarity with low life. He was borne valued by his contemporaries, as is proved by his being chosen as the champion of such men as Jonson and Massenger.
The usual time of 1092.)—1. For bringing to the city of London with excessive charge and greater difficulty a new cut or river of fresh water, to the great benefit and inestimable present and future profit. 2. For gaining a very great and spacious quantity of land in Bradmg Haven in the Isle of Wight, out of the bowels of the sea; and with banks and pyles and most strange defensible and chargeable mountains, fortifying the same against the violence and fury of the enemy and the like. 3. For furnishing manufactory, bus. skill, exceeding industry, and no small charge, in the county of Cardigan, a royal and rich mine, from whence he hath extracted many silver plates, which have been coined in the Tower of London for current money of England. We have in our November, 350, 1655, (Misc.) on the 18th of November, 1636, Charles I., re-granted to Sir Hugh the whole of King James's shares for an annual rent of 500l.

Middleton is supposed to have died soon afterwards, leaving a numerous family in very indifferent circumstances.

The springs near Ware are beautifully clear and very copious; but, a great many years ago, the supply having been found inadequate to the demands of the increased population, the New River Company entered into an agreement with the Commissioners of the Lee River to take a portion of the Lea at Ware, which was conveyed at first through pipes, but some years afterwards it was agreed that there should be an opening made of six feet by two, which is called the Apnal. Through this, the water runs into the Lee River, and has done so for a great number of years; but an ample supply having been obtained from the Lea, it is presumed that the New River Company made no objection to the Annwell spring being turned from its original course, and the time however when it was done is not certainly known.

The fall of the New River is three feet per mile, which gives a velocity of about two miles an hour. The average width is about 21 feet, but at the south end it reduces to 74 yards. The whole width is about 130 feet in the centre; so that, taking it at half the depth, there is a section of forty-two square feet flowing to London at the rate of two miles an hour. At the Sluice, near Highbury, the river is dammed back to the height of twenty inches, at Enfield to two feet four inches, and there are three or four more similar interruptions for the purpose of checking the current. This has been done because the Commissioners of the Lea complained that the New River Company, by enlarging the bridges and taking off the banks of the river to bring it more closely to London, took away water that they were legally entitled to. They could take one-third more if they had the right; but not having enough, they have erected a steam-engine at Broken Wharf, which pumps up an additional supply from the Thames, pouring it directly into the Lea, so that this railway which runs into the Lee River, and has done so for a great number of years; but an ample supply having been obtained from the Lea, it is presumed that the New River Company made no objection to the Annwell spring being turned from its original course, and the time however when it was done is not certainly known.

Middleton married soon afterwards, and resided for a short time in the Isle of Ely on a small living in the gift of his family. A misfortune of the situation induced him to return to Cambridge as the end of the year.

When George I. visited the University of Cambridge in 1717, Middleton, with several others, was created Doctor of Divinity; but Bentley, who was Regius Professor of Divinity, refused to confer the degree unless a fee of 500 guineas was given to him in addition to the broad piece which was the antient and customary compliment on this occasion. This demand was resisted by Middleton, who however at last consented to pay it, on condition that the money should not be restored if it should be determined that it was an illegal demand. Middleton sued Bentley for it in the vice-chancellor's court; and Bentley, refusing to pay the money or to acknowledge the jurisdiction of the court, was deprived of his degrees by a grace of the senate, October 17, 1718. (Bentley's Apology.) At this time the government had so few at their disposal, according to an old writer, that 'at this time they have purchased Tottenham mill, together with fifty acres of ground, that they could convert into a reservoir.'

The New River, especially in winter, is occasionally rendered dirty by drainage from the land and villages along its course, and the company have been at great expense to purify the water before it is delivered to the inhabitants of London. For this purpose two settling reservoirs were formed at Stoke Newington in 1832, under the direction of Mr. Mylne, the Company's engineer. The water covers an area of about 3 acres. 2736 yards, and twelve feet on the average. A part or the whole of the New River can be turned into the upper reservoir, where it settles, and is then drawn off by a steam-engine, and poured into the lower reservoir, where another settlement takes place, and the water is then turned again into the channel of the New River. Bathing in the New River is now entirely prohibited; and men called walk-men mow the bed of the river every week to keep down the weeds. The reservoir is 2000 feet by 300 feet, lying two miles from each other, where the weeds are taken out.

The capital of the Company has been stated by themselves to be 1,938,425l., divided into 72 shares, or 14,425l. per share. We subjoin a short table founded upon a 'Report on the Metropolitan Water Works,' by T. B. Houghton, Esq., in August, 1834; by which it will be seen that the New River furnishes almost as much as the other seven companies united, supplying 70,145 houses (including large manufactories, breweries, &c.) with 16,905,000 gallons of water daily, at the average rate of 241 gallons per day to each house, at an average charge of less than 1d. per day. Each day.

Manufactures, &c.) with 16,905,000 gallons of water daily, at the average rate of 241 gallons per day to each house, at an average charge of less than 1d. per day. Each day.

Manufacturers, brewing, &c.) with 16,905,000 gallons of water daily, at the average rate of 241 gallons per day to each house, at an average charge of less than 1d. per day. Each day.

**Note:** The average daily charge on each house is not precisely 1d., but the table shows that the company has reduced it to a very reasonable amount by their efficient management.
master of the court, and paid by Trinity College, amounted to 150l.

In this matter was pending, Bentley published Proposals for a new edition of the Greek Testament, with a specimen of the intended work. The proposals and specimens were drawn up by candle-light one evening, according to Bentley's own confession; and the whole sheet bore marks of haste. Middleton was aware of himself the opportunity which the carelessness of his great enemy had afforded him, and accordingly published a severe critique upon it, in a pamphlet entitled Remarks, paragraph by paragraph, upon the Proposals lately published for a new edition of the Greek Testament; and followed up his attack by 'Some further Remarks a few weeks afterwards. Although Middleton professed in the commencement of the pamphlet, that his reflections were not drawn from him by personal spleen or envy to the author of the Proposals, but by a serious conviction that he had neither talents nor materials proper for the work he had undertaken, and that religion was much more likely to receive detriment than service from it, he nevertheless condescended to lowest abuse his antagonist; but it must be allowed that in this respect he was hardly a match for the master of Trinity.

As Middleton had been put to great expense and trouble by his recent prosecution, his friends in the university, regarding him as a principal librarian, while paid in a position of distinction among men, accordingly established a new office of principal librarian, to which Middleton was elected notwithstanding the violent opposition of the vice-chancellor. Short time after his election, he published a prospectus for arranging the university library, which was entitled Bibliothecum Cantabrigiensis Ordinatum Methodo quaedam, 1723; in the dedication of which to the vice-chancellor he expressed himself in a manner which appeared to call in question the jurisdiction of the Court of King's Bench; for which he was again prosecuted by Bentley, and condemned to pay a fine of 100l.

Having lost his wife shortly after this, he travelled on the Continent, and spent some months in Rome in 1724. On his return, he again sought the suit against Bentley for the recovery of the four guineas, which at length paid the money to Middleton in 1725. In 1726 he published a short treatise De Medicorum apud veteres Romanos degentium Conditione Dissertatio; qua &c. servilium agrus ignotis eam fines sustinendi, which was considered an insult upon the whole medical profession. Several pamphlets were published in answer to it, to which Middleton replied in the following year.

In 1728 was published his celebrated Letter from Rome, in he which he attempted to show that the religion of the present Romans was derived from that of their heathen ancestors, and that in particular the rites, ceremonies, dress of the priests, &c. in the Roman Catholic church were all taken from the pagan religion. This work was received with the greatest favour by the learned, and went through four editions in the author's life-time; but the free manner in which he attacked the miracles of the Roman Catholic church gave offence to many divines of his own communion, who suspected and maintained that the author had as little respect for the miracles of the apostles as for those of the Roman Catholic saints. This suspicion was confirmed by his next publication in 1731, which was a letter to Dr. Waterland, containing some remarks on Waterland's reply to Tindal's attack upon revealed religion, in a work written by the latter, which was entitled Christianity as old as the Creation. This letter, which was first published anonymously, but was soon known to be written by Middleton, gave the greatest offence to the clergy. Pearce, bishop of Rochester, replied to it; and so strong was the feeling against Middleton, that he was nearly deprived of his deanship, and nearly degraded from his office of public librarian. Finding it necessary to make an explanation of his sentiments, Middleton published, in 1732, Some Remarks on a Reply to the Defence of the Letter to Dr. Waterland, wherein the Author's Sentiments as to all the principal points in dispute are strenuously defended, in which he expressly asserted his belief in Christianity, and his design and intention of attacking the evidences of revealed religion. It must however be admitted that Middleton had spoken of the Scriptures in a manner that was calculated to give just cause of offence; and there is abundance of evidence in his writings to prove that he regarded Christianity as surely any other light than a republication of the law of Moses, and that he was unfavourable to the descent of the divines in Germany, to reduce as far as possible everything supernatural in the Bible to mere natural phenomena. He expressly maintained that there were contradictions in the four evangelists, which could not be reconciled (Reflections on the Passages found in the Four Evangelists), and accused Matthew of wilfully suppressing or negligently omitting three successive descents from father to son in the first chapter of his Gospel (Works, vol. ii., p. 24, 4to ed.); and some of his other opinions in their applications of prophecies relating to Christ were erroneous. In 1734, he considered the 'story of the fall of man as a fable or allegory' (Works, vol. ii., p. 131); and with respect to the prophecy given at the fall, that the seed of the woman should bruise the serpent's head, he did not hesitate to declare, in another part of his works (vol. iii., p. 235), 'that men who inquire into things will meet with many absurdities which reason must wink at, and many incredibilities which faith must digest, before they can admit the sort of this in a justification of the evidence of the historical narrative.' Such being the opinions of Middleton (and passages of a similar nature might be multiplied to almost any extent from his works), it cannot excite surprise that he should have been regarded by his brethren with the greatest suspicion, and that he should be looked upon, notwithstanding his assertions to the contrary, as a disbeliever in the fundamental doctrines of Christianity.

While these discussions were going on, Middleton was again selected for a professorship of natural history, which had been recently founded by Dr. Woodward; which office he filled only about a year, and then he resigned in 1734, and soon after married again. In the following year he published A Dissertation concerning the Origin of Printing in England, showing that it was first introduced and practised by William Caxton at Westminster, and not, as is commonly supposed, by a foreign printer at Oxford. In 1741 he published by subscription his most celebrated work, The History of the Life of M. Tullius Cicero, Lond., 2 vols. 4to. There were about 4000 copies sold at their first impression, but the sale was so considerable, as to enable Middleton to purchase a small estate at Hildersham, six miles from Cambridge, where he chiefly resided during the remainder of his life. Middleton's Life of Cicero is written, like all his other works, in a graceful style, but the strong bias of the author in favour of his hero has frequently led him to become the panegyrist of very questionable actions, and even to misrepresent, perhaps not intentionally, the character of his favourite. [Cicero's Life.]

Dr. Bentley was appointed librarian, but was not admitted. Two years afterwards, Middleton published a translation of Cicero's letters to Brutus, and of Brutus to Cicero, with the Latin text, and a preface, in which he defended the authenticity of the epistles against the objections of Tunstall, who maintained that they were the compositions of some sophist. The arguments of Middleton were combated by Dr. H. Erskine, his Remarks on the Epistles of Cicero to Brutus, and of Brutus to Cicero, in a letter to a friend. (Cicero's Life.)

In 1745 he published Germania quaedam Antiquitates erudita Monumenta, &c., in which he gave an account of the various specimens of ancient art which he had collected during his residence at Rome. In the following year he published his Treatise on the Roman Churches, and his account of those churches is supposed to have subsisted in the Christian Church from the earliest ages, which was followed in 1749 by A Free Inquiry into the Miraculous Powers. &c. This work gave even more offence than his letter to Dr. Waterland: it was attacked by Dodwell and Bosworth-Chapman; and was generally condemned by the clergy as tending to destroy the authority of miracles in general. Middleton however disclaimed all such intention; and it must be allowed, that whatever may have been his private opinions, he does
not in this work advance anything which could fairly be
construed into an attack upon revealed religion; perhaps
the title itself is misleading. The
object of the 'Free Inquiry' was to place the divines of his
own church in the awkward predicament of either denying
the authority of the fathers altogether, or else of admitting
the truth of the low-church doctrines of the Roman Catholic
Church, which he maintains to be satisfactorily established
by the testimony and miracles of the early fathers.

Edward Gibbon, who was then a young man at Oxford, chose
the latter alternative, and went over to the Roman Catholic
Church sooner than abandon the authority of the fathers.

Great.

In 1750 Middleton published 'An Examination of the
Bishop of London's (Dr. Sherlock) Discourses concerning the
Use and Intent of Prophecy,' in which he maintained that
the use of prophecy, as taught and practised by
Christ and his Apostles, was drawn entirely from single and
separate predictions, gathered by them from the books of
the law and the prophets, and applied, independently of
each other to establish the Messiahship of Jesus, and that
there was no foundation for Dr. Sherlock's argument that
the prophecies of each age were intimately connected
with each other and with those of the preceding age, and
that the whole formed one connected series from the time
of Adam to the Messiah. On the 25th of July, 1750.

He accepted, shortly before his death, a small living from
Sir John Frederick. His subscription to the thirty-nine
articles and the canons of the church on that occasion was
by the church, but as only or not it is difficult to say, as hypocritical and
insincere.

The works of Middleton, with the exception of his 'Life
of Cicero,' were collected and published after his death in
four volumes, 4to. 1792, and subsequently in five volumes,
svo. Several treaties appeared in this collection which had not been published before, of which the most important are:
A Preface to an Intended Answer to all the Objections
made against the Free Inquiry; *Some cursory Reflections
on the Behaviour of the Bishops of England in their
extent to the doctrine of the Evangelist, and the
coronation of the Heretic; and
'An Essay on the Allegorical and Literal Interpretation
of the Fall of Man.

MIDDLETOWN, THOMAS FANSHAW, D.D., the first
English bishop of Calcutta, was the only son of the Rev.
Thomas Fancies, of Fancies, who were of such
ancestry that there was a tradition that he was born at that vil-

In 1779 he was admitted into Christ's Hospital, London, and
from whence he proceeded to Pembroke Hall, Cambridge,
where he took his degree of B.A., with honours, in Jan.
1787. He then entered upon the curacy of Gainsborough, in Lincolnshire.
Here he edited a periodical work, entitled the 'Country
Spectator,' which continued to appear for about seven
months, and most of the papers in which were written by
Mr. Middleton himself. In 1794 he became tutor to the
sons of Dr. John Pretomy, archdeacon of Lincoln,
and brother of the bishop. In consequence of this appointment
he removed, first to Lincoln, and afterwards to Nor-
wich, where he became curate of St. Peter's Mancroft in
1779, having already, in 1755, been presented by Dr. Pre-
tym to the rectory of Tansor, in Northamptonshire.

In 1791 he married Elizabeth, the eldest daughter of John
Maddison, Esq., of Gainsborough. This lady not only brought
herself a good income of her own, and helped him to
assist him in his literary labours, by transcribing all
his manuscripts for the press. In 1802 Dr. Pretym
presented
him to the rectory of Bytham, in Lincolnshire.

About the year 1812 he was appointed by Dr. Prenty to
the rectory of Huntington. In 1811 he resigned his two livings for the
vicerage of St. Pancras, Middlesex, and the rectory of Rot-

MIDDLETOWN, in Hertfordshire. He fixed his residence at St.
Pancreas, and made the acquaintance of several dignitaries
of the church distinguished in this metropolis.

About this time a provision was inserted in the Act for
the renewal of the East India Company's Charter, enabling
the crown to constitute a bishopric in India. Calcutta was
proposed, and Dr. Middleton was ap-
pointed the first bishop, and consecrated by the archbishop of
Canterbury on the 5th of May, 1814. After receiving an
address from the Society for the Promotion of Christian
Knowledge, of which he was a warm supporter, requesting
him to aid in promoting the objects of that body,
and after being elected a fellow of the Royal Society, Bishop
Middleton sailed on the 8th of June, and arrived in Calcutta
on the 28th of November, after a voyage which he had
diligently employed in increasing his qualifications for his
future work, especially for the history of Hinduism. As
bishop of Calcutta he made every effort to promote the
interests of Christianity according to the tenets of the
Church of England, and to aid the cause of education.

He made three visitations of his immense diocese, in two of
which he directed his particular attention to the state of
the Syrian Christians in the neighbourhood of Cochin, on
the coast of Malabar. By his efforts the Bishop's College
at Calcutta was established for the education of clergymen
in the East Indies. As a bishop, Dr. Middleton
laid the first stone of its buildings on the 15th of
December, 1820. He instituted a consistory court at Cal-
cutta, and would have done the same at Madras, but for
the opinion of the advocate-general at Madras that such
a measure would be unauthorized.

Bishop Middleton died of a fever on the 8th of July,
1822, in the fifty-fourth year of his age. He was buried at
Calcutta, and the greatest respect was shown to his memory
both in India and at home. He was of a tall and commanding
person; animating in his manner; amiable and amiable in his disposition; and, in his religious prin-

The object of Bishop Middleton's work on the Greek
article is, first, to establish the rules which govern the use
of the article, and then to apply these rules to the interpre-
tation of various passages in the New Testament, many of
which he had not hitherto been called to give an opinion on.

Owing to this circumstance the doctrine of the Greek article has
become the subject of much discussion among theologians;
and some Unitarian divines have strongly attacked the
views of Middleton. His chief rules have however been
received as sound by the great majority of biblical critics.

A second and improved edition of Middleton's work was
edited by Professor Scholefield in 1826, and a third edition
by the Rev. Hugh James Rose, 1833. An abstract of the
work is prefixed to Valpy's edition of the Greek Testament.

MIDDLEWICH. [Cheshire.]

MIDHEAVEN (Astronomy), a technical term for the
point of the ecliptic which is on the meridian at any given
moment.

MIDIANITES (MIDIA). Mada'awira, Mada'awiya), the
descendants of Midian, the son of Abraham by Keturah (Gen.,
xxv. 4), who, with the other sons of Abraham's concu-
ines, migrated eastward from Canaan during Abraham's life
(Gen. xxvi. 6). In the time of Jacob their merchants
had caravans from Gilead through Palestine to Egypt (Gen.,
xxxvii. 29, 36). In the time of Moses we find them at
Arabia Petra, under the government of a high-priest
(Exod., ii. 15), and leading their flocks as far as Mount
Sinai (Exod., iii. 1); but they did not extend to the west of
the mountains. In the days of Job they encamped with them in their march from Egypt, but, on the contrary,
Jethro, their high-priest, came out of his country to visit
Moses, when the Israelites were encamped at the foot of
Sinai (Exod., xvii. 1-5; Num., x. 29).

They are next mentioned as living in the neighbourhood of the plains of Moab, to the east of the Dead Sea and the river Jordan,
where they suffered a defeat from the Edomites (Gen., xxxvi. 35), and where they again appear as allies of the Moabites when the Israelites arrived the second time on the borders of Palestine (Numb., xxii. 4). Here they corrupted the Israelites with the licentious worship of their god Baal-peor, and were punished by a dreadful massacre (Numb., xxvi. xxxi.; Josh., xii. 21). This calamity however fell only upon a part of the nation, for they afterwards, with the rest, and to other eastern tribes, invaded the coun-
try of the Israelites, and destroyed the harvests, during seven successive years (Judges, vi. 1-3, 33). At last Gideon (Judges, vii. 11) defeated the Midianites and Amalekites in their passes, routed them near the mountains of the Jomtha, (Judges, vi. 33; viii. 7). In the time of Isaiah, the Mi-
dianites were still known as a commercial tribe (Is., ix. 6), but their name afterwards merged in that of the Arabians.

The exact country of the Midianites is not determined with certainty. Some indeed supposed that those in Arabia Petraea, mentioned in Exodus, ii. 15, were quite a different nation from those on the east of Palestine, the former being related to the descendants of Cush (Numb., xii. 1; Hab. iii. 7). But the more common and more probable opinion is, that the Midianites were the Arabian nomads tribe, of the possessions extended from Mount Sinai and the head of the Red Sea up towards the plains of Moab, while there may have been other bodies of them in the western part of Ar-
abit (I Kings, xi. 19). The Arabic geographers Abulfeda and Ibn Khaldun place a Midian town near the Atlantic Gulf of the Red Sea, somewhat to the north of the modern Mohilah, which is probably the Jumam of Ptolemy (v. 17) and the Maalach of Josephus (Ant., xii. 11). The ruins were to be seen in the time of Rusebus and Jerome.

The Midianites were governed by their elders (Numb., xxii. 4), and by chief or kings (Numb., xvix. 18; xxxii. 8; Judges, vii. 25; viii. 3, 5). When they invaded Palestine they were numerous, they possessed many camps, and had acquired great wealth, probably by commerce (Judges, vi. 5; vii. 12; viii. 10, 24; Is., ix. 6). Their reli-
gion was the worship of Baal-peor. [Baal.]

They are twice called Ishmaelites (Gen., xxxviii. 29; Judges, vii. 25), and once Ismaelites (Numb., xi. 10), all three terms being equivalents with the Arabians. (Relands, Palestina, 98; Winer's Bi-
blisches Realwörterbuch.)

MIDSHIPMEN are young gentlemen ranking as the highest of the first class of petty officers on board a ship of war: their duty is to pass the seaman to the business. By the rate of the captain or other superior officer, and to superintend the performance of the duties so commanded. They are edu-
cated for their profession at the Royal Naval College, and are required to pass four years at sea before they can be rated. Such are appointed by the special authority of the Lords Commissioners of the Admiralty are denomi-
nated Admiralty midshipmen.

By the regulations of 1833, the whole number allowed to be promoted to the rate of a midshipman varied according to the rate of the latter; a sixth-rate ship may have eight, and a first-rate may have twenty-four midshipmen. And, on a ship being put in commission, the captain or commander may select them from the Royal Naval College, subject however to the approbation of the lords of the admiralty.

Should there be more Admiralty or College midshipmen than can be provided for, their lordships may give appoint-
ments, as extra midshipmen, to two at most for any one ship; and should the number be equal to the number of seamen, and they are included in the complement of mid-
shipmen when vacancies occur.

The monthly pay of an officer of this class is 21. 5s. for all rates.

MIDWINTER EVE. On the eve of the feast of the Nativity of St. John the Baptist, or Midsummer-day, it was long the custom to kindle fires at midnight, sometimes upon the hills, in honour of the summer solstice; or a practice which Gebelin, in his 'Allegories Orientales,' says was fol-
lowed by the inhabitants of certain nations. In later times these fires were sometimes called St. John's fires; and they are still lighted in Ireland. The 'Times' newspaper of June 29, 1833, contains an account of a riot at Cork in consequence of an attempt to substitute for sunflowers a fire-towards the first which were to be lighted on St. John's Eve. (Grand's Popul. Antiq. 4th ed., vol. i, p. 328; Milner's 'Inquiry into certain Vulgar Opinions concerning the Catholic Inhabitants and the Antiquities of Ireland,' 8vo, Lond., 1808, p. 100; Vallancey, Collect. de Rebus Hibern. No. i., p. 123.)

MIEL, ANDREW (called Giovanni Dello Vite), one of the most eminent of the Flemish artists, was born in 1598. He studied under Gerard Segers, in whose school having highly distinguished himself, he went to Rome, where he especially studied and copied the works of Caracci and Correggio. On being received into the academy of Andrea Sacchi, he abandoned the dry and laborious study to which he had been accustomed, and declined the friendly proposal of Sacchi, and resolved to adopt the style of Bamboccio, to whom he was now inferior in force or brilliancy. His favourite subjects were holiday parties, carnivals, gipsies, beggars, and pastoral scenes and personages. We speak of his art as perceiving all his felicitous performances; but he likewise painted historical pic-
tures on a large scale, both in fresco and oil, which, though wanting in elevation of design and grace in the heads, are far superior to what might be expected from an artist whose works are generally much too minute. His characters, his figures of hunting-parties are particularly admired: the figures and animals of all kinds are designed with extra-
ordinary spirit and truth to nature; the colouring is beautifully transparent, and the tints of his skies are extremely clear and delicate. In the portraits of members of the royal family, Charles Emmanuel, duke of Savoy, who appointed him his principal painter, conferred on him the order of St. Maur,

Mieranis, Francis (called the Elder) was born at Leyden in 1633. This admirable artist was at first placed under the care of Abraham Torni Vicet, one of the best designers in the Low Countries; and after having made considerable progress under him, he became a pupil of Gerard Dout. He is said to have conversed with some con-
temporary artists, that Gerard Doux called him the prince of his disci-
iples. He excelled Doux in elegance, in correctness and brilliancy of colouring, and in the art of painting silk, velvet, satin, and other rich stuffs, and was nearly equal to him in finish. His works are generally much too minute, and are rarely sold, and their prices are very high. Besides portraits, he painted conversations, persons performing on musical instruments, patients attended by their physician, &c. His own portraits are so fine that his contemporaries, instead of the time he spent upon them, at the rate of a ducat an hour. His finest portrait is that of the wife of M. Cornelius Plas-
numerous copies of the works of his father and grandfather, and in the library and chapels of the convents there is a notable collection of such copies, which is sold at public sales as their performances. He is more distinguished as an historian, by his 'Historia der Nederlandsche Vorstten,' 3 vols. fol., The Hague, 1732-4; and 'Groot Charterboek der Graves van Holland, Zeeland, en Vriesland,' 4 vols., Leipzic, 1738. The palace of his native town Leyden was left unfinished, one volume only having been published.

He died in 1763, aged seventy-six.

MIGNARD, PETER (called the Roman), was born at Troyes in 1640. His name was properly More; but his family changed it to Mignard in 1667. He was at first intended for the medical profession; but as he manifested a decided talent for painting, his father placed him in the school of Jean Boucher, at Bourges, and afterwards that of Le Brun. Having seen some exquisite paintings of the Italian masters, he left his home and went to Rome, in 1636, to study after Raphael, Michael Angelo, and A. Caracci. He spent twenty-two years at Rome, during which time he painted many historical pictures and portraits, among which those of Popes Urban VIII. and Alexander VII. were the finest. In 1656 he was invited to Paris at the suggestion of Colbert, and, on his way through Italy, had the honour of painting the portraits of several of the Italian princes and their families. Peter Mignard died at Rome in 1713, and the court gave him for his portrait ten times, and gave him a patent of nobility; and after the death of Le Brun, appointed him principal painter, director of the Royal collections of the Academy of Painting, and of the Gobelin manufactories. Mignard was a great admirer of the style of Poussin, and of the French, the cupola of Val de Grace. He also adorned the great hall at St. Cloud with mythological subjects, undertook several works at Versailles, and painted numerous portraits. Though Mignard was a great master, which is seen in his work at Rome, in invention, elevation, depth of feeling, and originality, his pictures, especially his Madonnas, have much delicacy and grace; his compositions are rich; his colouring, in general, is brilliant and harmonious; and he understands the French style with his hundred and fifty compositions in the French school. He died in 1695, at the age of eighty-five.

Nicholas Mignard, Peter's brother, two years older, was a very respectable artist: he studied two years at Rome with Peter. He died at Paris in 1685, where he was director of the Royal Academy of Painting.

MIGUEL SAN. [MEXICAN STATES.]

MIHIEL. ST. [FRANCE.]

MILA'NO, THE PROVINCE OF, is bounded on the north by the province of Como, on the east by that of Bergamo, on the south by the Republic of Venice, and on the west by the provinces of Lodi and Pavia, and on the west by the Ticino, which separates it from the Sardinian territory. The province of Milan is entirely in the great plain of Lombardy, which is formed by the elevated alluvial tracts of the Po. Numerous canals, some for irrigation and others for navigation, communicate with these various rivers. The soil is in most parts fertile, and the country is well cultivated, full of large villages, farm-houses, and country-houses; and the appearance of prosperity is general. The chief products are corn, rice, fruit, grass for cattle, and silk. The population of the province, exclusive of the city of Milan, in 1837, consisted of 377,324 inhabitants, and is increasing every year. The province is divided into fifteen districts: Milan, Bergamo, Como, Crema, Cremona, Monza, Varese, Vercelli, Gorgonzola, Gallarate, Cuggiono, Busto, Arzio, Sonza, Melzo, Melegnano. The only town, besides Milan, is Monza, ten miles north-east of Milan, with about 16,000 inhabitants, and a fine old cathedral founded by the Legnano family; it contains several good paintings, and the portraits of all the sovereigns who have worn the iron crown of Lombardy, from Agilulfus, the husband of Theodelinda, to Charles V. The iron crown, so called, is preserved. Milan is the capital, a city of about 400,000 inhabitants, and the use of the nails from the cross of Jesus Christ is kept in the cathedral of Monza. The archives contain many valuable old documents, and some fine MSS. of the time of Pope Gregory I. Monza has also a handsome royal palace with gardens, and a famous abbey of Cistercians, fragments of several ancient MSS. of Marcus Aurelius and Frontinus, and other valuable remains of ancient literature. The library of Brera contains 100,000 volumes, and is open to the public. Among the private libraries, that of the marquis Trivulzio contains 96,000 printed volumes and 2000 MSS. of the campaign of 1797, and during the negotiations which preceded the peace of Campoformio. It was at Montebello that he decreed the destruction of the Republic of Venice. The roads in the province of Milan are numerous, wide, and kept in excellent repair.

MILANO, the capital of Lombardy, and the third city of Italy, being surpassed in population and importance, stands in the middle of a triangular area, between the rivers Olona and Lambro, with which it communicates by a canal calledNaviglio Grande, which flows all round the original old town, of which it marks the boundary, and is divided into two parts by a line of ramparts, which is planted with trees, and serves as a promenade. This external circuit of the town is nearly ten miles. Much of the space however between the Naviglio and the roads is built upon, and is occupied by gardens and fields. The population of Milan, in 1837, was 145,387. (Bollettino Statistico.) In 1770, when the abbé Richard wrote his tour, it did not amount to 100,000. In 1610, under Napoleon, it was 132,000. In 1797, it contained 1,029,560 inhabitants, since which time it has been increasing yearly. The widest and finest streets of Milan are in the external part of the town, or suburbs: those which lead to the principal gates are called Corso, and serve as fashionable promenades. The Corso Sempione is the most frequent, and is the most frequented. The streets of the old town are mostly narrow and irregular. The duomo, or cathedral, stands nearly in the centre of the town, and its lofty spire, which is in the Gothic style, serves as a directing point to strangers. This magnificent church, all of white stone, and dedicated to the Virgin Mary, was begun by Giovanni Galeazzo Visconti, duke of Milan, in March, 1386, and is not yet quite finished. The exterior, at least, is in a magnificent style, and its height, with its various sizes, looks like a forest of marble. The style of architecture is a kind of florid or modern Gothic; the front is of a mixed style. The interior is vast and imposing, and not loaded with ornaments. There are 520 steps to ascend, in order to reach a gallery which runs round the principal spire, from which there is a most splendid view of the whole Lombard plain, and of the chain of Alps which borders it in the form of a crescent on the north side. The churches of Milan abound with fine paintings: the famous Museo di San Vincenzo was the first public museum and is the former convent of Santa Maria delle Grazie, though sadly injured, is not yet quite obliterated.

Milan is a gay, thriving, modern city: its markets are splendidly supplied, and the manufactures of silk are generally fond of good living. Numerous coffee-houses, splendid hotels, abundance of handsome carriages, elegantly dressed pedestrians, several theatres well supplied with actors and singers,—all attest the habits of a luxurious capital. Milan has been styled 'the little Paris;' and the appellation is appropriate, for it resembles that capital rather than the other Italian cities. But Milan is also a centre of learning: it is the place of residence of several of the best Italian writers, and more books are published yearly in Milan than in all the rest of Italy. Genoese, Roman, and Monti made Milan their habitual residence: Manzoni, Grossi, Sacchi, and other living writers still reside in it. The fine arts are successfully cultivated at Milan, as the exhibition of the works of living artists proves. The engravers are: Agostino Redentori, and others rank among the first in Italy. The museum of Brera contains several excellent paintings of the great masters; among others the Agar of Guercino, the Marriage of the Virgin by Raphael, and St. Peter and Paul by Guido. The Ambrosian library is well known for its numerous and valuable MSS, and especially for its palmipests, derived from the monastery of Bobbio, and among which Mal discovered the treatise 'De Republica' of Cicero, fragments of seven books of Tacitus, and parts of Marcus Aurelius and Frontinus, and other valuable remains of ancient literature. The library of Brera contains 100,000 volumes, and is open to the public. Among the private libraries, that of the marquis Trivulzio contains 96,000 printed volumes and 4000 MSS.
MIL

Milan abounds with charitable institutions. The great hospital, one of the finest and largest in the world, has been richly endowed by numerous benefactors, whose portraits are preserved within it. A singular but harmless distinction has been observed in these portraits. Those benefactors who have contributed below a certain sum are represented standing, whilst those whose donations or legacies have been more considerable are placed sitting comfortably at their ease. Four houses of refuge for poor children are supported by public contributions. Two large workhouses for the unemployed poor have been established for late years, as well as a house of correction for criminals, who are afterward employed in manual labour, and so irreparably well regulated. (Bollettino Statistico di Milano, January, 1833.)

Milan has a savings' bank, the deposits in which are between five and six millions of livres, or above 200,000l. sterling, an insurance company, a military college, a veterinary school, a conservatory or school of music, and a school of the fine arts. For general education, there are two royal colleges or Lycees, three gymnasia, a clerical seminary, and three colleges or houses for female education. The elementary schools are noticed in the article Lombardo-Venetian Kingdom. The Society of Arts and Sciences bestows annual prizes for inventions relating to agriculture and manufactures.

The manufactures of Milan are of some importance: there is a good deal of silks, printed cottons, plate from iron and brass, crystal, glass, jewellery, artificial flowers, braid, soap, and leather.

Milan is an architect's see, the residence of the Austrian vicerey and of the governor-general of the Lombard provinces. It has a court of appeal, a tribunal of private instances for civil and criminal matters, and a commercial tribunal, called 'Tribunale mercantile e di Cambio.'

The public gardens, the ramparts, the great parades, which connect the old part with the new, are several acres, planted with trees which lead from the gates in various directions, afford pleasant walks and rides. The climate of Milan is hot in summer, but occasionally cold and foggy in winter: it is however considered healthy.

The city is commenced, built in the time of the French dominion, for the exhibition of chariots and horse races, bull-fights, and other games, is of an oval form. The arena, which is about 800 feet in length, can be filled with water, and be transformed into a naumachia for boat races.

The Duomo and La Scala theatre have so completely absorbed the attention of travellers, that few of them have done more than barely mention any of the other edifices, notwithstanding the Milan contains several buildings which deserve some amount of their architecture. Even Wood, in his 'Letters of an Architect,' speaks only of some of the older churches, scarcely naming any one building besides, or any work of the last or present century, the theatre of La Scala, and the belle Piazza del Duomo. In fact that place is properly, without the imposing grandeur of some of the older palaces, or private mansions, and the elegance of some of the modern ones, neither the one nor the other have been described, or rather they have scarcely been named; and yet among the former are the Palazzo Arconvescovile, with its façade of simple grandeur, the Palazzo Visconti, remarkable for the series of large busts on the pediments of the principal floor windows; the Palazzo Annone, by Francesco Rochester, in a rather peculiar yet majestic style; the Palazzo del Marchese Marchesi, which is new and modern, and which deserves some amount of its architecture.

There is some peculiarity in the plan of the Arco della Pace, there being a transparent passage through it from end to end, as in the Arco de l'Etoile, built with the piers separating the larger arch from the one on each side of it, owing to which the external sides or ends of the structure have the expression of greater solidity. At each angle of the arch is a bronze equestrian statue of Vittorio, about thirteen feet high; and on the side towards the city the centre is crowned by a colossal figure of Peace (modelled by Sangiorgio, and cast in bronze by Luigi and Antonio Manfredini) in a car with six horses. Further than this model of the five-horse chariot, and various other sculptures and reliefs that so worthily adorn this magnificent work.

Milan, under the name of Mediolanum, was a town of the Lombardii, and the capital of the region of Mediolanum, or Polus (b. xi.). It was taken by the consul Marcus Aemilius and C. Cornelius Scipio, b.c. 221, and it is said in history of Milan afterwards until the third century of our era, when Maximian, governor of Dacia, fixed his residence at Milan with walls,
which were two miles in circumference, and when then enclosed to occupy the area of the town till the time of Frederic 1. in the twelfth century. Valentinian II., Theodosius I., Honorius, and other emperors of the fourth and fifth centuries, resided occasionally at Milan. At the fall of the Western empire, Milan was twice devastated, once by Attila, and afterwards by the Goths under Vitiges, a.d. 539, and it did not recover from their ravages for several centuries. Attila is said to have been defeated at Pavia, and Milan is little noticed in history during their dominion. It remained in obscurity till the latter part of the ninth century, when, under the reign of the emperor Charles the Fat, the archbishop Anspertus restored the whole country individually, subject to Milan to the inhabitants. From that time Milan recovered, and grew in population and wealth, and became gradually the principal city of Lombardy. The remainder of its history is given under Lombardy and Lombard Curtiss.

The present city of Milan has no claims to classical antiquity, the only solitary remains of Roman construction being sixteen handsome fluted pillars near the church of S. Lorenzo, which are supposed to have formed part of a temple dedicated to Hercules by the

The history of Milan has been written by Corio, Ripamonti, Calco, Giulini, and lastly by Verri, who is the most critical and enlightened of the native historians,' Storia di Milano,' with a continuation by Custodi, 4 vols. 8vo., 1825. A remarkable work of history of Milan is the Epitome di Storia Comparativa by G. Tavella, published in 1745. A new and improved edition has been published in 1825. A series of memoirs on the natural history of Milan and its vicinity, with particular buildings and other subjects relative to this important city. See also the Plan of Milan, published by the 'Society for the Diffusion of Useful Knowledge.'

MILDEW is a disease which attacks both living and dead vegetable matter, and is believed by the vulgar to be owing to fogs, dew, meteors, and noxious exhalations, but in reality it is caused by the ravages of parasitical fungi. This malady is often of little importance to the subjects of its attack; but it is often a source of much annoyance to gardeners and agriculturists, who are most susceptible and most frequent causing the plants to be attenuated and often wholly destitute of food. It may be said that it is a prevalent disease which attacks the plants of the vegetable kingdom. The species of fungi which produce these effects are always very minute, and often of microscopic smallness. Some are intestinal, attacking plants internally, and only becoming visible when they break through the surface of the ground; by degrees a loss of reddening their spores; others are superficial, rooting and fructifying upon the surface of the epidermis. These two classes of mildew fungi require to be carefully distinguished.

Of the intestinal fungi the following are the more common:

1. Uredo festiva, called the Pepper-brand. This plant attacks wheat, filling the young seed with its jelly-like mass, and producing myriads of rust brown spores, which are generally carried by the wind.
2. Erysiphe graminum, and other species of the same genus, which overrun the leaves of the mountain ash, the yew, and sarcocornia, &c., forming broad grey, orange, or brown blotches.
3. Puccinia secta, of Puccinia, the mildew of wheat, oats, and barley, is caused by Puccinia graminum, which is generated in cavities below the epidermis of the stem, and protrudes when ripe in the form of dull greyish-brown broken stripe. Puccinia Heraclei occasionally attacks crops of celery and endive, spreading over the field and producing the appearance of scorching.

4. Erysiphe aecidium occasionally occurs on the pear-trees in the orchards of Herefordshire. It appears at first like bright yellow spots, and eventually becomes fuscous, open at the sides by numerous slits, and thence discharge their spores. This fungus often produces the most destructive consequences, appearing upon the leaves, stems, and fruits, and generally destroying the tree. Another species of Erysiphe aecidium sometimes spreads over hawthorn hedges; and the common orange-red mildew of the Berberry is Erysiphe Berberidis.

5. Sclerotium, a hard kernel-like fungus, is a less common but sometimes a very destructive one. It is described under Erysiphe aecidium occasionally establishes itself in the form of fruits, rendering them uneatable; S. Cyparissie and others attack the leaves of various plants, particularly of the pear-tree.

In all these cases it is usually found that the most vigorous specimens of a plant are most affected, and this especially in the case of Uredo and Puccinia; and it is probable that the spores from which these plants are propagated are drawn into the circulation from the soil, along with the fluid matter on which plants feed; that they are carried along into the stem, and begin to grow as soon as they find themselves in a suitable situation, disturbing and disorganising the tissue by the production of their spawn, and taking to themselves that nourishment which would otherwise have been applied to the general maintenance of the plant attacked. Mr. Baur and Mr. Knight have been led by research to show that wheat produces the Uredo festiva by rubbing its grains with the spores of that fungus previous to their being sown; and Mr. Knight ascertained that by sowing pear-seeds in land infected with the Erysiphe, the very youngest leaves of the seedlings were attacked.

Of superficial fungi the following are the more remarkable:

1. Cylindrosporum concentricum, a pelurient species, which appears in dots ranged in a circular manner upon the leaves of the cabbage.
2. Aerosporium moniloides.—A frequent cause of the whiteness of leaves and stems in roses, &c. It consists of vast multitudes of filaments jointed like a string. Botryis diaphana, the muscina superciliius, whose filaments bear tufts or branches, covered with spores. These form the white mealy appearance of the leaves of onions and similar soft-leaved plants.
3. Erysiphe laricis, which forms the mildew of peaches. It consists of white cobweb-like spawn, radiating from a solid greyish spherical centre, filled with the spores of the species. Peach mildew is often caused by another of this genus, the E. panumosa.

The attacks of superficial fungi are generally brought on by the debility of the species attacked; and it is probable that unhealthy individuals only are suited to the growth of these parasites. This is like what occurs among animals, which, when healthy, are scarcely attacked by parasitical worms, but as soon as they become debilitated or diseased, they are frequently attacked by them. Heavy rains occurring suddenly after long drought are mentioned as a cause of this kind of mildew; and it may be supposed that the plants are debilitated by the dry weather, at which time the fungi seize upon them, and as soon as rain falls they grow with rapidity and quickly overrun the plants. It is said that deep-coloured roses and peaches are more liable to mildew than others; this may be referred to constitutional debility, for their colour is connected with a want of power to decompose carboxylic acid, which is one of the most indispensable of vital functions in the vegetable kingdom. Transplanted onions, which are less vigorous than untransplanted ones, are the most subject to mildew.

These causes of mildew being rightly understood, the methods of preventing the evil are sufficiently obvious. To cure intestinal mildew the soil should be neither too rich nor too freely watered, and every precaution should be taken to prevent the spores of the mildew-plants from being communi-
cation. At least a 24 E

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regard to destroying superficial mildew, a restoration of vigour or its preservation seems to offer the best chances of success. Mr. Knight prevented his pears from mildewing by watering them abundantly and constantly; in Scotland, where the climate is more equable than in England, and the nights are more on an even level, the method is unknown. The writer of this has seen a crop of onions, perspiring under the attacks of Botrytis cinerea, gradually restored to health by a constant supply of water. As to the schemes of stopping superficial mildew by the application of sulphur, quicklime, or tarsates, of similar substances, of which several have been recommended, it does not appear that any advantage follows their employment. When trees are attacked by superficial parasites, the best plan of removing the evil is by cutting off all the mildewed branches and destroying them, together with the shoots from which they may have been made use of in training the plants. Mr. Hayward recommends in addition that peach-trees, which are very liable to mildew, should be subsequently washed with a fluid consisting of 4 gallons of rain-water, 5 lbs. of soft soap, 1 lb. of flower of sulphur, 1 lb. roll tobacco, 1 quart of fresh-slaked lime, and 1 pint of spirits of turpentine, the whole boiled together for half an hour.

MILE. This word is derived from miles, the mille passus, or thousand paces, of the Romans. Each pace was five feet, and each foot certainly contained between 11·60 and 11·64 modern English inches. [STANDARDS OF LENGTH.] Taking the Roman foot at 11·62 English inches, the original Roman mile was therefore 1614 yards, or 1081 German feet. The English statute mile is therefore exactly one-sixth of the Roman mile — very nearly; while the English mile is a Roman mile and nine hundredths of a Roman mile.

The English statute mile is 8 furlongs, each of 220 yards, or 40 poles of 1·4 yards or 145 feet each. It is also 80 surveying chains of 22 yards each. It is therefore 1760 yards, or 5280 feet. The square mile is 6400 square chains, or 640 acres.

The remains of the Roman mile and the Gallia or Celtic league [LEAGUE] are found in the following measures of various nations. The following have been taken from Kelly's 'Cambist,' except the statement of the Roman mile, will show the itinerary measures of various countries, as they are usually reported in English yards and statute miles. We have placed them in order of magnitude. The last column shows in round numbers how many of each make 1000 statute miles:

<table>
<thead>
<tr>
<th>Miles</th>
<th>Stat. miles</th>
<th>No. in 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1614</td>
<td>1917</td>
<td>911</td>
</tr>
<tr>
<td>1629</td>
<td>1925</td>
<td>918</td>
</tr>
<tr>
<td>1760</td>
<td>2000</td>
<td>1000</td>
</tr>
<tr>
<td>1780</td>
<td>2027</td>
<td>1014</td>
</tr>
<tr>
<td>1798</td>
<td>2047</td>
<td>1024</td>
</tr>
<tr>
<td>1824</td>
<td>2077</td>
<td>1037</td>
</tr>
<tr>
<td>2240</td>
<td>2683</td>
<td>1241</td>
</tr>
<tr>
<td>4253</td>
<td>5062</td>
<td>2531</td>
</tr>
<tr>
<td>4653</td>
<td>5583</td>
<td>2791</td>
</tr>
<tr>
<td>4956</td>
<td>5845</td>
<td>2923</td>
</tr>
</tbody>
</table>

The metrical mile of 1000 French metres, or one kilometre, or 1693 English yards, is put down among the measures, or thousand paces, of the Romans. Each pace is 5 feet, and each foot certainly contained between 11:60 and 11:64 modern English inches. [STANDARDS OF LENGTH.] Taking the Roman foot at 11:62 English inches, the original Roman mile was therefore 1614 yards, or 1081 German feet. The English statute mile is therefore exactly one-sixth of the Roman mile — very nearly; while the English mile is a Roman mile and nine hundredths of a Roman mile.
has lengthened with the common estimation of the degree of latitude. Thus in the Gunter we find the degree described as 60 miles of 5000 feet each; though he certainly says (On the Cross-Stoffe, b. xi., cap. 6,) that by computation of observations, he thinks 350,000 feet nearest the truth. Even almost as late as the Revolution common works written for landmen describe the sea league as three Italian miles, which answers nearly to 15,000 feet. By the time of Dr. Bernard we find the sea mile described as 60 miles, or the preceding with a correction of 50 feet, 292); but this is in a work of science and authority: and Oughtred (before the date of Bernard’s book) says that it is ‘taken’ (or rather mistaken) that 60 statute miles make a degree. It is most likely that the sea league would in the first instance have been measured on a scale differing from the old by 15,000, or 244 statute miles, is almost the same as the length which different deductions will give for the old land league.

We now proceed to the main question, the length of the old English mile: premising that the utmost we can attempt is a clear proof that the old popular mile differed considerably from the modern mile. The gradual changes of this old mile (which the general history of itinerary measures makes it clear that many interchanged) and the invigoration of antiquarian authorities than mathematicians have been wont to make, and better estimation of their relative values in a mathematical point of view than antiquaries have hitherto been capable of making.

James Ogilby and D’Anville’s inquiries (Sir H. Ellis, Preface to Domestacy) that this old mile was somewhere about a statute mile and a half. This tradition is not to be relied on; for though in all probability it agrees with the truth, yet it may have arisen from another circumstance. James Ogilby in his map to the General Companion of 1675, under the title of ‘Britannia,’ with copious descriptions, and 100 copper-plates of the roads, in a large folio volume: the instrument used was called by him a „wheel-dimensionator,” and answers entirely to the pantograph in use. Various editions of this work were published, of which we have seen three, and D’Anville mentions a fourth. It is worth noting that this measurement, as compared with older ones, soon came into general use; thus in a little work for men of business, the pamphlet called The Traveller’s Daily Companion, London, 1684, we find a list of Ogilby’s distances from town to town, compared with those formerly adopted. The latter were called by Ogilby computed miles, and the meaning of this word might be doubted, but it is proved to mean miles in common use by previous publications. Thus in Samuel Morland’s „Description and Use of Two Arithmetic Instruments,” ·c., 1673 (two years before Ogilby’s publication), we find the distances called „computed” by Ogilby set down as the (supposed) real distances. D’Anville, in his map, has seen an edition of Ogilby (of which there is one at least) in which the word „computed” is always contracted into „com.” This he supposed to mean „common,” and the whole of his chapter on English itinerary measures (Miscelles Literature, 1824) is concerned in consequence be read cautiously, as he assumes it to be indispensable that there was a common mile in use at the Revolution, which was about a quarter longer than the statute mile. But on the authority of the silence of Bernard and others, we arrive to, we have seen, several different opinions, and must suppose that the computed miles preserved by Ogilby had been intended to represent the number of statute miles, but erroneously given.

The measures in Ogilby may of course be erroneous; but as they were certainly made with a sufficient instrument, and exhibit every appearance of care, and as in our country it is nobody’s business to alter what was measured in other times altered when a mile of road is saved in the middle of a line, we suspect strongly that a remeasurement would show our present distances to be too long.

The credit of the antiquaries’ tradition, which would otherwise be entirely lost, is endangered by a protest of origin, as above stated. We now come to another species...
evidence, the testimony of foreign writers. The new measures of any country found their way abroad but slowly and at the beginning of the seventeenth century, and we shall not be surprised to find foreign writers of the middle and end of that century varying from then existing measures in their statements. We shall first take the geography of Varennes, first published in 1630, and edited in 1672 by no less a person than Newton, then Lucasian professor. The concluding sentence of the preceding was followed by the same sentence to pass without comment:—Triplicia habent Angli milia: majora, quorum 274 equant gradum sive 19 Holandesia; medioqne quorum 50; minus quorum 60 vel 55. Now the mile of Varennes is described as containing 10,000 Rhodes and feet, each of which, according to Dr. Bernard, is 1'033 English feet. Whence it may be deduced that the three miles described as English by Varennes severally contain 243,133, and 111 statute miles (twice 60 and 5'5') to be 60. We have no doubt that Varennes has here got hold of the leuca, the old mile or half the leuca, and the modern statute mile, which, being not sixty years old when he wrote, was not, though the contemporary legal measure, more accurately known than the others. Again, Osmann in his 'Mathematical Dictionary,' A.D. 1691, makes the English mile a quarter longer than the Italian mile, that is, considerably above the statute mile; but his accounts of itinerary measures are so evidently theorised from round hundreds and thousands of geometrical figures that he no dispensation is placed upon the specific results drawn from them. If his geometrical pace be five French feet (Paucker, p. 179), this English mile (which he states at 1250 paces) is 6250 French feet, or 2219 English yards, that is, 726 statute miles. If this is barely possible now, no value of the geometrical pace can be taken which will make Osmann's account of measures consistent with itself. We shall take one more conjectural determination of the mile, derived from the sea league of the seventeenth century. Gunter states a sea league of 5000 feet in a mile, the league being the twentieth of a reputed degree. The author of the 'Exact Dealer's Daily Companion,' above cited, calls it three Italian miles, or 4594 yards. Now if the original league were the land measure (for half of the leuca) would have been 2542 yards, or 1/4 statute mile. D'Anville endeavours to make the old mile the same thing as the original French league, or the Roman mile and a half. [League], taking the computed mile, already discussed. The old leuca. But independently of the mile thus considered not being long enough (and we have no instance of an itinerary measure shortening by time), the distinction between the mile and the league seems to have been quite common amongst the tithe, even in the earliest manuscripts; and previous to this time the confusion which might have made D'Anville's supposition true had already lengthened the league by 500 paces. The only way of detecting the length of any measure, a commodious method, is to determine by the knowledge of some quantity, which having been handed down in terms of the old measure, and being still in existence, can be re-estimated in terms of the new measures. Unfortunately we have no very exact measurements of well-known lengths; nevertheless by using such as we have, and taking the mean of a considerable number, the odds are much against any very serious error remaining in the result.

About 1475 William Botiner, commonly called William Worcester, son of Thomas of Worcester, made a tour in various parts of England, and wrote, apparently for his own use, a large number of memorandum, which remained in the library of Corpus Christi College, Cambridge, and were published in 1778, by Dr. Nasmyth, with the title 'Itinera Williami de Worcester.' The date of the writer is well settled for he asserts that in the year 1473 he presented to the bishop of Winchester his own translation into English of Cireno de Seneclute. This William of Worcester was given to measure out the dimensions of the church or churches which he visited, and the number of miles between the several towns. From the latter enumerations we have collected the most definite instances, which we have compared with our latest road-books, as follows: (W is the number of miles in W. of W.'s account; R in the road-books):—

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>W.</th>
<th>R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxford</td>
<td>Farringdon</td>
<td>12</td>
<td>174</td>
</tr>
<tr>
<td>Oxford</td>
<td>Wotton Bassett</td>
<td>9</td>
<td>107</td>
</tr>
<tr>
<td>Gloucester</td>
<td>Tewkesbury</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Shepton Mallet</td>
<td>Glastonbury</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Glastonbury</td>
<td>Bridgewater</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>Bridgewater</td>
<td>Taunton</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>Wellington</td>
<td>Wiveliscombe</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Wellington</td>
<td>Collumpton</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Collompton</td>
<td>Exeter</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Ottery St. Mary</td>
<td>Exeter</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Plymouth</td>
<td>Salcombe</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

To give the best chance of a correct result which our present means afford, we must increase this 1314 modern road miles in such proportion as will make them correctly represent the same roads at the time when William of Worcester's work was made. This we have done, and the supposition may make itself rest on its own intrinsic probability. To neglect this correction altogether would make the preceding give 100 old miles equal to 141 statute miles, and this is the lowest conclusion which can be formed. But if first cut any notion of deviation has been corrected since the old account, that is, if what is now 100 miles would have been 105, then 100 old miles may be stated at 148 statute miles. This conclusion, and even a stronger one, may be reinforced from a totally distinct quarter. But first let it be observed that, though the tendency is to lengthen, but the contrary, it may be inferred that such of the preceding instances as make the old mile least are most probably those in which the distances have been shortened; and instead of being the cases of most weight, are precisely the reverse. Though the preceding instances are quite sufficient, yet it may be satisfactory to name one or two short distances in which a very large mistake is impossible. The following were those of the only one that I expect to find that the old mile was even longer than a mile and a half statute. William of Worcester says that Wokey Hole is about half a mile from Wells, whereas, by the Ordnance Map, it is a mile and six-tenths in a straight line from the centre of the town. Again, Maryberry (now Massacre for Doncaster) is placed by him at two miles from Wells on the opposite side: it is now three miles and three-quarters in a straight line from the centre of the town. Lastly, Fenny Castle is said to be a mile and a half westward towards the marsh, whereas we now call Castle Hill, and it is now in three or three-quarters westward. These instances are more convincing than the preceding as to the mere use of a longer mile, though not so well adapted for its determination.

We must next remove the question of Palestine. In the description of that land given by Roger Bacon (Jebb, pp. 180-236) he generally follows Pliny, and gives distances in Roman miles, except only when treating of those parts which the Crusaders visited, and other Eastern countries. In this latter case, he relies much on the conversation and writings of a certain Williamus, who went on a mission from the king of France to the Tartars in 1253, and on the oral accounts of other travellers. But the country on the distances of whose towns he is most precise in his information is Palestine itself. By taking fifteen well-defined instances, and measuring the corresponding distances on Major Rennell's map in parts of inches, we have the following, the first column being the number of leuca in Bacon, the second the number of inches in Rennell. (We omit sea-distances, as likely to err considerably):—

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>W.</th>
<th>R.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gaza</td>
<td>Ascalon</td>
<td>9</td>
<td>65</td>
</tr>
<tr>
<td>Joppa</td>
<td>Acre</td>
<td>12</td>
<td>72</td>
</tr>
<tr>
<td>Joppa to Aco</td>
<td>24</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Aco to Cesarea</td>
<td>12</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Aco to Tyre</td>
<td>9</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Tyre to Sarepta</td>
<td>11</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>Sidon to Baruth</td>
<td>8</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Baruth to Gilebeth</td>
<td>9</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>Gilebeth to Tripolis</td>
<td>9</td>
<td>91</td>
<td></td>
</tr>
<tr>
<td>Jerusalem to Joppa</td>
<td>12</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Jerusalem to Jericho</td>
<td>9</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Samaria to Jerusalem</td>
<td>12</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Samaria to Cesarea</td>
<td>12</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>Aco to Nazareth</td>
<td>9</td>
<td>73</td>
<td></td>
</tr>
</tbody>
</table>
The scale of Rennell’s map is three inches to a degree of latitude; and the only remaining question is, how much more or less than the actual distances measured in the shortest lines from place to place, be increased to allow for the deviations of the roads? If we assume that the deviation was equal to that in England at the Revolution (16° of latitude in proportion of 127, which gives 20° 35’). It must be remembered that the more allowance made for deviation, the longer is the leuca; and we think it is the least supposition which can be made, to suppose the deviation on routes in Palestine no greater than those, for which we may take the practice of the Oriental geographer Abu Ribahan (Al Bruni or Birunius) to deduce one-fifth from distances measured on the roads, to obtain the true distances in a straight line. This amount to increasing the number of miles measured would be 18,000, or more than a third, which is practically accordant with the preceding rule in a question of which the data are as rough as in the present one. The testimony is valuable as referring to roads in the East, and at the period to which Bacon’s account refers. The leuca is then, on these suppositions, 1335 of an inch on Rennell’s map, or 0.414 of a degree. The length of the degree in these latitudes being assumed at 365,500 feet, we deduct 3° 98’ statute miles as the length of a leuca, or 1° 532 statute miles as a leuca, or a mile, and half (and not two) make the league of Roger Bacon. The following are all the comparisons which his work affords us of the means of making:

<table>
<thead>
<tr>
<th>From Joppa to Aco</th>
<th>24</th>
<th>60</th>
<th>2° 5’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aco to Tyre</td>
<td>9</td>
<td>25</td>
<td>2° 7’</td>
</tr>
<tr>
<td>Tyre to Sidon</td>
<td>8</td>
<td>20</td>
<td>2° 5’</td>
</tr>
<tr>
<td>Sidon to Baruth</td>
<td>8</td>
<td>25</td>
<td>2° 9’</td>
</tr>
<tr>
<td>Jerusalem to Joppa</td>
<td>12</td>
<td>30</td>
<td>2° 5’</td>
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But even Lannoy’s mile must be longer than our statute mile; and it is difficult to explain the difference. One thing is certain, that Lannoy’s mile in 1422 cannot be the same as the leuca of the old measure, and of which there is, or that of Bacon in 1529, being shorter than either. So far our conclusions proceed upon assumptions of the highest probability; and the result is, that from the English measurements we may infer that 100 antient miles certainly exceed 141 statute miles, while from those in Palestine they are most likely not much less than 123 such miles. It is highly probable that the result is nearer to 153 than to 141. If we were to take a mean of both results, giving them equal weights, the mile thus obtained would be probably too small, and this result is 1° 47; so that (as mentioned in LEAGUE) the ratio of 145 to 100 (misprinted 45 to 100) is the very least which is admissible, and perhaps too small even for a minimum. It seems to us that a more probable result would be obtained by some further means. We refer to an attempt to measure in Palestine (for it is hard to believe that the correction for deviation could have been too much), and giving this number twice as much weight as 141 in forming a mean of the two. This gives 149 in place of 147; or, roughly by the (only) rule (as a result of which 100 antient miles are as much as 120 statute miles, and tolerably certain that they exceeded 145 such miles. At the same time there is evidence enough that very different miles were in use among writers, and also that the most ignant and backward nation has been frequently existed. Sir John Maundeville, for instance, says, *After the accusations of astronomey, 700 furlonges of the answeren to a degree of the firmament: and the ben 87 miles and 4 furlonges. Now be that here multiplied by 360 sithe; and then be 31,500 miles, every of four furlonges, after which in our English authors use the measure, which is here made to be the English furlong, a measure with which it had no connection. There is certainly this difficulty in the way, that [LEAGUE] the antient minimum distance between two market-roads must have been 19 modern statute miles, which seems a great distance. But it must be remembered that this appearance is a consequence of the notions derived from the modern interpretation of the texts, which make them refer to modern statute mile; so that seven miles has long been the legal distance. This interpretation is so prepositious that it must be thrown aside; for even if the mile of Bracton and Fleta were the mile of the books, and not the mile of the people, the leuca or seven statute miles would be a twelfth part of a mile. And the reason given by Bracton certainly requires some greater distance than seven miles. For he implies [LEAGUE, vol. xii, p. 376] that the third of a day’s work should be half the distance of two market-roads, and gives a time for buying and selling not longer in duration than that allowed for going to the market. Reading this paragraph by the modern interpretation of the courts, the time of business would be that in which a laden horse carries at least three miles light, and half; and if, taking into account the badness of roads in the fifteenth century, we allow even as much as two hours for this, then the day’s work would be only six hours. According to our reading the time of going nine miles and a half would be at least twelve, not allowing the fact that one third of a day’s work would be something more than nine hours. It may however be possible, and not improbable, that the mile of 5000 feet, or that of the books, was that of the courts of judicature, which would give about 124 statute miles as the distance in question.

We conjecture that the length of the antient mile arose from that confusion between the mile and the leuca which is referred to by Ingulphus. [LEAGUE.] The leuca of fifteen hundred feet was the old measure of length, being 1° 42 modern statute miles, to which the new mile being applied, we have the probable beginning of the old mile, that is, we adopt D’Anville’s conclusion on different grounds. If in the meanwhile the leuca of 2000 paces came into use (as, according to Ingulphus, it did), which would be called in the books two miles (as in fact it was two miles of the scirtare), it is by no means surprising that a new leuca of two long miles should be formed from the mile of the people. This would be but a poor conjec- ture for the establishment of a modern mile. But in force in reference to a mile, the existence of which is separately proved. And though Ingulphus states that the word leuca was introduced as meaning a mile, yet it is more likely that he would have had his leuca under the old name, than the new name for the old measure; it is moreover tolerably certain that the conquerors would attempt to introduce both their measure and its name, while the people would be able to resist the latter, but not the former. The origin of the statute mile may perhaps be explained as follows:—The furlong, or quarantua, was not a part of the Roman itinerary system of measures. It grew out of the perch, or percuta, a measure originally of small length, as in buying or selling of land, 40 of which were made into television of 16 perch, or furlongs. The great variations of the perch, in different parts of the country, induced the legislature, at a very early period, to fix it at five yards and a half. It did not harmonise with the book- measure of 400, or 500 furlongs, and so we see [LEAGUE] that when it was introduced there, the mile was awkwardly described as seven furlongs and a half, three perches, and two palms. The legislators of Elizabeth, who were well acquainted with the stadium, seeing the mile of the books (and perhaps of the courts) making upward of seven furlongs and a half, might very naturally restore the nominal accordance of the old and modern systems, and at the same time avoid fractional quantities, by lengthening the mile into eight furlongs.

MILFORD HAVEN. [Pembrokeshire] MILHAU, a town in France, in the department of Avereyon; in 44° 5’ N. lat. and 3° 5’ E. long.; on the road from Paris to Narbonne, through Moulins, Clermont, and St. Fleur; the distance is not given in the road-books. Milhau is said to have been known to the Romans by the
name of Amilianum, a name which indicates a Roman origin. It is not however noticed by D'Anville. In the reign of the sixteenth century, it was one of the strongholds of the Calvinists. Louis XIII., possessed himself of it in A.D. 1629, and ordered the fortifications to be destroyed. The town is situated on the right bank of the Tarn, in a pleasant valley surrounded by coniferous woods and almond trees. It is well laid out, but the streets are narrow. Many of the houses and the public fountains are handsome; there is a good place or square and some agreeable promenades. There is a bridge of stone over the Tarn intended to be of iron in the next election.

The population, in 1831, was 8847 for the town, or 9066 for the whole commune; in 1836 it was 10,450 for the commune. The inhabitants manufacture a considerable quantity of woollen cloth, serge, chamois and other leather, and gloves. Cheese, which resembles the Roquefort cheese, is sold under that name, is made in the neighbourhood in cellars hollowed out of the rock. Considerable trade in raw and spun wool, leather, timber for various uses, wine, and sweet and bitter almonds, is carried on. There are a subordinate commercial centre, a commercial exchange, a board of trade, and some fiscal government offices; an agricultural society, a high school, a drawing-school, and an hospital. There is a Protestant church, under the direction of the French government, and several Roman Catholic priests and laity.

The arrondissement of Milhaud has an area of 727 square miles, and comprehends 39 communes: it is divided into nine cantons or districts, each under a justice of the peace. The population, in 1831, was 63,603; in 1836, it was 65,900.

Military Frontier of Hungary. (This is the name given to a tract of country which extends from the Adriatic Sea to the Bukovina, between the frontiers of Illyria, Croatia, Slavonia, Hungary, Transylvania, and those of Turkey. The length is about 1000 miles, from Porel, on the Adriatic, to 46° 48' E., to the delta of Ostora, in 26° 25' E., and it lies between 44° 7' and 46° 30' N. lat.; its breadth varies in different parts: the area is about 18,000 square miles. About a fourth of the whole of this tract is divided into : 1. the Western or Croatia Military Frontier; 2. the Hungarian Military Frontier; 3. the Hungarian or Banat Military Frontier; 4. the Transylvanian Military Frontier. This tract is distinguished from the rest of the Austrian monarchy by having its own purely military government. All the peasants are soldiers of peace, in time of peace; 45,000 men are always under arms; but in 1815, before the peace, there were 62,000. This force was originally intended as a barrier against the incursions of the Turks. By this tenure the peasants are soldiers, and not the state; the state having usurped their arms and lands. This singular institution secures to the state the services of a great military force (there being above 100,000 men capable of bearing arms), which in time of peace costs the state nothing. These well-trained and disciplined soldiers, instead of being a frontier hostler, are in constant motion, and the plague without pay, and in time of war serve the state in the same manner as the rest of the army, and receive the usual pay. They are divided into seventeen regiments of infantry, one of hussars, and one battalion of sailors. Each regiment consists in time of peace of two battalions, or twelve companies, which serve in turn, has its own staff, and is commanded by a colonel, who exercises both the civil and military authority. Two regiments make a brigade. The military authority is divided among what are called four general commands, the seats of which are, at Agram for the Croatian frontier; at Peterwaldin for the Slavonian; at Temesvar for the Hungarian; and at Hermann for the Transylvanian: the whole is under the supreme direction of the Aulic Council of War at Vienna. According to the military constitution, the generals superintend the civil affairs and the administration of justice. Under the general are the regimental commanders, who are in the place of district authorities; in short, all civil officers hold military rank.

For Donau, see Don; and for Transylvania, the western part of the country is mountainous, the eastern part being traversed by the Julian Alps, and the eastern by branches of the Carpathians. Many fine valleys, some of them rich in picturesque beauty, lie between the branches of the mountains: the remainder of the country is pretty flat. The western part of the Banat is a sandy plain covered with sandhills from 60 to 180 feet high. On the banks of the Danube, the Tisza, and the Teme, there are extensive marshes. In the mountainous parts the temperature is that of more northern countries; whereas the lower central parts enjoy a climate resembling that of Italy. The fruit is very fruitful, especially in the plains, and on several valleys of the Banat. For the natural productions, see HUNGARY.

Manufactures.—There are no manufactures of any importance except those of salt, which are of no quantity, and ingeniosity in manufacturing almost every article for their own consumption. There is a very great export trade in the productions of the country. The extensive forests supply great quantities of excellent timber. That of Japlan, oak, beech, and linden, is very celebrated. The flax is of great size. The greatest export is tobacco, together with hemp, and a little of hemp-seed. For the export and import of tobacco, see HUNGARY. There is a great quantity of hemp, both for the rope and the linen manufacture, and for the making of burlap. There is a great trade in timber, and wood for fuel. Iron, copper, lead, and silver, are the metals generally found in the country. The iron is chiefly employed for the cutting of wood, the making of iron tools, and for the use of the peasants, and the manufacture of nails. The silver is employed for coins, and for the making of brass and copper ware. There is a considerable trade in the manufacture of leather, and tallow, for the making of candles. For the manufacture of leather, see HUNGARY. There is a little trade in the manufacture of paper, and in the making of brushes and brushes, and in the making of brushes and brushes. For the manufacture of paper, see HUNGRY. There is a little trade in the manufacture of glass, and in the making of glass for window and for table purposes. For the manufacture of glass, see HUNGARY. There is a little trade in the manufacture of starch, and in the making of starch for the use of the peasants. For the manufacture of starch, see HUNGARY. There is a little trade in the manufacture of sugar, and in the making of sugar for the use of the peasants. For the manufacture of sugar, see HUNGARY. There is a little trade in the manufacture of soap, and in the making of soap for the use of the peasants. For the manufacture of soap, see HUNGARY. There is a little trade in the manufacture of bread, and in the making of bread for the use of the peasants. For the manufacture of bread, see HUNGARY. There is a little trade in the manufacture of wine, and in the making of wine for the use of the peasants. For the manufacture of wine, see HUNGARY.
arms either for the purpose of covering and defending certain troops of cavalry or for the purpose of beginning of offensive operations against an enemy.

A position is considered as advantageously chosen when it is on an elevated ground; when it is not commanded by eminences within the range of artillery; and when, from the extended nature of observation over the rear or in front, it is incapable of being turned, that is, the enemy cannot without making an extensive movement get to the rear of the army by which the position is occupied. In the event of such points of support being wanting, the position, whose front is defended by an eminence, should have its flanks protected by villages, or by redoubts raised for the purpose; for the flanks being the weakest points of the line, since the troops there are only defended by their own fire, they particularly require to be strengthened by the impediments of the ground or by fortifications, in order that the enemy, in any attempt to turn the position, may be retarded till reinforcements can be brought up to oppose him.

The advantages possessed by an army on commanding ground consist in the troops being able to see the manoeuvres of the enemy while their own are concealed; the fire also, being directed downwards, is more effective than that of the enemy, which is made upwards from a lower level. The existence of woods or hollow ways in front of a position is considered as a serious drawback by those who might place divisions or parties for the purpose of attacking the line by surprise; but, on the other hand, a wood in the rear, if it should not be such as to create an impediment to the passage of the troops through it, might become, if a river, the lines of battle as if the enemy could afford a temporary cover for the retiring columns. A village or even a single building on the ground occupied by the army may become the key of the position; and, as frequently, on the preservation of this point depends the possible hope of the main body of troops should be well supported by troops and artillery.

At the battle of Corunna, in 1809, the village of Elvina was twice contested by the opposing armies; and on the field of Waterloo, the Chênes was regarded by the object about which the action was raged with the greatest violence. The higher the ground, particularly if near the lines of operation (the roads leading to the magazines), may also constitute the key, and it is usually strengthened by one or more redoubts. If the height is natural, and the surface of the ground, particularly if near the lines of operation, the key might still be retained, and if the wings are separated from each other, it might prevent other of them from being cut off by the enemy; whereas if they are contiguous, the defence, especially if the army taking place, become so remiss as to be incapable of being supported.

The elevated ground which constitutes the position should be able to contain all the troops who are to occupy it, but it should at the same time present a superiority of position, lest, not being able to defend the whole, the army should be deprived of the advantages arising from a superiority of command, in consequence of the enemy gaining some part of the height.

However favourable a position may be with respect to the elevation of the ground, that circumstance will be of small value if the troops and artillery cannot be conveniently placed on it. It is indispensable that the ground should afford for the manoeuvres of that species of troops in which the strength of the army chiefly lies; and at the same time it may be observed that, in making choice of a position, the ground in front should be as much as possible disadvantageous in that respect for the enemy. It is essential to the successfully which the enemy's troops may advance; and at the latter that they may defend the descending ground immediately in front of the others. Infantry may occupy any kind of ground, but should, if possible, always form a close line: it is usually placed between the batteries; and, if exposed to a distant cannonade, the troops may be drawn up in a trench, the earth from which will serve to cover them without preventing fire being brought to bear upon the enemy. Cavalry must be posted on a level plain, over which it may advance with regularity when a change is to be made; if compelled to act on broken ground, it is forced to the rear and supports the infantry, through whose intervals it may pass at proper opportunity. It should be observed that every disposition of an army for defence should correspond to that of the works which constitute a fortified place. The batteries at the advanced points of the line serve a purpose similar to that of the guns in the flanks of bastions; and the intermediate line of troops forms a sort of curtain.

In the choice of positions for offensive operations, such should be taken as have no rivers or broken ground in front; since these would interfere with the contemplated movements towards the enemy: small inequalities, behind which infantry or cavalry may be concealed, are however advantageous, as they afford the means of occasionally making attacks by surprise. On the other hand, when an army is on the defensive, the front as well as the wings should be protected by every obstacle to the progress of the enemy which nature may present or art can devise: among those afforded by the latter may be mentioned the blocking up of paths, the placing of stores in the immediate rear of a flank, or the destruction of the roads leading to the magazines; which, on the enemy's advance, the roads may be destroyed; rendering fords impassable and even forming inundations by constructing dams across the streams. It should be observed however that when a defensive position is covered by troops, a part of the ground should be left to move in rear of the latter, in order that sufficient space may be afforded for the troops to act against the enemy in the event of his forcing a passage across; and, in all cases, every obstacle in the way of a free communication within the position ought to be removed, that the enemy may not be able to succour each other when attacked. Whatever be the nature of the obstacles opposed to the enemy, they should be within the range of the artillery of the line; and then the position will be unassailable, since it will become impossible to find it scarcely possible either to form or deploy his columns of attack on broken ground and under a destructive cannonade. Good roads, on the other hand, should exist, or should be formed, in the rear, both to facilitate the possession of stores, to the rear of the troops; and, to favour a retreat, should the latter step become necessary. An army always retires in disorder under the fire of the enemy, and its danger is greatly increased when the retrograde movement is embarrassed by walls, ravines, streams, which, by their nature, or other impediments, will separate the army. Sometimes it may happen that the enemy, by detaching, or formed from marching, would become too numerous to be repelled; and it might be possible, by the enemy before they can be supported. It would be advantageous that the ground in rear should command that of the position itself; the main body of the enemy, in this way, would find an opportunity of renewing the action with a prospect of success.

A knowledge of the art of choosing military positions is an important qualification in the staff-officers of an army; and these officers should continually exercise themselves in forming correct judgments concerning the fitness of ground for such positions. They should be able to ascertain at once, by the eye, its extent and the stations it may afford for troops of the different arms, so that those of all kinds may act with the greatest effect and duly support each other; and, consequently, they should be able to determine the order of battle which is the most advantageous for the ground to be occupied. They are also to judge of the extent of the ground which may present the object of a retreat, or for the conveyance of supplies from the magazines; and, finally, of the obstacles which the ground in front may oppose to the movements of the enemy. The power of readily appreciating the character of the ground, as well as its advantages and disadvantages, is a mark of great importance; and it might be possible, by the profound knowledge of the tactics of war joined to much experience in the practice of executing military surveys, and of contemplating the progress of ground from various points of view. These points being the supposed stations of the enemy, the staff-officer should accustom himself to observe from thence how the latter might make his attack; for only can he judge in what manner an attack ought to be opposed; that is, what disposition of troops and artil-
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Lever would be the most favourable for resisting it when made. Continual meditation, fear for their health, on the morrow. 1641, have every number of years within the limits of these realms. The result of this service differs widely from those of the conscription on the Continent; since under the latter the troops become members of the regular army, and may be marched beyond the frontiers of the state; whereas the militia is enrolled only for home service, and may be called out at the request of a domestic government, and so the militia may be said to have existed among the ancients. In the Grecian states every citizen was a soldier; and every person, between certain ages, in the city and in the countryside, was obliged to serve in the Roman armies wherever they might be employed.

The military force of this country in the time of the Saxons was formed by a species of militia, and every five hydes of land were charged with the equipment of a man for a year, and every ten men were enrolled under the command of the earldoms or chiefs, who were elected by the people in the folkmotes. After the Norman conquest of the country the proprietors of land were compelled, by providing men and arms in proportion to the value of their land, to contribute to the defense of the realm in the event of a threatened invasion. The troops were raised under the authority of commissions of array, which were issued by the crown; and the commission was sometimes vested in the crown itself, to whom the commission were granted; though frequently the high constables, or the sheriffs of the counties, commanded in their own districts. This militia seems, at first, to have been liable to be marched to any part of the kingdom at pleasure of the king; but by the act 28 Geo. II. it was provided by a statute that no man thus raised should be sent out of his county, except in times of public danger. From the reign of Philip and Mary the lords-lieutenants have had the charge, under the sovereign, of raising the militia in their respective counties.

Charles I., having, by the Petition of Right, been deprived of the power of maintaining a disposable body of troops in the country, found himself, in 1641, unable to subsist them and raise them. This, in consequence, induced the parliament, after it had been ascertained that the power over the militia, and also the command of all forts, castles, and garrisons, should be vested in certain commissioners in whom they could confide. The king having refused his assent to the bill, the parliament made a declaration that it was necessary to put the nation in a posture of defence, and immediately issued orders to muster the militia; on the other hand, the king issued commissions of array for a like purpose to some of the nobility, and thus commenced that war which desolated the country for several years.

When Charles II. ascended the throne, the national militia was re-established on its former footing, and the chief command was vested in the king. The lords-lieutenants of counties were to be subordinate to the sovereign, and granted commissions (subject however to the king's approbation) to the field and regimental officers who commanded under them. New regulations respecting the amount of property which rendered persons liable to the charge of providing men and arms in Ireland; and it was provided that the commission were not to exceed the fourth part of the income of each fertile farm, and that no one who had less than 2000l. yearly income or less than 2400l. in goods or money could be compelled to furnish a foot soldier; nor could one who did not possess 500l. per annum or an estate worth 6000l. be made to provide a man for the cavalry. Persons having less property were required, according to their means, to contribute towards finding a foot or a horse soldier. The militia was then mustered and trained, by regiments, once a year, and during four days; but the men were mustered and trained, by companies, four times in the year, and during two days each time. At the periods of muster every soldier was obliged to provide himself with his accoutrements.

These regulations, being found to be expensive, at length ceased to be observed, and the trainings of the militia were discontinued in every part of the realm except the city of London. In 1756, under an apprehension that the country was about to be invaded by a French army, considerable bodies of Hanoverian and Hessian troops were brought over for its defense; the spirit of the nation revolted however at the disgrace of being indebted to foreign mercenaries for protection; and these troops being sent back to Great Britain, it was decreed for the future that no militia of the land should be called into active service. Experience has however shown that such an opinion is quite destitute of foundation; and it was soon afterwards admitted, that, when well disciplined, these constitutional battalions rivalled those of the regular troops in the performance of all military evolutions. It may be observed here, that the greater part of the 16,000 British troops that gained the battle of Talavera were men drafted for two years, and who would not otherwise have joined the army in Spain, that in the action many of them bore on their accoutrements the numbers of their former corps. (Napier, vol. ii.)

The militia laws were repealed in the 2nd year of George III., when it was decreed that the service of this force was passed; and in the 26th George III. all the previously existing statutes relating to the force were formed into one law. New regulations however were made by act passed in the 22nd George III. for the support of the militia of the kingdom. It is now embodied under general officers, and is subject to the provisions of the mutiny act, or articles of war. The king is empowered to employ it in any part of the United Kingdom, but not out of it. The militia of England and Wales consists of the militia of the counties, which is now embodied under general officers, and is subject to the provisions of the mutiny act, or articles of war. The king is empowered to employ it in any part of the United Kingdom, but not out of it. The militia of the counties, which is now embodied under general officers, and is subject to the provisions of the mutiny act, or articles of war. The king is empowered to employ it in any part of the United Kingdom, but not out of it. The militia of the counties, which is now embodied under general officers, and is subject to the provisions of the mutiny act, or articles of war. The king is empowered to employ it in any part of the United Kingdom, but not out of it.
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George III, this force may be marched to any part of Great

Britain in 1809, for the purpose of replacing the

forces of revolutionists. In 1797, it was published in 3 vols. 8vo., in 1781, and considerably improved in the third edition at Bassano, 1785, greatly extended his

literary reputation, being, at the time of its appearance, almost the first attempt to base the art on rational

principles, and to confine the practice of it to the

formal duties of the artist. The whole of the

local militia cannot be compelled to serve in the regular

militia till one year after their period of service in the former

has expired.

The amount of the several militia forces in England

alone exceeds 200,000 men; and during the late war, when an invasion of the country was apprehended, the force which might be assembled in arms amounted to more than twice that number of men.

In France, the militia of America, by an act passed in 1792, the principal provisions of which are still in force, all

able-bodied white male citizens between the ages of eighteen and forty-five, with certain exceptions, are enrolled in the

militia; and when drafts are to be made for active service, the stables are men who have served in the militia; and, when on active service, it is subject to the same rules and articles of war as the regular troops, but courts-martial for the trial of military offenders are composed of militia officers only.

The persons excepted are the executive, judicial, and repre-

sentative officers of the Union, those who are employed in the post-office department, &c.; and, in some of the

states, persons are exempted who have scruples of conscience, and others who have been engaged in the militia for calling out the militia of the states; and, when on active service, is subject to the same rules and articles of war as the regular troops, but courts-martial for the trial of military offenders are composed of militia officers only.

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states, persons are exempted who have scruples of conscience, and others who have been engaged in the militia for calling out the militia of the states; and, when on active service, is subject to the same rules and articles of war as the regular troops, but courts-martial for the trial of military offenders are composed of militia officers only.

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There are not wanting natural districts in the heavens, which offer great peculiarities of character, and strike every observer: such is the Milky Way, that great luminous band which stretches, every evening, all across the sky, from horizon to horizon, and which, when traced with diligence, and mapped down, is found to form a zone, completely en-circling the whole sphere, almost in a great circle, which is neither an hour circle nor coincident with any other of our astronomical grammatas. It is divided in one part of its course, striking off a kind of branch, which unites with the main body after remaining distinct for about 15°. This remarkable belt has maintained, from the earliest ages, the same relative situation among the stars; and when examined through powerful telescopes, is found (wonderful to relate!) to consist entirely of stars scattered by millions, like glittering dust on the black ground of the general heavens.

"If the comparison of the apparent magnitudes of the stars with their numbers leads to no general conclusion, it is otherwise when we view them in connection with their local distribution over the heavens. If indeed we confine ourselves to the three or four brightest classes, we shall find them distributed with tolerable impartiality over the sphere; but if we take in the whole amount visible to the naked eye, we shall perceive a great and regular increase of number as we approach the borders of the Milky Way. And when we come to telescopic magnitudes, or stars of so small a magnitude as to be invisible except through a telescope, we shall find them crowded, beyond imagination, along the extent of that circle, and of the branches which it sends off from it; so that in fact its whole light is composed of nothing but stars, whose average magnitude may be stated at about the tenth or eleventh.

These phenomena agree with the supposition that the stars of our own system, instead of belonging in all directions inedemptly through space, form a stratum, of which the thickness is small, in comparison with its length and breadth; and in which the earth occupies a place somewhere in the middle of its thickness, and near the point where it subdivides into two principal laminae, inclined at a small angle to each other. For it is certain that to an eye so situated, the apparent density of the stars, supposing them pretty equally scattered through the space they occupy, would be least in a direction of the visual ray (as $A$) perpendicular to the lamina, and greatest in that of its breadth, as $B$, $S$, $G$, $D$; increasing rapidly in passing from one to the other direction, just as we see a slight haze in the atmosphere thickening into a decided fog-bank near the horizon, by the rapid increase of the mere length of the visual ray. Accordingly, such is the view of the constitution of the starry firmament taken by Sir William Herschel, whose powerful telescope has so far cleared away some of the fog of this wonderful zone, and demonstrated the fact of its consisting entirely of stars. So crowded are they in some parts of it, that by counting the stars in a single field of his telescope, he was led to conclude that 30,000 had passed under his review in a zone two degrees in breadth, during a single hour's observation. The immense distance at which the remotest regions must be situated, will sufficiently account for the vast predominance of small magnitudes which are observed in it. [Herschel, N. B. 505] But to the above it must be added, that the $G$, $S$ stars thus men-

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From these analyses it would appear that milk is a compound fluid, chiefly consisting of oleaginous and albuminous materials, with different salts.

According to Dr. Prout, the albuminous and oleaginous principles may be considered already fitted to the purposes of the animal economy, without undergoing any essential change in their composition. And thus, by the action of the organs of the parent, the food is brought into a state very favourable for its assimilation in the body of the young, without taxing severely the digestive organs of the latter. The salts present in the milk serve also important uses, especially the phosphate of lime by consolidating the bones which, at the time of birth, are soft and cartilaginous. The period when lactation in the human offspring should cease, must vary with the vigour and progress of development of the infant; but in general nine months is the proper time for suckling, and its continuance beyond that period is injurious both to parent and child.

The milk of cows or other domestic animals is extensively used as the food even of adults, and, though insufficient alone, is a most valuable ingredient of diet. It is often enojased as the food of invalids, especially of persons who have a tendency to consumption.

Milk is also used as an antidote in cases of poisoning by some metallic salts, such as corrosive sublimate, perchloride of tin, sulphate of copper, &c.

Though cheese is in general difficult of digestion, pressed curd is often found to suit the stomach of persons affected with disease of that organ. (See Abercrumbie, On Diseases of the Stomach.)

Milk may be brought to a dry state, and powderd, in which condition it keeps for a length of time; and by dissolving it in tepid water an artificial milk may be formed, capable of being used at sea, particularly for children during long voyages. (See Mr. Pereira's Lectures in the Medical Gazette.)

**MILKY WAY.** It is desirable, in describing astronomical objects, to keep as close as possible to the words of those who are acustomed to the sight and description of such things. Two passages in Sir John Herschel's 'Astronomy' (pp. 183, 375, 376, Lardner's Cyclopædia, No. 43) will describe the Milky Way, and the theory of it, by Sir William Herschel, with an excellent brevity and distinctness.

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* Many popular works on astronomy contain nothing but descriptions of descriptions, in which what of absolute quotation is in merit, but the reverse. We recommead the work cited to those of our readers who are not already acustomed with it, as that of an eminent observer whose facility of description is very noticeable among those who are in the habit of viewing the celestial bodies.
tioned as contained in a zone of 16° by 5° include only those which could be steadily seen and distinctly numbered; but for which, twice, as many more were suspected, of which only occasional glimpses could be got for want of sufficient light.

The Milky Way may be described in general terms as extending three or four degrees on each side of a great circle inclined at an angle of about 60° to the ecliptic, which cuts in the northern hemisphere between the horns of Taurus and the feet of Gemini, and in the southern hemisphere between Sagittarius and Scorpio. Beginning with the part nearest to the North Pole, it nearly covers Cassiopeia and Perseus, and, as it is obtained would appear to be a cleft or rift, between Taurus and Gemini, and near the back of Canis Major through Argo. It then narrows considerably, and passing under the hind feet of Centaurus, widens again near Ara. A little above the last constellation, and before it again meets the ecliptic, it divides into the two streams above mentioned, which contain between them a long thin strip passing through part of Scorpio, Serpens, Aquila, Vulpecula, and Cygnus. In Cygnus the streams reunite, but immediately separate and gradually rising higher, up in the same constellation, from whence the main stream reaches Cassiopeia, &c.

The Milky Way was called by the Greeks γαλαξίας, or γαλαξίας γαλατικής (whence our word Galaxys), and by the Romans plectra lactea; and the word plectrum in horn plectrum on the subject is as edifying as usual: Hyginus fixes on Eratothenes the most common story, namely, that the Galaxy arose from the milk of Juno, who pushed Hercules away from her breast (where he had been placed by Jupiter) on the supposition that he was the master of the heavens. An above accurate writer forgets to mention that others held the appearance to have arisen from young master Hercules having been a greedy child, and having filled his mouth too full. Others thought that the whole was not milk, was the east of corn which Isabella ate in her flight from Typhon. Another fable, mentioned by Plato, makes the Milky Way to be a broad causeway through the heavens for gods and heroes to walk upon; another, that it is the part of the heaven which was not seen by the Greeks, and which it was impossible to see. These stories are a proper prelude to the speculations of the philosophers which followed. Some of the Pythagoreans are reported to have supposed the Milky Way to be an old and disused path of the sun, out of which, some said, he was frighted by the banquet of Tythes, others, a reflection from the sun. Anaxagoras is said to have thought it was the shadow of the earth: Aristote supposed it to be sublunary, and to consist of exhalations, of the same matter as comets. Posidonius took it for a band of fire; Theophrastus declared it to be caused by burning fire from the other hemisphere; while Diodorus thought it was celestial fire shining through the clefts of the solid heavens. Democritus hit the true explanation, namely, that it is a congeries of little stars, and a very small part of the Milky Way; the observer can see only part of it, (De Plant. Philosoph., lib. iii., c. 1) and Manilius mention. Shortly after the invention of the telescope, Galileo announced that he had resolved the whole of the Milky Way into stars. 'Est enim Galaxia nihil aliud quam summorum stellarum consorciwm consorciwm consorciwm in quamque unum regionem illius perspiculum dirigat, statim stellarum ingens frequens seae in consequentia profert quantum compulere suis magnum et valde conspicuum visum, sed insigni revera. (It is however not easy to suppose that Galileo's resolution of the Milky Way was complete, and we may here see how necessary is attention to minute description. When Sir J. Herschel, in the paragraph cited above, states the stars which are in the Milky Way, 'as the Marquis of Titvig's, the general heavens,' we know that, if the observer can be depended upon, he has completely resolved the continuous light in question: but if he only says, with Galileo, that he detected innumerable stars, we are only sure that he has detected innumerable stars, and that he has other stars, and more distant ones still formed a Milky Way behind them. That this must have been the case with Galileo's (whose telescopes would never distinctly show Saturn's ring) may be plausibly asserted. It must be remembered that Galileo was not accompanied by several nebulas, and might easily have completed his assertion as to the Milky Way from analogy. Kepler (Doiptr. Priv.) describes this resolution in a way which will be some guide as to its character: 'Nebulosa stella ostendit ut in Via Lacteae, duas, tres, vel quator clarissimas stellaris in arctissimo spatio collocatas; si quidem, ita, tres, or four stars were seen the smallest space: this may very well correspond to Sir W. Herschel's estimate of 50,000 in the zone above mentioned, without the necessity of supposing that those stars were seen, which the forty-foot reflector would only show by glimpses. Sir W. Herschel counted seventy-nine stars, the chief contributors to the 'Edinburgh Review.' He married soon after he had settled in London. His acquaintance with Mr. Buntham commenced at an early period of his residence in the metropolis.
His 'History of British India' was commenced about 1806, but being a work of great labour, and the author being obliged to devote a considerable portion of his time to other avocations, it was not published till the winter of 1817-18. It is perhaps no very high praise of this work to say that it is not only the best history of British India, but the only single work calculated to convey to the general reader any clear and connected view of India and Anglo-Indian possessions.

It is admitted by some of the most eminent of those who have administered Indian affairs for the last ten years, that Mr. Mill's work was the beginning of sound thinking on the subject of India; and that the mere mention of Government in India conveys the impression of Cron to those who have the best means of knowing, to be now bearing every year more and more the impress of his views. The style of Mr. Mill's history has been represented by some as dry and unattractive. Mr. Mill certainly does not deal much in rhetorical oration; at least in what is usually considered such by modern writers, for his style reminds us more of the nervous simplicity and terseness of some of the antient masters of the difficult art of writing, than that of any modern except Hobbes. The reader who really is searching in a searching way finds in the writings of Mr. Mill with far less labour than where it is to be sought for in a crowd of unapt and unnecessary words. These remarks may be said to be applicable rather to Mr. Mill's philosophical than to his narrative style. But though his narrative power may not equal Sir Walter Scott or even David Hume, there are passages of Mr. Mill's history which will interest many readers as much as the most spirit-stirring romance; for instance, his account of the capture of Corew by Clive, which makes the night attack upon the outworks of Seringapatam. His narrative of military operations is good; clearness, in which Mr. Mill excels, being the principal quality required. And some of his characters, that of Clive in particular, are drawn with a few bold and forcible lines, which engrave them on the mind of the reader.

In consequence of the ability and knowledge of the subject displayed in his history, and although he had in some parts of it freely enabled the conduct of the East India Company in the early period of its existence, he introduced him into their establishment, and intrusted to him the chief conduct of their correspondence with India in the revenue branch of administration. He afterwards rose, in the course of promotion, to be head of the department in the India House, and his form of correspondence with India, which is very carefully worded, is adopted as a model by all the officers who are in the service. The form of correspondence with India, which is very carefully worded, is adopted as a model by all the officers who are in the service.

About three years before his appointment to his office in the India House, Mr. Mill became a contributor to the 'Supplement to the Encyclopædia Britannica,' his principal contributions being in the branches of Education, Jurisprudence, Law of Nations, Liberty of the Press, Colonies, and Prison Discipline. These essays were reprinted in a separate form, and are probably the best known of Mr. Mill's productions. They exhibit great powers both of organization and production, and we believe, more marked effects than any other, not only of the works of Mr. Mill, but of any other writer of this age on such subjects, on the minds of his contemporaries.

His 'Elements of Political Economy,' whatever may be its merits or demerits, and it made no pretensions to originality, published in 1821-2, has at least the very great merit of being written with his usual clearness and precision of language.

In 1829 he published his 'Analysis of the Phenomena of the Human Mind,' a work on which he bestowed more of the labour of thought than on any of his other productions. In this work Mr. Mill has attempted to resolve all the powers of the human mind into a very small number of simple elements. From an examination of a number of the more complicated cases of consciousness, he arrives at the conclusion that they all resolve themselves into three simple elements—sensations, ideas, and the train of ideas. He thus explains what he means by the terms sensations and ideas. He has here brought forward the doctrine that there exists when the object of sense is present; another, that which exists after the object of sense has ceased to be present. The one class of feelings I call sensations; the other class of feelings, I call ideas. This is the real nature of ideas. This is the more simple, and thence proceeds to the exposition of the more complex phenomena. The feelings, he says, which we have through the external senses are the most simple, at least the most familiar, of the mental phenomena. Hence the propriety of commencing with this class of our feelings. (Analyses, vol. i, p. 1.) Accordingly, he begins with sensations, which he proceeds to divide into two classes, that is to say, that sensations are of two kinds, which he calls the five senses and the five tastes. He finds it necessary to explain the process of naming, or language; that process by which the sensations and ideas of one man are communicated to another, and by which likewise a record is preserved of sensations and ideas after they are past. Out of these, he brings forth the train of consciousness and conception, which philosophers, he says, have erroneously created into what they called powers of the mind: whereas, he says, consciousness is merely a name applied to sensations, and to ideas whether combined or not; and the combination and conception is a name applied only to ideas, and to ideas only in a state of combination. But consciousness may surely be said to be the power of having sensations and ideas; and conception the power of having ideas in a state of combination. The complex ideas, or ideas in combination, are the result of Mr. Mill's explanation of them; both consciousness and conception may be called powers of the mind.

Again, imagination, he says, is the name of a train of ideas, a succession of ideas, or a series of ideas which are of the same train; and when I am said to imagine, I have the same thing; nor is there any train of ideas to which the term imagination may not be applied.

There is great diversity of trains. Not only has the same individual an endless variety of trains, but a different character belongs to the whole series of trains which pass through the minds of different individuals or classes of individuals. The different pursuits in which the several classes of men are engaged render particular train of ideas appropriate to them; and they may, therefore, be considered as a sort of professional mind; and, when we come to think of the merchant, and trains respecting the goods in which he buys and those in which he sells are habitual in his mind. Another man is a lawyer, and ideas of clients and fees, and judges and witnesses, and legal instruments and points of compulsion, and the like are habitual in his mind, and are habitual in his mind. Ideas of another kind occupy the mind of the physician; of another kind still the mind of the warrior. The statesman is occupied with a train different from that of the merchant, and the merchant with a train different from that of the warrior; and one statesman with a very different train from another, according as his mind is running upon expedients which may serve the purpose of the day, or arrangement which may secure the happiness of the population from generosities, or other necessary or necessary machinations, or some train which habitually occupies the mind of the mathematician.

The mind of the metaphysician is also occupied by a train distinguished from that of other classes. And there is one man yet to be mentioned, the poet, the peculiarities of whose train has been the subject of particular observation. To such a degree indeed have the trains of the poet been singled out for distinction, that the word imagination, in a more restricted sense, is appropriated to them. We do not call the trains of the lawyer, or the trains of the merchant, imagination. We do not speak of the poet as one who is mentally revolving each the ideas which belong to his peculiar occupation; it is only to the poet that the epithet of imagination is applied. His trains or trains analogous to his are those which receive the name of imagination. (Vol. i, p. 179.)

In some parts of his book Mr. Mill has, we think, been led into error, in part probably by carrying his notion of association as an explanation of these phenomena too far. Thus in the chapter on various relations to one another showing how long men had been led away by mere jargon from the real nature and object of classification, he says, 'Man first becomes acquainted with individuals. He first names individuals. But individuals are innumerable, and he cannot but be sensible that the number of names which serve for many individuals.' After then alluding to the cause of 'synchronic sensations so concreted by constant combination as to appear, though numerous, only one; of
which the ideas of sensible objects, a rose, a plough, a house, a ship, are examples—he thus proceeds: 'It is easy to see wherein the present case agrees with and wherein it differs from those familiar cases. The word man, we shall say, is first applied to an individual; it is first associated with the idea of that individual, and acquires the power of calling up the idea of him; it is next applied to another individual, and acquires the power of calling up the idea of him; so of another, and another, till it has become associated with an indefinite number, and has acquired the power which was before possessed by a single idea, differently. What happens? Does it call up an indefinite number of the ideas of individuals as often as it occurs; and calling them up in close connection, it forms them into a species of complex idea.' (Vol. I, p. 294.) Mr. Mill then says there can be no doubt that an empty word is an acknowledged fact. 'Mr. Mill himself furnishes what he considers the reason, for he says, 'It is also a fact that when an idea becomes to a certain degree complex from the multiplicity of the ideas it comprehends, it is of necessity indistinct. Thus, when the word man calls up the ideas of an indefinite number of individuals, not only of all those to whom I have individually given the name, but of all those to whom I have in imagination given it, or imagine it will ever be given, the generation of his ideas has become a perfectly very complex idea, and therefore indistinct.' (Ibid.)

Mr. Mill having gone through an exposition of abstraction, memory, belief, ratiocination, evidence, and some of the more complicated cases of naming, devotes the latter half of the present chapter to the neglected misapprehensions in which the sensations and ideas are to be considered as not merely existing, but also as exciting to action. He treats of pleasurable and painful sensations, and of the causes of both; good fortune, pain, and death, as well as those of the pleasurable and painful sensations, and of the causes of them. He treats of wealth, power, and dignity, and their contraries, of our fellow-creatures, and of the objects called sublime and beautiful, and their contraries, each completed as a complex idea. Chapter 22 is devoted to the subject of motives; and Chapter 24 to that of the will. Chapter 25 (the last) to intention. Mr. Mill's exposition of all these phenomena is mainly grounded on the law of association, by which he means simply the law of habit. His principle was the idea of the order of occurrence amongst our former sensations, of which those ideas are the copies.

Mr. Mill's last work was the 'Fragment on Mackintosh,' published anonymously in 1835. This is a very able and elaborate treatise on the 'History of Ethical Philosophy,' contributed by Sir James Mackintosh to the 'Encyclopaedia Britannica.' This work contains some very valuable disquisitions on morals, legislation, and jurisprudence, and is the result of a series of lectures delivered to students of society and government, Mr. Mill was induced from this circumstance to publish a short treatise on the subject. This he did in 1771, and the work was favourably received. He began to turn his mind to a very particular manner to the nature and origin of the English government; and in 1787 he published his 'Historical View of the English Government, from the settlement of the Saxons in Britain to the accession of the House of Stuart.' This work is described as 'remarkable for the sagacity of its conjectures, the ingenuity of its explanations, the boldness of its discussions, and the total freedom from prejudice; but it is deficient in accuracy and research, and will not bring conviction to a mind that has received its first impressions from the plausible but delusive representations of Hume.' (Edinburgh Review, xxx., 166-7.)

Mr. Mill was in stature about the middle size; his person was athletic, and his countenance very animated. He was the school of Bristow, and of Drumtyle. He was sent to Glasgow college, where he distinguished himself by his diligence and attention. He was at first designed for the church; but while at college he adopted the resolution of studying the laws; and was sent to the university of Edinburgh to study law. He was then sent to Corpus Christi college, and afterwards to the University of Oxford, where he spent two years, during which he formed an intimacy with David Hume and other eminent individuals. On the 8th of February, 1760, Millar passed advocate (Faculties Edinburgh) on oath; it is to be supposed that this period is the earliest part of his life the care and burden of a family, he was soon obliged to abandon his prospects at the bar, and an oppor-

MILLENNIUM, a Latin word meaning a period of a thousand years, is applied by ecclesiastical writers to the period during which it is predicted in Scripture that the Church will be in a state of extraordinary prosperity, and which is to be preceded by the overthrow of the power of vice, accompanied at its commencement by the first resurrection, or the resurrection of the saints, and followed by the destruction of Gog and Magog, and the general judgment. (Rev. xx.)  

The elaborate article of which the above quotation is a part has for its report—The author Francis Jeffrey, who is supposed to have been a pupil of James Mill's.
Respecting the state of the church, during the Millennium two opinions are held, both of which can be traced up nearly to the earliest ages of Christianity. The one is that Christ will reign in person upon the earth at Jerusalem, that the saints will reign with him and enjoy corporeal pleasures, and that the Jews will be restored to Palestine and exalted to the first rank among the nations of the world. This doctrine was held by Irenæus and others of the earlier fathers, not merely as their own opinion, but as the faith of the church received from the Apostles. These tenets were also held by Lactantius, who expected the Millennium to commence very soon after the time at which he lived. On the other hand it was held by Jerome and other fathers, who warmly opposed the doctrines just mentioned, that the passages of scripture on which they are founded must be taken in an allegorical sense, and that the Millennium will only be distinguished by the universal diffusion of pure Christianity in the world, and a consequent decrease of physical and moral evil. This opinion was adopted as the belief of the orthodox church, and has been almost universally received in modern times. The followers of the late Rev. Edward Irving and some other small sects, as well as many individuals among other bodies of Christians, still hold the doctrine of the personal reign of Christ on earth. Such persons are commonly called Millenarians, the name applied in the early ages of the church, together with the corresponding Greek word Chiliasits, to those who held these opinions. (Lardner's Credibility; Middleton's Free Enquiry, page 46.)

**MILLEPORIDÆ.** In the Linnaean 'Systema Naturae' the genus Millepora included fourteen species of solid corals perforated with conical non-lamelliferous pores. Several of these have been taken as types of new genera or subgenera, and, according to the general practice of modern zoology, the Linnaean genus is transformed into a great family. Lamarck (Anim. sans Vertébrés, 11) places many of the Millepores in his fourth section of Polyparia, the foraminated corals, with Catenipora and Tubipora, which belong to other groups. The Milleporidae form a distinct order in the Foraminated Polypiaries of Lamouroux (Expos. Méthod.), and include no less than eighteen genera, viz.:

- **Ovulites**, Retepora, Lunulites, Orbicules, Ocellaria, Melobesia, Eudica, Alveolites, Theonaea, Chrysaora, Millepora, Terebellaria, Spiropora, Idmonea. (Distichopora, Hornera, Krisusterna, and Tiliaea are included among Milleporidae in the table, but not in the body of the work.) The genera in Italics are fossil.

Lamouroux defines the Milleporidae thus:—**Polyparia** stony, polymorphous, solid, internally compact; **cells** very small or poriform, scattered or in series, never lamelliferous, though the parietes are sometimes slightly striated.

Blainville collects the Milleporidae into groups according to the form in the coral, and defines the family by characters drawn both from the animal and the stony support. **Animals** in general very slender, and provided with a single circle of slender tentacula; **cells** sometimes of considerable size, but always without lamellic or stria within or without the tubes; **polyparium** fixed, varying in shape. Retracing from the group the palmated kinds (to form the genus Palmipora among the Mutilphyllida), there remain, according to Blainville, 23 genera, which are thus arranged:

1. **Cells polygonal, often rather large.** Favoritides (Eunomia). Alveolites, Ayendesia, Theonaea, Pelagia, Terebellaria, Polytrema, Frondipora, Lithoporema.
2. **Cells round, very fine, poriform, immersed.** Orbicules, Marginopora, Stromatopora, Tiliaea, Spinopora, Chrysaora, Cricopora, Distichopora, Heteropora.
3. **Cells round, larger or less tubular.** Fusulopora, Hornera, Idmonea, Cricopora.

The following are the principal characters of these genera:

- **§ 1. Cells polygonal.**

**Favoritides.** Animals unknown; **cells** prismatic, contiguous, vertical or diverging, the parietes pierced with pores, the cavity divided by transverse septa; **polyparium** branched or massive, sometimes basaltiform.

A genus of Lamarck; Goldfuss added to the knowledge of its structure, but changed its name to Calamopora. Blainville thinks Eunomia of Lamouroux may be included in it, but the descriptions are unlike. Ehrenberg places it near Astrea, in the family of Madrephorides, and we think with reason.

The Favoritides are only known in a fossil state, and, we believe, only in strata of the Transition and carboniferous eras, in the former of which they are specially abundant, in the Eifel, S-pillia, at Dudley, &c.

**Example. Favoritides Gothlandicae.** (Goldfuss, t. 26, f. 1.)

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**Favoritides Gothlandicae.**

\[ e \]

\[ d \]

**Favoritides** with specimen; \( e \), nucleus of the tubes; \( d \), tube magnified; \( f \), specimen of a vertical section.

**Eunomia.** Animals unknown; **cells** tubular, long, parallel, internally sulcated longitudinally, and transversely annulated; the parietes thick and solid. (Lamouroux. Expos. Méthod.)

The only species, Eunomia radiata, is fossil in the oolithic series of Caen.

**Alveolites.** Animals unknown; **cells** short, tubular; prismatic, alveoliform, the parietes thin; **polyparium** formed into reticulated layers, enveloping each other.

A genus of Lamarck, subsequently, but without sufficient reason, reunited by Goldfuss to Favoritides, under the name of Calamopora.

Two living species and a few fossils, chiefly from the tertiary series of Dax. Blainville includes in the genus (not correctly) many of the Calamopora of Goldfuss which are to be ranked as Favoritides.

**Frondipora.** Animals unknown; **cells** unequal, subpolygonal, accumulated irregularly, prominent only on the external surface of a finely branched **polyparium**, which is fixed, arborescent, variously reticulated, and longitudinal striated on the non-celliferous face.

One of the species is ranked as a Retepora by Lamarck.
Lamouroux (following Tilesius) calls it Krusensterna. The species are recent in the seas of Kamtchatka and the Mediterranean.

Example, Frondivora reticulata. (Blainv., pl. 66, f. 1.)

Lichenopora.—Animals unknown; cells rather large, poriform or subglobular, subpolygonal, acumulated and scattered on the interior surface of a fixed orbicular, cupuliform polyparium, which is quite smooth externally.

A genus of Defrance, including one recent and three fossil species from the cretaceous and tertiary strata.

Example, Lienselenopora turbinata. (Blainv., pl. 68, f. 4.)

Theonc.—Animals unknown; cells rather large and deep, subpolygonal, acumulated irregularly, prominent on the tumid or angular face of the polyparium, which is fixed, irregularly lobed, and more or less lacunose between the acumulations of pores.

Example, Thenea claithra (Lamouroux, pl. 20, f. 17), from the oolite of Caen.

Apendendia.—Animals unknown; cells subpolygonal, small, poriform, irregularly disposed, occupying the upper and external edge of sinuous ridges, smooth on one side, pilose on the other; polyparium globular or hemispherical, diverging from the base to the circumference.

A genus of Lamouroux, from the oolite of Caen.

Example, A. dianthus. (Blainv., pl. 59, f. 2.)

Terbellaria.—Animals unknown; cells small, oval, sub-trigonal, quindecimarily arranged on the surface of the polyparium, which is composed of short conical apparently twisted branches.

This beautiful coral, thus characterised, is found in the oolite of Caen, and, it is believed, also abundantly near Bath. Perhaps only one species is known, which Lamouroux divides into two.

Example, Terbellaria ramissimia. (Lamour., pl. 82, f. l, a.)

Pelagia.—Animals unknown; cells subpolygonal, closely irregular, occupying the convex edge of numerous vertical ridges, disposed in a radiating form, and either simple or dichotomous, on the upper surface of the coral; polyparium free, fungiform, and lamelliferous above, convex, pedunculated, and circularly wrinkled below.

Example, Pelagia evelpeta. (Lamour., pl. 79, f. 5, 6, 7.) From the oolite of Caen.

Polytrema.—Animals unknown; cells poriform, polyparial, irregular, unequal, numerous, occupying the knotty branches of a small fixed polyparium.

A genus of Risso.

Example, Polytrema miniacum. (Blainv., pl. 69, f. 4.)

§ 2. Cells rounded, poriform.

Orbitolites.—Animals unknown; polyparium a regular, orbicular, discoid, cellular, cretaceous mass; cells in two layers, sometimes apparent externally, and especially at the margin, which is thickened.

One recent European species, and several fossils from the chalk and tertiaries of Europe, are mentioned.

Example, Orbitolites complanatus. (Blainv., pl. 72, fig. 2.)

Margintopora.—Animals unknown; cells poriform, except in a very small, mostly close, situated in the narrow tortuous folds of the circumference of the polyparium, which is free, irregular, discoid, thickened at the margin, and concentrically stratified on both surfaces.

(Probably an internal coralline plate.)

Example, Marginopora vertebralis. (Blainv., pl. 69, f. 6.)

Stromatopora.—Animals unknown; polyparium hemispherical or subglobular, formed of alternately solid and porous adherent supposes layers.

The character is from Goldfuss, the authority of the genus. The cells are very small, the external surface concentrically wrinkled. The species are fossil in the 'Transition' limestone, &c. of the Eifel, Siluria, Dudley, &c. Mr. Lonsdale has described a new species similar to a Nummulite in figure.

Example, Stromatopora concentrica. (Goldfuss, 'Petrifusta Europae,' tab. 8.)

Stromatopora concentrica. a, surface reduced; b, vertical section reduced; c, portion highly magnified.

Ceriopora.—Animals unknown; cells poriform, round, close, irregularly distributed in concentric layers; polyparium polymorphous, often globular or lamellar.

This genus was established by Goldfuss, but is curtailed by a stricter definition, by Blainville, to suit fossils which appear in the chalk of Maestricht and the 'Transition' rocks of Bamberg.

Example, Ceriopora micropora. (Goldfuss, t. 10, f. 4.)

Chrysaora.—Animals unknown; cells poriform, very fine, with a round opening, acumulated on the intervals of ridges, which anastomose on the surface of the fixed irregularly ramose polyparium.

A genus of Lamouroux, to which Blainville refers many of the Ceriopora of Goldfuss, which belong to the oolite formations.

Example, Chrysaora spinosa. (Lamour., pl. 81, f. 6.)

Tetesia.—Animals unknown; the polyparium formed of tortuous, verrucose, cylindrical branches; cells small, acumulated in irregular patches which project above the general surface, and are separated by smooth intervals.

Example, Tetiesia distorta. (Lamour., pl. 74, f. 5, 6.) From the oolite of Caen.

Spinopora.—Animals unknown; polyparium adherent by a concave concentrically striated face below; above reticulated, tuberculated, and bearing between the tubercles poriform cells.

Fossil from the chalk. Three species.

Example, Spinopora mitra. (Blainv., pl. 70, f. 3.)

Distichopora.—Animals unknown; cells of two kinds, some stelliform, scattered, superficial, shallow; the others poriform, deep, unequal, forming three lateral rows on each side of the branches of an arborescent polyparium; these branches are compressed, obtuse, subfoveous, and tubulous within.
This Lamarchian genus contains the Millepora, violacea of Linnaeus. (Blainv., pl. 55, f. 2.)

Heteropora. - Animals unknown; cells round, poriform, completely immersed, of two sorts; some, larger than the others, are regularly dispersed on the whole surface of the polyparium, which is fixed, lobed, or branched, and formed of superposed laminae.

A genus of Blainville, formed to include certain Ceriopora of Goldfuss which have two sorts of pores.

Example, Heteropora cryptopora. (Goldfuss, t. 10, f. 3.)

Heteropora cryptopora.

a, b, two specimens; c, pores magnified.

Fossil from the chalk of Maastricht.

Mr. Lonsdale mentions one from the Silurian Rocks. (Murchison's Silurian System, p. 880.)

§ 3. Cells round, and more or less tubular and prominent.

Pustulopora. - Animals unknown; cells rather prominent, pustule or mammellated, distant, with round openings; polyparium formed of superposed laminae, cylindrical, digitiform, or a little branched, fixed.

The few fossils which have these characters are separated from the Ceriopora of Goldfuss by Blainville. They are from the chalk and olite.

Example, Pustulopora madreporacea. (Goldfuss, pl. 10, f. 12.)

Hornera. - Animals unknown; cells with a circular opening, prominent, detached, dispersed almost quincuncially on the inner face of the branches of a fragile ramose polyparium, which is flatulose and furrowed on the non-polytalamous face.

A genus of Lamouroux, formed from Retepora of Lamarck. It includes several living species, from the seas of Europe and Australasia, and two fossils, chiefly from the tertiary strata, but Mr. Lonsdale notices one from the Dudley limestone.

Example, Hornera frondiculata. (Lamour., t. 74, f. 7, 8, 9.)

Hornera frondiculata.

a, natural size; b, c, fragments of the upper and lower sides, magnified.

Idmonea. - Animals unknown; cells prominent, subconical, distinct, with a circular opening, arranged in half rings or short cross-lines, and two-thirds of the circumference of the branches of the polyparium, which is not porous, but slightly channelled on the non-celluliferous face; the branches are divergent and triquetal.

One living species belongs to this genus of Lamouroux, and several fossils from the olite of Caen, and chalk and teriaries of Maastricht and Paris. Goldfuss has included two of them among Retepora.

Example, Idmonea triquetra. (Lamour., pl. 79.) From the olite of Caen.

Cricopora. - Animals unknown; cells tubular, rather prominent, with a circular opening, arranged in rings transversely or obliquely on the surface of a fragile polyparium, which branches into cylindrical parts obtuse at the extremity.

This genus was named Spiropora by Lamouroux, but it is only rarely that the cells take anything approaching to a spiral arrangement. The coral is also seldom found in great masses.

Some of the most characteristic species are fossils from Caen. C. Faujasii is from the chalk of Maastricht, and Blainville joins to the group two recent species, Seriopora annulata and S. nuda (Lamarck). Ehrenberg calls the group Mynaxoa, and Wiegmann Truncuaria.

MILLER, SRIR THOMAS ASBURY, second son of Mr. William Miller, writer to the signet, was admitted advocate at the Scottish bar in February, 1742, in the twenty-fifth year of his age. In 1748 he was constituted steward (or sheriff) of Kirkcudbright, and the same year elected joint principal clerk of the city of Glasgow. In 1753 he resigned in 1755, being then appointed solicitor to the excise in Scotland. In March, 1759, he was made king's solicitor-general: in April of the same year, he was advanced to be lord advocate, soon after upon which occasion he took his seat, by desire of the court, on the right hand of the lord president; and thence, on Dundas's death, he was, in January, 1788, elevated to the presidency of the court of Session, being the first lord justice clerk so promoted. The following year, 1789, he was created a baronet. He died 27th, September, 1789, leaving the present Sir William Miller, a judge in the court of session by the titular designation of Lord Glenlee, and other children.

It is an undistinguished person that the poet Burns alludes in these lines of his 'Vision':-

"Through many a wild romantic grove,
Near many a hermit-faunted cove,
I saw his feature for the first time,
In musing mood."

"An aged judge I saw him first, Dispensing good."
the King and St. Nicholas Acon, in Lombard Street, with
that of Mercham, in Surrey, and the sinecure rectory of
West Tarring, in Sussex. In 1762 Dr. Mills was nom-
dinated to the deanship of Exeter, on the advancement of Dr.
Charles Lyttleton to the see of Carlisle, whom he also
succeeded as president of the Society of Antiquaries in
1769. In the 'Archæologia' are several communications by
spread pebbles, sand, and clay, and calcareous squamae or
flakes where, previously, corals and shells were accumulated
in the quiet sea. The character of this group varies according
to a certain law of development, in passing from the south
of England to the north of England. It is also found in the
do-subtropical regions of Southern Spain, and in the
midland coal-fields, but in Derbyshire it acquires great thickness,
and appears in some of the most striking scenes of that
romantic county. Here it is a series of thick arenaceous rocks,
alternating with shales and flagstones. Below the coal
above the limestone. Perhaps no more remarkable feature
in English geology can be noticed than the bold crests of
millstone-grit which are crossed as the traveller proceeds
from the coal of Sheffield to the limestone of Castleton.

Further to the north, in the deep limestone districts of
Yorkshire, the millstone-grit rocks appear on the summit of
Ingleborough, Penyghent, and Wharnside, mixed with shales,
and limestone, and with beds of coal. At least three distinct
bands of coarse pebbly millstone-grit here occur, and the
former two are also found to the north of the limestone;
it is succeeded by the millstone-grit of Durham and
Northumberland. Throughout all the extreme north of England
the millstone-grit group passes by its coal, limestone, &c., to the coal forma-
tions above. Thus the thickness of these beds, and the
mountain limestone below, by so easy a gradation that
the whole appears one vast series of associated deposits.

The rock from which the group is named, the millstone-
grit, is a very coarse-grained quartzose sandstone, with layers
of pebbles, often of the upper flint, scattered through it,
and beds, and sometimes (as near Kesleigh) containing remarka-
able masses of laminated micas, which is not common in
the substance of the stone. The most coarse and quartzose parts
of the stone have a vague resemblance to uncleanicous gra-
site (as that of the upper flint), and this may account
for the occasional abundance of felspar, in large masses crystalized
within, but fragmented or worn to a pebbly aspect exter-
nally. This discloses probably the true history of the rock.
It is a re-aggregated mass of the disintegrated materials of
granite, and its almost everywhere abundant pebbles and coarse
beds, and sometimes (as near Kesleigh) containing remarka-
able masses of laminated micas, which is not common in
the substance of the stone. The most coarse and quartzose parts
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evangelical party in the church of England. This change in his religious views brought upon him neglect, and in some cases open opposition from many among the upper classes, because his friends and followers, but his church was soon crowded with others, chiefly from the lower orders of the people, in whose sentiments and manners his preaching produced a striking change; and at length he not only recovered the esteem of his fellow-townsmen, but lived and died in the bosom of them. His name is commemorated in the town that many of the pulpits of the churches were filled by his friends and pupils, and he himself was chosen vicar of Hull by the mayor and corporation. His election took place only a few weeks before his death, which happened on the 9th of November, 1786, at the age of sixty-six. After seventeen years before his death he had been vicar of North Ferriby, near Hull. A monument, executed by Bacon, was erected to his memory in the high church of Hull by several gentlemen who had been his pupils.

The excellence of Mr. Milner's personal character were of the highest order. He was deeply pious, upright in all his conduct, sincerely and kind, cheerful, and amusing in social life. In his political principles he was strongly attached to the established order of things in church and state.

The work by which he is best known is the 'History of the Church of Christ,' which was commenced by himself and completed by his brother, the dean of Carlisle, and published in the time of the Reformation. The first edition of this work appeared in 5 vols. 8vo., 1794 to 1812, and a second edition in 1816. It has been more than once reprinted. The plan of the history is similar to the author's 'Dialogues on the Christian Religion,' consisting in that in all ages of the church there have existed 'men who have been real, not merely nominal, Christians.' He proceeds:—It is the history of these men which I propose to write. It is of no consequence with respect to my plan, and of much importance, I believe, then to determine from nature, to what external church they belonged. I intend not to enter with any nicety into an account of their rites and ceremonies, or forms of church-government, much less into their secular history. Even religious controversies shall be the province of those who wish to wear a gaudy dress to the essence of Christ's religion, and of which the history of his real church requires some account. Let not the reader expect that the actions of great men (great in a secular view, I mean) will be exhibited to his notice. Nothing but what appears to me to belong to Christ's kingdom shall be admitted: genuine piety is the only thing which I intend to celebrate.' It is manifest that on this plan no complete church history can be written. Such a work would involve the religions principles and practices which have at any time prevailed among any of those who profess the Christian faith; leaving the reader to conclude, from these materials, which parties have been right and which wrong. But on Milner's plan we have avowedly the history of the Christian Church, and in no class of questions is this class determined solely by their agreement with the sentiments of the author. Now, to say nothing of the temptation to do violence to facts, to which an author is exposed who is determined to trace the existence of certain principles in all ages of the church (a temptation from which it is but just to add that Milner has escaped), it is clear that, writing on this plan, two ecclesiastical historians of opposite creeds would produce works containing very different sets of facts, but each professing to be a 'History of the Church of Christ.'

Mr. Milner's work cannot be called a complete church history, its value as a contribution to church history is very great. It is written in that spirit of piety, and of deep interest in which all authors who have been true to the religion which is never always found in their celebrated church historians; and for the very reasons which prevent its being complete, it contains many important facts which had previously been little attended to. It surpasses most other church histories in the number of facts from the writings of the fathers, and though the reference which the author professes for those venerable men has led him to trust them too much.

The other works of Mr. Milner are:—1, 'Gibbon's account of Christianity considered; together with some Strictures on Mr. Milner's preface to his work.' 2, 'Sermons on the Influence of the Holy Spirit.' 3, 'Essays on the Influence of the Holy Spirit.' 4, 'Tracts and Essays, Theological and Historical.' 5, 'Practical Sermons; with an Account of his Life, by the Dean of Carlisle,' 2 vols. A complete collection of his works was edited by the dean of Carlisle, 4 vols.

MILNER, ISAAC, dean of Carlisle, and brother of the preceding, was born in 1751. At the age of six he began to accompany his brother to the grammar-school at Leeds; but at his father's death his studies were interrupted, and he was employed in learning the wholesale business at Leeds. When Joseph Milner was appointed tutor of the grammar-school at Hull, he released his brother from his engagements at Leeds, and took him under his own tuition, employing him as his assistant in teaching Younger pupils, and after his death has expressed his sense of this act of kindness with an affectionate warmth which shows the attachment that existed between the brothers, and is equally creditable to the feelings of both. In 1770 Isaac Milner entered Queen's College, Cambridge, where he took his degree of B.A. in 1774. He was Senior Wrangler. In 1775 he was elected Fellow of Queen's College, and in 1783 Jacksonian Professor of Experimental Philosophy; in 1788 he took his degree of B.D., and was elected Master of Queen's College; and in 1798 was engaged in the establishment of the Lusitanian Professor of Mathematics. In 1791 he was appointed Dean of Carlisle. He was twice Vice-Chancellor in 1792 and 1809. At Cambridge he formed a close friendship with the late Mr. Wilberforce, by whom he was introduced to Mr. Pitt; and in company with him he made the memorable visitation about the year 1787. He died at the house of Mr. Wilberforce, at Kensington Gore, on the 1st of April, 1820.

Dean Milner was possessed of very extensive and accurate knowledge, and had great talents for conversation, and a dignified simplicity of manner. His religious and political principles agreed pretty closely with his brother's. He wrote the following works, besides several scientific papers in the 'Philosophical Transactions:' an account of his brother's 'Church History;' 'Animalcylinders on Dr. Hauke's History of the Church of Christ;' 'Strictures on some of the Publications of the Rev. Herbert Marsh, inten- ded as a Reply to some of his Objections against the 'Dialogues on the Christian Religion:' 'Life of Mr. Milner, one of the larger Cyclades in the Aegean was about 70 miles north of the coast of Crete, and 65 east of the coast of the Peloponnesus. It is 14 miles long from east to west, and its breadth is about eight miles. Its northern coast is indented by a deep bay, which forms a fine natural harbor, and is safe and sheltered in the Levant. The surface of the island is mountainous, and of volcanic formation; it has hot mineral springs, and mines of sulphur and alum. The soil is fertile, and produces abundance of fruit, wine, oil, and pasture for cattle. The population, which was not much before the close of the 18th century, has greatly decreased; it is now stated vaguely at 7000 by Balbi, and at only 1500 by Thiersch, but this last estimate appears too low.

Besides the chief town, called also Milo, which is in the east part of the island, near the port, there are several villages, called Pollono, San Dimitri, Castro, &c. The lower grounds near the sea are marshy, and are said to render the air unhealthy in summer.

Melos is said to have been colonised first by the Phrygians, and afterwards by the Corinthians. During the Peloponnesian war the Athenians sent an armament to reduce it under the command of Nicias, the son of Niceratus, but the attempt failed. Some years later in the war a new expedition from Athens landed on the island, and after a siege of several months took the town. The Melians werepersuaded to put to death all the adult males, and carried away the women and children as slaves, after which a colony of Athenians was sent to occupy the place. (Thucyd., ii. 51; 54, 6.) Later, period Molos, like the other Greek islands, became subject to Rome, and afterwards to the Byzantine emperors, the Venetians, and the Turks. It now forms part of the new kingdom of Greece.

There are extensive remains of the ancient capital of the island, Molos, near the city of Melos, consisting in part of an amphitheatre, cyclopian walls, a temple of Venus and numerous subterranean galleries. A fine statue of Venus, found at Molos, is in the museum of the Louvre at Paris.
A number of vases and other antiquities have been discovered among the ruins.

Near the north-east extremity of Milo is the rocky island of Cimonas, called by the Italian sailors Argentinara; the channel between the two is very dangerous in stormy weather, and noted for shipwrecks. (Dapper, Description des Isles de l'Archipel; Porcelli; Tournefort.)

MILNOV, MICHAEL, a Russian poet of considerable talent; was born in St. Petersburg, June 1608, and died in November, 1757. His works were first published in a collective form in 1819, consist chiefly of various lyrical pieces, and display elevation of mind, acute thinking, and tender feeling. Among them are some translations and imitations from Horace, Schiller, and others.

MILTIADES (Märtyr), the younger son of Cimon (who was sprung from a noble Athenian family), and nephew of the elder Miltiades, who, during the life of Pisistratus, had founded a tyranny, or arbitrary government, in the Chersonese. The elder Miltiades, that had been succeeded by Stesagoras, the elder son of Cimon, on whose death the young Miltiades succeeded to his place. The first important affair in which Miltiades appears is that at junction, during the Sicyonian expedition of Darius, B.C. 513, when the Greek commanders first opened the question whether they should not cut off the Persian king's retreat by breaking up the passage. Miltiades advised the destruction of the bridge, and although his opinion was overruled, it is not too much to suppose that his reason for and against the measure was so strongly debated as to make it obvious that the Greeks both then and subsequently often did under similar circumstances, to the Persian court. In Ionia, the burning of Sardis was followed by a war which lasted for six years, in which each party seemed to have learned a lesson. The Persians, that had been defeated by Sisamis eius, tantamount to giving all the tyrants of India to settle the dispute.

Twenty years afterwards, Miltiades was called upon to act a more important part. Hipparchus, one of the sons of Pisistratus, had fallen by the hands of Harmodius and Aristogeiton; and Hippias, the other son, who had been driven from Athens, by the will of the Spartans, had retired, as Greeks both then and subsequently often did under similar circumstances, to the Persian court. In Ionia, the burning of Sardis was followed by a war which lasted for six years, in which each party seemed to have learned a lesson. The Persians, that had been defeated by Sisamis eius, tantamount to giving all the tyrants of India to settle the dispute.

In B.C. 492, Mardonius led the first Persian armament, which was dispersed by a storm in the island of Euboea, and the war was renewed for the third time. Artaxerxes, the king of Persia, who was a skilful general, was present at the battle of Marathon, in which the Persians were defeated. The battle was fought on the 13th of September, and the victory of the Greeks was complete. (Generally supposed to have been fought on the 12th; the Greek historians are divided on this point.)

The plain of Marathon extends from the sea to the mountains, where it is contracted into a narrow glen by the spurs of two hills, but spreads out beyond the base of those spurs and between them and the sea. It is roughly in the form of a T, the top stroke representing that part which borders on the sea, and the leg of the letter corresponding to the glen, which is divided lengthwise by a mountain spur running from north to south. The plain is about the eastern side of the hill the Athenian army posted itself.

According to custom, the army was under the direction of ten generals, each of whom took the command for one day in turn. One of the ten was Miltiades, who had just been appointed to the public post, and was sent to take the place in which he had used his power in the Chersonese, than to the real merits of his conduct. He had a powerful ally in the polemarch Callimachus, who, by virtue of his office, commanded the right wing, and had an equal voice with the ten generals. The votes of the generals were being divided on the question of an engagement, Callimachus, by his vote, decided for fighting; and when the day of command came round to Miltiades, the battle took place. The strategy of the Persians was much more perfect, and so the contest might be weak and the wings strong. The Persian centre broke that of the Greeks, and pursued them toward the hills, but in each wing the Athenians, who had charged at double quick time, dispersed those who were opposed to them, and the victory was complete. The Persians were left completely masters of the field.

Heredotus states that 40,000 were the number of the Persians killed, and 129 the number of the Athenians who fell. The tactics practised at this battle are worthy of remark, as being so completely opposed to the Donian plan of preserving close and impenetrable phalanx; and much more nearly allied to those of modern warfare. Perhaps no battle ever reflected more lustre on the successful commander than that of Marathon on Miltiades; though it should be observed, that he, whom all ages have regarded as the defender of liberty, began his career as the courtier, like only one occasion in his whole life was engaged on the side of freedom; but for the same man to be the liberator of his own country and a despot in another is no inconsistency, as the course of human events has often shown.

The battle appears to have been an easy victory for the expedition headed by Datis and Artaphernes, and the career of Miltiades closed soon after. He appears next at Paros, to which he was in search of seventy Athenian ships. The Persians defended themselves bravely, and, if we may believe Herodotus, Miltiades on the reception of the Persian practice of which he received a wound, which, with general ill success, compelled a retreat. On his return, while yet suffering from a gangrene in the wound, he was accused, tried, and condemned as a demagogue. The punishment was commuted for a fine; but being unable to pay it, he died in prison.

The character of Miltiades is one on which, with the few materials which history has left, we should not judge too severely. The great point in his character is his love of Athens, and this is often more than sufficient to make a man disinterested and great in his country, but in Miltiades the motives of his actions were more than merely patriotic. He was a skilful general, and the best soldier of the time. In the army he had raised a new spirit of discipline and order, which was afterwards followed by the Spartans and Spartiates, and in the Battle of Marathon was the first to advance and break the true phalanx of the Persians. He was a man of the highest moral character, and his acts were acts of the highest virtue. He was a man of the highest intellectual gifts, and his letters and epistles are full of wisdom and eloquence. He was a man of the highest courage, and his conduct on the field of battle was always brave and bold. He was a man of the highest patriotism, and his love of his country was the guiding principle of his life. He was a man of the highest wisdom, and his counsels were always wise and prudent. He was a man of the highest education, and his knowledge of the arts and sciences was encyclopaedic. He was a man of the highest virtue, and his life was pure and blameless. He was a man of the highest ability, and his public services were always brilliant and successful. He was a man of the highest character, and his name will be remembered with reverence and respect for all time to come.
excellence of his Latin verses, and, according to his own expression, met with 'more than ordinary favour and respect' during the 13 years of his stay there. It will be unnecessary here to go into the momentous question whether Milton was whipped at Cambridge. Dr. Johnson is "as usual in relating what he fears is true, that Milton was one of the victims of the pranks of the boys," and that "the indignity of corporal correction," and Warton, in an elaborate commentary on Milton's first elegy, draws from the words a meaning which would have startled the author: but there appears small reason to believe the fact.

It has been regarded both by Dr. Johnson, and those who have retired to his father's house at Horton in Buckinghamshire, where, during a residence of five years, he read over all the Greek and Latin classics, and, as it is supposed, wrote his 'Aretes,' 'Comus,' 'L'Allegro,' 'II Penseroso,' and 'Lycidas.' Attempts have been made to fix the precise place where some of Milton's minor poems were written, by a reference to the descriptions of scenery contained in them. It appears to us that these attempts depend on a mistaken principle; that, namely, of assuming the poet to be informed in such a manner of the scenery with which he is at the time familiar. Now that localities must affect a person who is writing descriptive poetry, no one will deny: but in purely imaginative poetry, like 'L'Allegro' or 'II Penseroso,' many great weight to such considerations, particularly when the descriptions are so general, and when the describer is Milton.

In 1637, on the death of his mother, Milton travelled into Italy, during which year he was introduced to Groton, and afterwards to his Tuscan patron, Guido. Whence Italian news reached him of the progress of the troubles in England. Relinquishing his original intention of prolonging his journey to Sicily and Greece, he returned, after an absence of fifteen months, and devoted himself to the cultivation of his studies. John Lichfield, a friend of his and a fellow of Oxford, told the poet of the day. Much has been said on his system; Dr. Johnson has sneered at it; and more modern authors have caught at it in order to support a convenient thesis, each perhaps without reflecting much on the point. Milton's evidence of the existence of a thing is not to supply the then existing deficiency of instruction in the knowledge of nature, or to substitute some other treatise on such matters for the works of Aristotle, but to exchange, as quietly as possible, and at the same time as decided, the illustrous formal system of classical scenery by one in which the books that were read might arouse thought as well as excite memory. His list comprises almost all the technical treatises extant in Latin and Greek, but excludes history and elocution; his books are, probably for this reason, his only ones he especially intended for children, and postponed such subjects for the instruction or amusement of riper years. His aims were not those of a mathematician or the philosopher of nature; the state, not science, was in his view, and in his work. He was, not a member of an academy, but well-informed citizens. To this tend his economy of many exercises and his plans for a common table, which could have had little importance in the eyes of a student.

In 1641 Milton began his political career by writing a treatise 'Of Reformation,' which was followed in the same year by 'Prelatical Episcopacy,' 'The Reason of Church Government urged against Prelacy,' and some animadversions on a tract of Bishop Hall's, and in the next by 'An Apology for Smectymnus.'

In 1643 he married his first wife, who was the daughter of a country gentleman of Oxfordshire. Not long afterwards his conjugal troubles began, by the refusal of his wife to return to him from a visit to her father. He accordingly repudiated her, and in 1646 published four treatises in justification of his conduct. The year is also remarkable as that in which he produced his 'Tractate on Education,' and that most able of all appeals, the 'Areopagitica,' or Speech for the Liberty of Unlicensed Printing. This document contains some of the most surprising eloquence than any other that he has ever composed from his own or from any other pen.

About this time Milton was reconciled to his wife, whose friends had been induced to distress her by their devotion to the royal cause. His pen was silent until after the execution of Charles, when he produced a tract on 'The Tenure of Kings and Magistrates;' proving that it is lawful to call to account a tyrant or wicked king; &c. This was followed by 'Observations on the Articles of Peace, and Animadversions on the Scotch Presbytery at Belfast,' in the same year (1649). His next work, 'The History of England,' was interrupted by his appointment to the post of Latin secretary to the Council of State, which had determined that the first term of its transactions, a custom which has not been dispensed with until lately as far as treaties are concerned. At present, treaties are written in French, in addition to the languages of the parties to it; and disputes on the text are settled by an appeal to the French version. The Council could not have chosen any man in England better qualified for the office by his sound scholarship and his ready command of the Latin language; but it is to be regretted that in his controversies with Salmasius he should have stooped to criticism style instead of weighty argument. In 1654, or perhaps before that time, he became totally blind, a misfortune which his enemies considered as a judgment from Heaven.

Of the series of his office, occasional pamphlets on politics, and his 'History of England,' which appeared in 1670, he was in childbed within a year of their marriage. He died in 1674, or perhaps before that time, he became totally blind, a misfortune which his enemies considered as a judgment from Heaven.

Having obtained indemnity under an act passed in 1666, he married his third wife, Elizabeth Minshull; and in 1663, according to Elwood the Quaker (who acted in 1665 as a serjeant-at-arms, and settled on his) is a "description of the place," to which he added, "he is now in the Bedford, for the copy, with a promise of five pounds more when 1300 copies should have been sold, of the first, second, and third editions respectively. The 'Paradise Lost' first consisted of only ten books. The division into twelve was made in the second edition, published in 1667, and completed three years later, the work having been produced 'Paradise Regain'd' and 'Samson Agonistes.'

In 1673 he published a 'Summary of Logic; in 1673 a treatise 'On True Religion,' &c.; and in 1674 his Latin Poems of exercises. His last work was translation of the Political History in favour of John III. He died on Sunday, November 8, 1674, and was buried in the chancel of St. Giles, Cripplegate.

For full information on Milton's life, his habits, appearance, &c., the reader is referred to the very copious Life by Todd, prefixed to his edition of Milton's Poetical Works.

Milton belonged to the Independents, a name in his time expressive of both religious and of political tenets. He seems to have been as bold in speech as in writing, and the history of his life is the date of his friendship with his friends some uneasiness for his safety. But Milton did not consider, as some have supposed, that in entering on controversy he was following the bent of his nature; he calls it expressly a 'manner of writing,' wherein knowing myself to be bound by the law of my country, and led by the need of another task, I have the use, as I may account it, but of my left hand.' After the death of Charles he took a decided part against the Presbyterians, as is shown by his tract on the Tenure of Kings, and became the champion of republicanism against Salmasius. This was the period of his greatest celebrity. As Latin secretary he held an official residence for eight years, and divided the curiosity of foreigners with Cromwell himself. Yet, at the Restoration, he had no hardships to complain of, except the exorbitant charge for the serjeant-at-arms, and that he had the refusal of his original office.
It would be out of place here to do more than notice in a cursory manner Dr. Johnson's criticism of Milton's poetry. To attempt by way of writing an imaginative work upon those acquainted with that work is a task more easy than useful; for those who do not appreciate poetic beauty without the guidance of another man's judgment will seldom form any opinions of their own worth possessing; and in like manner those who are not by their own taste directed to see the faultiness of a critique like that to which we have referred, will probably derive little benefit from being told that it has faults. But there is another class of writers from it may be possible to direct a few observations; those, we mean, whose taste is not sufficient to enable them to trace faultiness as pervading the system, though they cannot discern its particular mistakes. In any criticism, on whatever subject, it is most important that the author in which the work subjected to criticism has written, should be kept in view by the critic. With this restriction and condition an imaginative work like 'Lycidas,' written in the style of a school of Greek poets, of which Theocritus is the model, would never be called easy, vulgar, or ungraceful; and the same might be said of the whole, if Milton had Italian models in view when he wrote 'Lycidas' in verses of unequal length.

To no one try to render a poem, even epic or dramatic, into an historical form. Charles Lamb has attempted it; a man perhaps more likely to succeed than any of his age; and his prose Shakspeare would rather derate than proveko imitation. The absurdity of reducing a chapter of Hume's 'History' into a play, or into a poetic imitation of history, is, in nothing, sufficiently manifest; but when we come to an imaginative work like 'Il Penseroso,' dissect it into elements, and make these elements purely narrative, persons are and have been deceived into supposing this dissection to be legitimate criticism.

Paradise Lost, perhaps the greatest continuous effort of human imagination, had originally the form of a drama, of which several plans remain. The epical form however at last won the preference; although the original form remains in the present poem to enable us to trace with some distinctness the shape which it probably assumed. In spite of all that has been said and written on 'Paradise Lost,' the truth of Dr. Johnson's observation must be to a considerable extent attended to, that Milton was the ideal of the Indian in which the reader admires and lays down, and forgets to take up again.

Much of this inattention is no doubt owing to the character of this age. Learned poetry suits us not. We require either a more poetic or a more dramatic form of the representations of antiquity so disguised that we are not all of us able to trace them, like Walter Scott's; or thoughtful poetry, either couched in sensuous imagery, like that of Shelley, or aspiring to be philosophical, like that of Wordsworth. But for neither of these is Milton's poetic genius adapted, and his exhibition and exposition of the leading doctrines of Christianity, couched in language however sublime, and for a history of events so gigantic, we have no taste when conveyed in the form of a poem. In other words, 'Paradise Lost' is not and cannot be extensively popular; and even among its admirers we shall detect many who judge of it as not a poetic but as a theological production. Taken as a whole, a proper estimate cannot be formed of it by any one who does not care that a true man shall take the learning of the author; and the same may be said of the dramatic works of Milton, for the allusions to passages in the Greek tragedies which are contained in the first few pages of 'Samson Agonistes' are almost equal in number to them. To receive the learning of the author, and to see the same may be said of the dramatic works of Milton, for the allusions to passages in the Greek tragedies which are contained in the first few pages of 'Samson Agonistes' are almost equal in number to them. To receive the learning of the author, and to see

Milton's poetry cannot be dismissed without a word or two on his versification. His matchless ear led him to choose blank verse—a measure till then almost unknown except in dramatic works—as the best metre for an epic poem. The power of opinion there is a decided preference of his lyrical verses, in which, as in everything else, he seems to have been a century in advance of his own time. If we compare his liquid verses with the liltting jingle which characterises almost all the versifiers of the last century who attempted the metre, we have a decided preference for the latter, which we are all of us accustomed to. It was not until Milton began to supersede the French school that English poets produced verses approaching his own in sweetness. Such are some of Coleridge's and Shelley's, not to mention Scott, who borrowed his measures from other sources.

Of all his works, Milton's De Doctrina Christiana, respecting whom conflicting judgments have been pronounced, no one has had more to contend with, both from the unwise conduct of his friends and the malice of his enemies, than Milton. Living at a time when party spirit ran high, and identifying himself with one of the extremes, his character has been assailed by many enemies, and of his defenders not a few have made up by violence what they wanted in discretion. It is part of our national habits to regard every man who can be so regarded, not according to his eminence in art or science, so much as according to the tenor of his political part. This is no theory, but a positive fact, which has become more generally true during the last half century from the accident of that literature by which the whole portion of the reading public is guided—the periodical literature—in taste assumed a tone decided by political. Thus Milton is often viewed, not as a poet, but as a writer of all writers most eloquent, but as a partisan. And yet, until we divest ourselves of this deep-engrafted prejudice, we shall never read Milton's prose works as they ought to be read; we shall never see in them the commentators on his own poetry which they supply; never trace those models of eloquence which they contain; never reflect that in Milton's polemics we find the perfection of a writer's style, in that the acuteness of his wit, the strength of his argument, and the lucidity and decision of his style, and with qualities more adapted to controversy than any which have been exhibited from his time until the beginning of the present century; that in his historical fragment exists a mythological narrative written not in a totally new style, but in the Miltonic manner of the Roman History, although Nibulon was the first who followed, however unconsciously, this great example; and that in his 'Speech for the Liberty of Unlicensed Printing' the sentiments are noble, and are more powerfully expressed than in any English composition before the days of Burke. It is a rhetorical models that we must view Milton's prose works; his logic may fail, his facts and arguments may be insufficient, but his eloquence remains unrivalled.

The place of Milton in Milton's lifetime in regard to public taste. The Shakesperian dramas, that wonderful combination of active and reflective poetry, gave place to a bad imitation of an unnatural model, the French heroic play. Italian measures, those which Surrey and Shakespeare, and Milton had all more or less supplanted by the ten-syllable rhyming couplet of Dryden, imitated also from the French. In fact the nation took their cue from the court in matters of taste, and the court was not less subservient to French influence in literature. Milton's poetry himself, and the fourteenth century shall be written, the historian will do well to trace distinctively the way in which English literature has been gradually recovering from the taint which it contracted after Restoration, as affording a curious illustration of the manner in which the current prejudice of one age is hand in hand. And no such history can be written without including a deliberate investigation of the influence which Milton has exercised, and the esteem in which he has been held, particularly amongst the nonconformists, a body of men whose power, because silently applied, has been often underrated or even overlooked.

The editions of Milton's poetical works are very numerous. His prose works have been much neglected, and we are not yet very certain in our criticism, including the tract on Christian Doctrine has yet appeared.

In the year 1823 a Latin manuscript, with the title 'De Doctrina Christiana, libri duo posthumi,' was discovered in the State-Paper Office, and it was there that it was known to have written on his subject, and which was supposed to be lost. It was edited by the present bishop of Winchester (Sumner), and a translation was also published. This work is characterised by the verbal boldness and freedom of opinion, but is a very bad piece of writing. In Milton's theological work, it is perhaps almost unnecessary to remark that it would be considered of little value by any denomination of Christians.

Tod's Life of Milton; Milton's Works. MILEYS. [FALCONER, vol. x, p. 167.]

MIME (from the Greek mime, an imitator), a dramatic performance of irregular form among the Greeks, in which occurrences of real life were clothed in a poetical
dress. It usually consisted of a single scene, mostly comic, sometimes with such dialogue added as the excitement of the moment prompted. Mimes appear to have been common entertainments at feasts. Sometimes they were acted on the stage, Sophron of Syracuse (born about a.c. 450) who wrote in the vulgar dialect of the Doric Greek of Sicily, is considered the inventor of this species of composition. His mimes were in rhetorical prose, and were highly esteemed by Plato, who is said to have invited Athens to Athens the performances, as the mimes of Sophron. With the composition of a few fragments, and the names of some of his mimi, the works of Sophron are lost. The fragments of Sophron are collected in the 'Museum Criticon,' No. VII. We have some very curious remarks in the 'Tent of the Thousand.' Philistis of Nisaea, another writer of mimes, was contemporary with the latter years of Socrates. Suidas ('Evesia') calls his mimes biologe, or 'pictures of life.'

Among the Romans, mimes seem to have been nothing but irregular burlesqued, probably the literal ancestors of our 'Punch.' In the time of Augustus, Bathilius and Fylades divided the taste of the Roman capital as actors of mimi. Among the mimographers of Rome we find Mattius, Laberius, and Publius the Syrian, the second of whom died a.c. 44. and was buried in the heaquarters. Laberius acted as well as composed mimes. In the reigns of the earlier emperors we meet with other mimographers of celebrity, but none came up to the reputation of Laberius and Publius. (Macrobi, Sat. ii. 7; Suetonius, Caesar, c. 39; Zöggler, De Mimit Romanorum, Göttingen, 1789, quoted in 'Conversations Lexicon.')

MINNERMUS OF COLOPHON, a Greek elegiac poet, contemporary with Solon. Müller, quoting a fragment of Minnermus, says that the first great poets of the colonists of Smyrna who came from Colophon, and whose ancestors at a still earlier period came from the Nidan Pylus. To the reduction of Smyrna to Halyartes, he ascribes the manuscript of the chief of his works. ('History of the Literature of Antient Greece,' p. 115.) From Homer, Herodotus, Protagoras we gather that Minnermus was the first who adopted the elegiac verse to those subjects which, from this adaptation, are now usually considered as proper to it; Callinus, his inventor, having used it as a vehicle of verse for war-scenes. The fragments of Minnermus have been several times translated, and seem to be of the first magnitude. Bruck, Gaisford, and Boissevain, to which may be added Bach's separate edition, published at Leipzig in 1826. They have been translated by Ch. von Stolberg, Herder, and the Schlegel, and others. ('Ulric's Geschichte der Hellmischen Dichtbust.')

MIMO'SÆB are a division of the Leguminous order of plants, whose flowers are regular, the stamens long, usually indefinite in number, and hypogynous, and the flowers valuate in maturation. They are in many cases polygamous, and their leaves are always more or less compound. The principal genus of the division is the Acacia. ('Acacia.') Mimosa itself consists of a considerable number of species, many of which are remarkable for the irritability of their leaves, which, when touched, have been rendered them objects of interest. ('Sensitive Plants.') The species commonly cultivated for the exhibition of this phenomenon is the Mimosa pudica, a South American annual. Among the useful plants belonging to Mimosa, and not included in this order, may be mentioned the Inga, a large flowering plant, and some others, whose pods contain a sweet nutritious food, which renders them fit for food; and several kinds of Prosopis, the astrignency of whose pods and bark renders them valuable for tanning purposes. In general, in the northern hemisphere Mimosa are confined to tropical countries, or to those which have a high summer heat; but in the southern hemisphere they extend beyond such limits, as in Van Diemen's Land, where Acacias, called wattles, are the common tree.

MINANGKABOU. (Sumantra.)

MINARET (from the Arabic menara, a lantern), in Turkish and Eastern architecture, a very slender and lofty turret, having one or more projecting balconies around it, that divide it externally into two or more stories. They are used in Mohammedan architecture for the purpose of crowning domes and steeples, and therefore for the purpose of belfries. They are however generally numerous than such purpose actually demands, there being one at each angle of the building, and sometimes a greater number, and hence they become highly characteristic features, as in proportion to their frequency as their tall column-like shape, which causes them to contrast so picturesquely with the domes that crown the edifice, and together with which they serve to produce a pleasing and majestic effect. The design of the column is frequently large; increased by the uppermost gallery being corbelled and ornamented for a short distance downwards, so as to assume the shape and mass of a capital, above which the structure is usually made to terminate in a small polygon on the four sides, and crowned by an oblong or bulbous dome.

MINAS GERAES. [Brazil.]

MINCIO. [Po.]

MINDANAÓ. [Philippine Islands.]

MINDEG, the capital of the government in the province of Westphalia. It is situated in 52° 16' N. lat. and 5° 16' E. long., on a very pleasant spot on the left bank of the Weser, partly in a plain, and partly on the declivity of a mountain-chain, in which, at the distance of about two miles from the town, there is a neat little forest of trees. This government, which formed the principality of Minden, was afterwards a bishopric, which was secularised at the peace of Westphalia, and assigned to the electorate of Brandenburg.

MINDEN, the capital of the government possessing the same name, is situated in 52° 16' N. lat. and 5° 16' E. long., on a very pleasant spot on the left bank of the Weser, partly in a plain, and partly on the declivity of a mountain-chain, in which, at the distance of about two miles from the town, there is a neat little forest of trees. This government, which formed the principality of Minden, was afterwards a bishopric, which was secularised at the peace of Westphalia, and assigned to the electorate of Brandenburg. Over the latter river there is a very old stone bridge, 560 feet long and 25 feet broad. The French, in their retreat in 1813, blew up two of the arches. Since 1815 Minden has been again converted into a fortress, and is now one of the strongest places in Germany. It has six gates. Among the public buildings are four Protestant and three Roman Catholic churches, the largest and handsomest of which is the cathedral. Besides the gymnasium and a seminary for schoolmasters, there are public schools, a Lutheran convent, an orphan-house, a bible society, and other useful institutions. The manufactures are of woolen, linen, leather, tobacco. &c. Of late years the refining of sugar has been carried on to a great extent. The vinegar manufactures are on a large scale, and the distilleries are considerable. In the vicinity there are oil and saw mills. As the seat of the administration, the various public offices and tribunals of the government and the circle, and carrying on a considerable trade on the Weser, exporting hemp, flax, bacon, bran, flour, and coarse yarn, &c., and a thriving town, and the population (now 8000) is increasing.

The history of Minden presents some interesting particulars. In the year 1076 the emperor Conrad II. held a diet here in order to have his son Henry III. elected king of the Romans. The Roman province of Minden was introduced in 1252, the town was placed under the ban of the empire in 1338, and taken by the emperor Charles V. in 1547. In 1562 it was taken by Tilly, and in 1634 by George Duke of Linsburg. In 1651 thirty-one persons were beheaded in the town for witchcraft, and afterwards burnt.
MINE, a system of subterranean works or excavations formed in or going down upon any mineral or metalliciferous deposit, for the purpose of exploring its contents, and of making it the source of those metals or other mineral substances in sufficient value. These excavations are arranged in such a manner as to facilitate the drainage and ventilation of the works, to render them easily accessible to the miners, and to allow of the application of machinery, either for the extraction of the metallic ores or other mineral produce. In addition to the underground works which constitute the mine, properly so called, the term usually comprehends also the ground at the surface, together with the numerous appurtenances which are required for its management, and the machinery employed for the drainage, the extraction of the ores and their mechanical preparation, with various buildings and erections. The various works which constitute a mine, and their construction and arrangement, are fully described in the article MINING.

Mines are usually worked by companies, who hold grants or leases of the property from the mineral proprietors, for a certain term of years, commonly twenty-one. The risk and responsibility of the undertaking entirely devolve upon the company, and are long continued, and the management conducted, the proprietor of the mineral receiving a stipulated portion of the gross returns of the mine as a consideration for the use and deterioration of his property. This proportion varies according to the different parts of the world. In New England, there where the mines are comparatively shallow and cheaply worked, it is commonly an eighth or a tenth; but in Cornwall, where the mines are deep and extensive, it seldom exceeds a fifteenth, an eighteenth, or a twentieth part, and is sometimes lower than thirty-six. Although this payment, which is denominated 'dues' or 'royalty,' from the circumstance of all minerals having originally been the property of the king, is of course a matter of right, and claimed as such whether the mine is granted to the crown, the state, or a corporation; and many of them are, and have been extinguished in a number of instances; in some cases not for the application of it, or in the terms in which it has been expedited; in others, the sum has amounted to 150,000l.

In the older and best established undertakings, the number of shares is small, as 64, 100, or 128. In some recent companies it has been subdivided into several thousand shares; but most of these have been unsuccessful. Of the profit of mines no general estimate can be given: in some cases it has been two or three thousand pounds a year, in others, nothing; but the risks and expenses are greatly reduced and the production increased. In Cornwall, where the mines are deep and extensive, the average amount of the produce is only about 150,000l. per annum; but in the other countries where the mines are comparatively shallow and cheaply worked, the profit is more numerous and more extensive.

The greatest depth to which any mine has ever penetrated is nearly 500 fathoms, or 3000 feet, and this only in one instance, in the Tyrol. The Samson mine in the Harz is about 3200 feet deep, and the celebrated Valenciennes mine in Mexico attained the depth of 1800 feet, which is about the depth of the Consolidated Mines in Cornwall.

MINE LIUJS, JOHN, was born about 1625, at Rotterdam, and died in 1692, at Copenhagen. He was a schoolmaster in his native town, and edited many of the Latin classics, with short notes for the use of schools. He also published a translation of Terence in Dutch, Rotterdam, 1665.

MINERAL VEINS. [Veins, Mineral.]

MINERAL, after quicksilver, copper, and lead, is the most valuable of the metallic materials. It is the base and foundation of a further scope of enterprise. It may probably be stated that mines of the soft metals, as copper, tin, and lead, rarely continue in a uniformly productive state for more than fifteen or twenty years together, although the discovery of new deposits of ore may prolong their existence greatly beyond this period. Coal and iron mines, on the contrary, are more permanent in their produce, and may continue to be worked for an indefinite term of years.

Great Britain is pre-eminently a mining country. With the exception of quicksilver and the precious metals, it contains every variety of mineral in great abundance, and has been estimated to produce annually a greater amount of mineral wealth than all the other countries of Europe together. Rich and extensive mines of copper and tin are worked in Cornwall and Devonshire; and in Wales and the north of England there are numerous productive lead-mines. There are rich mines of coal in Ireland, and lead-mines are worked both in that country and in Scotland. The most productive mines of coal and iron in the world are opened in South Wales, in Staffordshire, and in the north of England, and are almost equally distributed in Lanarkshire, Cumberland, Yorkshire, Durham, Northumberland, and many parts of Scotland and Ireland. Beds of rock-salt are extensively worked in Cheshire, and large quantities of salt are obtained from brine-springs in Worcestershire. The quantity of water drawn from them is far greater than in any other part of the world, and the machinery employed to take the salt out of the brine is of the most perfect description. The extent and produce of the English mines, the large capitals employed in them, and the boldness, the skill, and ability with which their management is conducted, are the admiration of foreign engineers, who make frequent visits to this country to inspect them.

Mines are worked on a more or less extensive scale in every quarter of the globe, and almost in every country, but more especially in those in which igneous and metamorphic rocks are abundant. France and Belgium have numerous cases of coal and iron, as well as many in which copper, lead, zine, and other metals are worked.

Spain is a rich mineral country, and even in its present distracted state the produce of its lead-mines, and more especially of its quicksilver-mines, is considerable. Germany has copper-mines worked in the Harz, and adjoining mines, and silver and other metals in Saxony. The English possessions in America, and in India, have in the mines of silver and other metals, the wealth of the nation. Silver and other metals, and the abundance of copper, are also found in Borneo, and in the Malay peninsula, and gold-washings have long been carried on upon the coast of Africa. The mines of America, although they have produced immense wealth, and are yet productive of metals, are not so productive of minerals, as those of Peru and Mexico. In the latter country, copper, lead, and other metals, are most celebrated for its gold and silver mines; the former are chiefly situated in Brazil; the latter have been extensively worked in Peru and Mexico. The once celebrated quicksilver-mines of Guana-Verica is situated in the former country, and the lead and other metals are worked in Chili and Cuba. There are many mines of coal, iron, lead, and other minerals, now working in the United States of North America, and although hitherto little worked, mineral produce is probably abundant throughout many parts of British North America, in which the principal mines now existing are those of coal in Nova Scotia.

The quantity of mineral produce is so extensive, and the objections to it are so diminished, that a description of it is hardly necessary. The chief minerals are coal, iron, lead, silver, and other metals. The coal, iron, and lead are worked extensively in the United States of America, and are exported in large quantities to Europe. Silver and other precious metals are also produced in large quantities, and are exported to Europe and other countries. The other minerals are worked in various parts of the world, and are exported in large quantities to Europe and other countries. The object of this article is to give a general idea of the various minerals that are produced in the world, and to describe the chief producing countries, and the methods of working them.
Mineralogy then must be considered as including the chemical composition of bodies, and an account of their external or physical properties. Both are requisite, for substances occur which agree in their chemical composition, and exhibit differences in their external characters; while there are other bodies which differ in their chemical constitution, but agree in their external properties.

Various methods of arrangement of minerals have been proposed; but we shall not minutely describe or discuss, as the alphabetical arrangement which has been adopted in this work precluding any other here. We may however observe that, according to Werner, minerals were divided into the four classes of crystalline, saline, metallic, and metallic bodies: Karsten classed them under the heads of heads, salts, combustibles, and metals: Hauy divided minerals into acidoferous earthy substances, earthy substances, nonmetallic earthy substances, metallic bodies, substances not sufficiently known to admit of classification, rocks, and volcanic products. In Phillip's 'Elements of Mineralogy,' the classes are earthy minerals, alkaline-earthy minerals, acids, acidoferous earthy minerals, acidoferous alkaline minerals, native metals, metallic minerals, and combustible minerals. Berzelius has attempted a strictly chemical classification of minerals: he has however candidly admitted that considerable difficulties attend this method, owing, in part at least, to the uncertainty which exists as to what are the essential and accidental constituents of a mineral.

The arrangement of Berzelius has however, with some slight modifications, been adopted by Mr. Brooke in the work to which we have already alluded.

It has been observed that mineralogy includes a knowledge of the chemical composition and of the external and physical properties of minerals, and they are all divisible into two great classes of crystallized and uncristallized. With respect to regularly crystallized minerals we refer for an account of their forms to what is termed Crystallography. There are some substances which do not assume regular forms, but have an imperfect crystal structure; while those bodies which are not either crystallized or crystalline, unless they are pulverulent, are designated as amorphous. Gold, for instance, although it does not possess particular forms, is botyroidal, mammellated, nodular, stalactitic, reniform, globular, and amorphous, or without any particular form.

The structure of bodies is also an important character in some cases, and it may be compact, granular, fibrous, foliated, earthy, sealy, or laminar, and it is applicable both to crystallized and massive minerals.

Fracture is a very distinguishing characteristic in many cases; the principal are the following: fracture, earthy, splintery, hackly, and irregular.

Hardness.—In this respect minerals differ greatly. [Hardnesses.]

Specific Gravity.—In this respect also minerals are very different from one another: for the modes of ascertaining it, see Specific Gravity.

Colour.—Minerals occur not only of every colour, but of every mixture of colours, and also colourless. Colour can scarcely be admitted as a very distinctive character, for there are some minerals which exhibit all colours: of this quartz is an example; for it is met with colourless, black, grey, brown, red, yellow, green, blue, purple, slightly bluish, pale grey, and slightly greyish.

Colour of Striate.—Sometimes resembles that of the mineral, and is not extremely different, so that it is impossible to forecast what it is likely to be. Hence the importance of the character. Sometimes the streak is merely shiny, and its colour does not differ from that of the mineral.

Transparency, &c.—Minerals exhibit every degree of transparency, from the most perfect to absolute opacity. The different degrees are expressed by transparent, semitransparent, translucent, and opalescent, on the edges, opaque: it is observed that some transparent bodies are doubly refractive, as calcaceous spar, &c.

Lustre.—Minerals are described as having vitreous lustre (which is possessed by the greater number of them), resinous lustre, metallic lustre, adamanthe lustre, pearly lustre, and vitreous lustre. When perfectly devoid of lustre, the mineral is described as dull.

Phosphorescence is the property which some minerals possess of becoming luminous when heated: this is particularly the case with spattite and floor spar.

Electricity.—There are certain minerals which become electric either by friction or by heat: this is the case with the tourmaline, diamond, &c.

Magnetism.—There are certain oxides of iron, some of which are natural magnets or lodestones, and others which obey the magnet. No minerals but oxides of iron, or such metal as this metal or the oxide, possesses either the power of attracting as a magnet, or of being attracted by the magnet.

Besides the above more general and distinctive characters, there are also a variety of other properties observable in different authors, which must be considered in the descriptions; some of these are: magnetic, elastic, refractive, metallic, fusible, transparent, malleable, elastic, ductile, and so on.

Mineralogists.

MINEVA, or MENERVA, an ancient Italian divinity, known to the Greeks as Pallas Athene. [Athene.] Her attributes were a helmet, a spear, shield, and a caduceus; she was the patron of arts and industry, such as spinning, weaving, &c., and was the goddess of all the mental powers. Her statue was usually placed in a temple, and those who wished for her assistance presented their masters with a present called Minene. (Varro, De Re Rust., iii. 2; compare Tortull, De Idol., c. 19.)

Minerva also presided over olive groves (Varro, De Re Rust., i. 1); and goats were not sacrificed to her, according to Varro, because she was regarded under the name of a Grecian goddess. She was the patroness of arts and industry, such as spinning, weaving, &c., and was the goddess of all the mental powers. Her statue was usually placed in a temple, and those who wished for her assistance presented their masters with a present called Minene. (Varro, De Re Rust., iii. 2; compare Tortull, De Idol., c. 19.)

There was an annual festival of Minerva celebrated at Rome in the month of March, which was called Quinquagesima, because it lasted five days. (Varro, De Ling., Lat., xvi. 15; Plut. Min., 25.) One of the sacrifices offered to Minerva was a pig, which was carried to the temple, where it was sacrificed to the goddess, and on the other side there were gladiatorial combats, &c.

There was also another festival of Minerva celebrated in June, which was called Quinquagesima Minenae. (Ovid, Ruid, vi. 631.) There were several temples in Rome of Minerva. One was on the Caelian Hill, in which she was worshipped under the name of Minerva Capia, but the origin of the name is unknown. (Plut. iii. 833-839.) It also appears from various authors, in which she is called Minerva Medea, and it is supposed that this goddess was thought to be a sister of Minerva, and conceals them with the word Monere. Müller (Etr., ii. p. 48) supposes that the word is of Etrurian or Sabine origin.

Mines, Military, are excavations made in the rampart of a fortress, or underground, in order to contain the besiegers in siege, or to breach the rampart may be breached, or any works of the enemy, above or near the mine, may be destroyed.

The term offensive is applied to the mines which are formed by the besiegers of a fortified place; those which are formed by the besieged are called defensive or siegeworks. The cavity in which the powder is deposited is called the chamber; and the approach to the latter is called the gallery. [Gallery.]

Two kinds of mines were antiently employed in the attack of fortresses. One of them was merely a subterraneous passage carried under the walls from the exterior ground; &c. being suddenly opened within the town, the assailants were enabled to enter the latter by surprise. The other kind was set up in regular manner, and was intended to lift the rampart of the place in ruins; one of them was placed as near the town as possible, and kept in a square, made by having been driven as far as the walls, was carried on, right and left under the latter, which were supported by
props of timber till the time appointed for the assault was come; then, the props being drawn away or consumed by fire, a portion of the rampart fell into the ditch; and the troops, who had kept in readiness, passed on the ruins into the town. Mines of this kind are described in a relation of the siege of the castle of Boves near Amiens, at which siege Philip Augustus attended in person. At the siege of Melun, which was carried on by Henry V. of England, the sappers, or tunnels, and those of the Venetians and Spanish town, 1'64 cone, and denominated easy rock or wooded-wooden, which consumes its volume almost by the approach to the wall and the besieging having reached a mine in opposition, a barrier was erected where the two galleries met, and then the king and duke fought with lances against two battalions of horse.

As the parties engaged two abreast, it is evident that the galleries must have been much broader than such are made at present. The old French writers occasionally applied the term mines to what were also termed in modern times, called trenches. Thus, at the siege of Harfleur, in 1449, mention is made of broad and deep trenches by which the approach to the wall is said to have been rendered secure; and the same works are immediately afterwards called mines.

Gunpowder was, in 1457, used in military mining by the Genoese at the siege of Serezzana, a town belonging to the Florentines; but on this occasion without success. It is stated however, in the life of Goncalvo de Cordova, that Peter of Narvarre, a Spanish engineer, formed mines with gunpowder at the beginning of the sixteenth century, when the Venetians and Spaniards took the island from the Turks. And in 1503 the same engineer, or, according to Vallière, an Italian called Francis Guinart, made a charge in powder which was followed in the attack and defence of fortresses. By means of 1173 mines, great and small, the Venetians defended Candia during more than two years (1666 to 1669) against the whole power of the Turks; by mines also, in 1792, the town of Schweidnitz was defended against the Prussians. In the course of this last siege two of the mines fired by the besiegers had charges of powder amounting to 5000 pounds each; and the depth of the charges below the surface of the ground was from 18 to 20 feet.

In the siege of any place the mining operations of the besiegers are directed to the discovery and destruction of the galleries of countermine; to the blowing up of any advanced works belonging to the garrison; to the demolition of the ramparts, in order to make breaches into the ditches may be facilitated; and occasionally, to the formation of breaches in the principal ramparts. On the other hand, the countermines are employed by the defenders to destroy the trenches and batteries of the besiegers; and upon the ends of these watercourses and the lodgments which may be made on the breaches or within the works. It is easy to perceive therefore, that a system of countermines must add greatly to the strength of a place, by obliging the besieger to proceed with circumspection in his approaches above-ground, in order to avoid the risk of being blown up at every step; and, according to Boussard (Essai général de Fortification), if the glacis of a fortress be countermined, the duration of the siege, which otherwise might be intended to one month only, may be prolonged to six weeks.

The chamber in which the powder is placed is a cubical excavation formed on one side of the gallery, very little larger than is necessary to enable it to receive the box with the charges and the types. The charge is then cast in, the vertical face of the chamber is covered with boards, which are kept in their places by short timbers fixed in horizontal positions between them and the opposite side of the gallery. The latter is then filled up with earth, well rammed, and the earth is taken to the extremity of the gallery greater than that of what is called the line of least resistance, that is, a line imagined to be drawn from the chamber perpendicularly to the surface of the ground above. The mass of earth thus filling the gallery is called theamping of the mine. A train of powder, about 200 yards long, is placed beside the chamber, forming a tube about three-quarters of an inch in diameter, and for security contained in a wooden trough called an auger, or a casing-tube, is laid from the box in the chamber through the tamping, to the place where the fire is to be applied; to its extremity is attached a piece of port-firo, as it is called, which, being lighted, the fire communicates by means of the train with the powder in the chamber, and the explosion takes place.

The dimensions of the crater or funnel formed by the explosion depend on the amount of the charge; its form may be considered as an irregular frustum of a cone, or paraboloid, and the mine is denominated one-lined, two-lined, or three-lined, according to the diameter of the crater at the surface of the ground is equal to, once, twice, &c. the length of the line of least resistance. Every explosion of this kind necessarily produces a compression of the earth in all directions about the chamber, to a certain extent; and the mines have been denominated globes of compression from this circumstance. Line drawn from the chamber to the circumference of the crater, on the ground, is considered as the radius of the globe of compression, or the distance from the chamber to which the least effect of the mine will extend. The last-mentioned kind of mine is used by the besiegers only, as it consumes more powder than the defenders can generally spare; its object is, by compressing the earth laterally to a considerable extent, to destroy a side wall of an enemy's gallery or blow down the countercrater of a ditch.

The rules for determining the charges of mines are founded on the results of experiment, and it is evident that the charges must vary both with the nature of the soil and the earth, and the power of the mine, that is, with the ratio between the diameter of the crater and the length of the line of least resistance. When a mine of the kind called two-lined is formed in common earth, the amount of the charge is expressed as 33 pounds, or one-tenth of the cube of the line of least resistance in feet; but for a three-lined and a four-lined mine it is supposed that the cube of this line should be multiplied by 21 and by 25 respectively. In an experiment made at Potsdam, when a four-lined mine was formed in a sand soil by the Prussian Major Le Febvre, the cube of the line of least resistance in feet was nearly equal to the charge in pounds. According to the latest experiments of the French engineers, the charges of powder necessary to remove one cubic yard (English) of matter by the mine are as follows:

<table>
<thead>
<tr>
<th>Material</th>
<th>Charge Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common earth</td>
<td>121 pounds</td>
</tr>
<tr>
<td>Strong sand</td>
<td>164</td>
</tr>
<tr>
<td>Potters' clay</td>
<td>175</td>
</tr>
<tr>
<td>Loose sand</td>
<td>183</td>
</tr>
<tr>
<td>Old masonry</td>
<td>191</td>
</tr>
<tr>
<td>Freestone</td>
<td>214</td>
</tr>
</tbody>
</table>

Now the figure of the crater being supposed to be a paraboloid, of which the centre of the chamber is the focus—if a be the length of the line of least resistance in yards, and r the radius of the crater at the surface of the ground, also if \( \pi = 3 \cdot 1416 \), we shall have

\[
a^2 = \frac{8r^2}{3} \left(1 + \sqrt{\frac{2}{a^2} + 1}\right)
\]

for the volume of the crater in cubic yards: therefore, multiplying this volume by the numbers in the above table, we should have the charge in pounds.

In order to determine the proper size of the chamber, or rather of the box, which is to contain the powder, it will be necessary to observe that one pound of gunpowder occupies, in volume, about 30 cubic inches.

Experience has shown that the greater the charge of powder, the greater is the quantity of earth removed by the explosion. But this fact has its limits; for when the charge is considerable, since the whole of the powder does not take fire instantaneously, it will happen that the earth is partially displaced before the inflammation is complete; so that fissures being formed in the ground, the force of the powder is spent in the air without producing any effect. Hence it may be concluded that there is a certain charge of powder which will produce the greatest effect in the most regular manner. It is supposed by Belidor that, in earth of mean density, the greatest crackers will have their diameters, at the surface of the ground, equal to about six times the length of the line of least resistance.

MINERIA. [GEORGIA.]

MIMA, River. [PORTUGAL.]

MINIATURE, a species of painting which, owing to its mode of execution being adapted only to very small subjects, and more particularly portraits, has acquired such a distinct

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meaning in popular language, that, unless it be otherwise expressed, the term is used to signify a very small portrait, let it be executed in whatever mode it may,—as for instance, in enamel on the lid of a snuff-box, &c. The term is also applied adjectively as synonymous with minute. A very small portrait in oil is likewise so termed. But miniature painting itself is in water-colours, though it is not at all similar in its process to that employed in water-colour drawings in general. Instead of being applied in washes or by different tints laid over each other, the colours are entirely dotted, stippled, or hatched upon the surface; although sometimes only the face and other flesh parts are thus executed, as these require great delicacy and diligence, while the tinted and shadowed background are either partially or wholly executed according to the usual or less laborious mode of water-colours. The material employed for painting upon is generally ivory (the surface of which is first prepared for receiving the colours), or vellum; sometimes Bristol-board, or other drawing-paper of that sort. Ivory however is preferred, as not only being more durable, but bearing out the colours with greater brilliancy.

As may be supposed from the nature of the process, miniature painting requires great nicety and patience, and is also exceedingly limited in its subjects, being scarcely fitted for anything beyond the face and bust of a figure. It is therefore very seldom used except for likenesses, for which purpose it has been largely employed, the advantage of immortalizing appearances may be so small as to be worn even in a finger-ring— it recommends itself by the extreme softness and delicacy of the colouring; and by its excluding all those harsher markings and lineaments of the countenance which must, even when felled down, be indicated in any picture of the size of life.

Formerly miniature, though of a somewhat different kind from that now in use, was employed for decorating or illustrating manuscripts and other books, prior to the introduction of printing, when the books themselves were entirely the work of the hand, and consequently of such cost and value as to be considered worth such expensive adornment. Very lately that style of book decoration has been partly revived, by means of ornamental margins, borders of fanciful or arabesque patterns printed from wood-blocks.

MINIEH. [EGYPT.]

MINIM, in Music, a character, or note, formed of a round open head, and a stem descending or ascending from its right side—

When first introduced, the minim was the shortest note in music, as its name (from minims, the least) indicates. It is half as long in duration as the semibreve, and double that of the crotchet. [CROTCHET.]

MINIMS, or MI/NI/M, an order of religious who imitated the Cistercian Minors, by calling themselves the Least, or smallest. They were instituted about the year 1440, by Saint Francis de Paulo, and confirmed in 1473 by Sixtus IV., and by Julius II. in 1507. In France they had the name of Bons-hommes; and in Spain that of the Fathers of Victory, in consequence of Ferdinand IV. gaining a victory over the Moors, according to a prediction of Saint Francis de Paulo. In Spain a convent of nuns of this order was founded as early as 1495, followed by a number of that of the religious establishments. In France there was no female convent of this order till 1621; when one was established at Abbéville, and another subsequently at Boisains. (Moreri, Dict. Historiques; from Louis Dom D'Atiehe, Hist. Gen. de l'Ordre des Grandes Personnes.) No house of this order was ever established in England.

MINING. The art of mining embraces the contrivance and management of the operations necessary to effect the removal of objects requisite in a mine, as the discovery of minerals, the preliminary operations of preparing for the final extraction of their produce by means of suitable excavations and the application of the requisite machinery. These occupations may be said to constitute the business of the miner in the most comprehensive signification of the term, and it will be evident that the demand an extensive range of acquirements in which knowledge both practical and scientific must be blended.

History of Mining.—A regular or detailed history of mining, however interesting in itself, would far exceed the limits of this article; we shall therefore briefly glance over some of the most important times by which mankind have been led to their present bold and extensive operations for the extraction of metals and other mineral substances. The use of the metals, and consequently some process for their extraction and separation, may be traced to the most remote antiquity, and is there lost in the obscurity which veiled the early history of our species. Moses ascribes the first use and manufacture of the metals to Tubal-Cain, the seventh in descent from Adam, who is said to have been the "instructor of every artificer in brass and iron." Upon so brief a notice we may pass, for the gradual advance, which, nevertheless, that the use of the metals is almost coeval with the human race. Profane history likewise shows that it was known to the earliest nations of antiquity, as the Greeks and Egyptians. Gold and silver were among the earliest antients; an alloy of copper and tin formed the armour and weapons of the Greeks, although iron was not unknown among them, and of this metal the Roman weapons were formed. These facts do not however imply any great knowledge and exactness so early, as it is well known that metalliciferous deposits are often found near the surface, frequently in a state of extreme purity, as gold and copper for example; and in early ages, when they had been so much less marked by the miner, these superficial deposits must have been in some degree sought for and utilized. It is probable it furnished a great amount of the metallic substance of those times. Most of the mines of antiquity were probably of a similar nature to the stream-works of Cornwall, and it appears from Strabo (175, Caes.) that the Phoenicians at the same time used them in the same manner. In early times the demand for the metals could not have been very great; their use was then either as instruments of luxury or war, and thus confined to a limited class, so that the quantity found was the surface was in all probability fully adequate, leaving but little inducement for deeper and more laborious research.

There is however evidence enough to show that operations similar to those of modern mining were carried on by the Phoenicians, who imported copper from Iberia and copper plates from the mine of Parnassus in Germany. The mountains in the island of Thasos was completely buried by the Phoenicians in their search for the precious metals; and the curious fragment of Agatharchides preserved in Dorous (b. II. ch. 12, 13) shows that the art of founding shafts and passages for exploring mines, and procuring the metals was well known in Egypt. The silver-mines of Laurania Attica were worked by the Athenians, to some extent at least, as early as the beginning of the fourth century B.C. Under the Romans the quicksilver-mines of Almaden in Spain were extensively worked.

It is singular to observe that an art for which this country possesses such great natural facilities, and which was certainly cultivated here both before the Roman conquest and during the Roman occupation of this island, should after the destruction of the Roman establishments, be apparently for a time abandoned, and not have been chiefly practised by foreigners. Prior to the Norman conquest our mines had been much neglected, probably in consequence of incessant civil commotions; and subsequently to this period they were chiefly worked by Jews. In the reign of Elizabeth the art of mining had fallen into such decay that an importation of foreign skill was found necessary to revive them; and the Germans, long and justly celebrated as skilful miners, received every encouragement, in the fullest sense of the word, with the result was, that England was supplied with minerals from which the metropolis still benefits—the furnace of the New River. About this time a new and important auxiliary was furnished to the art of mining by the application of gunpowder to blasting, and an invention which has ever since been very extensively employed in the various operations of the mine. The use of gunpowder in mining is, and more especially in this country, we have probably more truly and extensively than any other since the age of gunpowder, the results of which have been given by Mr. John Taylor in a history of results in Rees's Cyclopaedia.—The application of gunpowder to
the purposes of mining first took place in Hungary or Ger-
many, about the year 1620, and it was not until 1663 that it was intro-
duced into England at the copper-mine at Ecton in Staffordshire, about
the year 1620, by some German miners brought over by
prince Rupert. It was in use in Somersetshire about 1684,
and it was not till after this period probably that the Cornwall
mines, with their apparatus of the kind, came to be used in the
operations. Its importance may be judged of by the
amount of the present consumption in the mines of Corn-
wall alone, which has been calculated at an annual value of
about forty thousand pounds sterling.

In the 17th century another
important event took place in the history of English mining. The
rich deposits of copper which have long constituted the
principal mineral wealth of Cornwall, had up to this time been
neglected, partly perhaps from this ore being con-

sidered of no value, or worthless iron parties, common
in most mines, and partly from its lying deeper in the veins
than the ores of tin, which had always formed the chief ob-
ject of search. When at length the nature and value of the
Cornish copper ore was fully recognised, a powerful stim-
ulus was given to the mining interests of the country, and
an entirely new branch of mining was brought into
being. This branch of mining was indeed carried on
on a large scale both at the Cornwall mines, and in many
other parts of the country, and by the system of stoping or
cutting away the ground in the bottom of the levels, as still
practised on the Continent.

The most recent improvements which have been intro-
duced into mining are those which regard the mechanical
mechanism of the ores after they have been extracted from
the mine, and previous to their being fit for the furnace.
The processes used for this purpose are technically termed 'washing' and 'dressing,' by means of which the ore is
made free from many of its earthy impurities, and thus rendered
much richer for metal, in the shape of its final products. In effecting this
object, several kinds of apparatus are employed, chiefly the
stamp-mill, the crushing-mill, and the jigging-machine,
the use of which has been known from time immemorial;
the stamp-mill, which has been chiefly used for the reduction of
the mineral to a powder, the crushing-mill, which has been chiefly used for
the reduction of the mineral to a smaller size, and the jigging-machine,
which has been chiefly used for the separation of the metal from the
non-metallic impurities.

The history of coal-mining is in great measure distinct
from that branch of mining which has been described above,
and which chiefly relates to the extraction of the metals.
The introduction of gunpowder, the invention of the steam-
engine, and the improved manufacture of iron, have formed
however epochs of common importance to both, having
greatly contributed to the present state of the coal mines,
and the objects to which objects so much to our benefit and the
improvements, which, though less striking than some others,
have, within the last few years, been productive of extremely
beneficial effects, and may still be considered as in progress.

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economy, it will be necessary briefly to glance at this subject, and to point out some of the most important modes in which minerals are produced. Of the various classes into which mineral deposits may be divided, it will be sufficient for our present purpose to notice four only, veins, belts, masses, and fragmentary deposits, each of which is associated with one or more of the mineral treasures, but more especially the first two. The veins have originally been, in most cases, long, narrow, and irregular fissures, traversing the rocky crust of the globe, which they penetrate but few feet beneath the surface; and have been the means of producing the various valuable metals. They are for the most part filled with sparry and stony substances, called the 'vein-stone,' or the 'gangue' of the vein, but contain here and there irregular masses or 'bunches' of the metallic ores, often of immense size, which are the principal objects of the business of the miner to discover and extract. Most of the metals are of common occurrence in veins, as in this country, copper, tin, lead, and zinc, to which, in other parts of the world, may be added gold and silver.

Beds arise from veins of mineral substance interposed between the strata of solid rock, which, except in their containing valuable matter, they very much resemble. The layers of vein, which may be often seen imbedded in chalk wherever a section of the strata is exposed, and in the form of a mineral-beds. Several of the metals, especially lead, are occasionally found in beds; coal, clay, ironstone, and rock-salt, exclusively so; but the last-mentioned mineral is far less regular and continuous than the former. Lead, 'as, as they are called, in the language of the miner, are not so easily defined: the best idea which can be given of them is that of an irregular branching cavity descending either vertically or obliquely into the rock, and filled up with metalliciferous matter. Deposits of this nature are not of much importance; they are generally small, and usually contain either copper or lead, and some of the rich oxides of iron appear to belong to a similar formation.

Fragmentary Deposits occur associated with and indeed forming part of many of the loose masses of sand and gravel found in the valleys of mineral districts, consisting of the detritus of the neighbouring mountains, which has been washed down from thence at remote geological epochs. The mineral substances found in these deposits, which may also be considered as having originally been derived from veins or beds in the vicinity, are not, in most cases, mixed up indiscriminately with the alluvial matter, their greater specific gravity having occasioned them to be deposited in distinct layers by themselves, usually towards the bottom of the mass. Tin and gold are the metals which most commonly occur in deposits of this kind.

Geological Position.—The above-mentioned mineral and metalliciferous deposits are not found promiscuously distributed throughout all rocks or soils; on the contrary, there are certain rocks or rather assemblages of rocks, and class of rocks which may be considered as in greater measure peculiar. Granite, porphyry, and the older igneous rocks, generally are metalliciferous, and often eminently so; but mineral deposits are on the whole most abundant in rocks of sedimentary origin, and more especially in and near situations where these two classes of rocks (the igneous and sedimentary) are in contact, or where a metamorphic structure has, from the action of internal causes, been superinduced upon the latter. It does not appear that nature has confined paragenetic metals to any and various kind of rocks; yet traces of a general association may still be perceived. Thus tin, copper, gold, silver, and certain deposits of iron, are most abundant in the class of rocks usually termed primary; while lead, zinc, mercury, and the copper-irons of the golden and the older secondary rocks, which also contain our principal deposits of rock-salt. Veins are of most common occurrence in igneous or primary or metamorphic rocks, in the vicinity of which the derivative fragmentary deposits are therefore most often found, as is the case in the works of Cornwall and the alluvial gold districts of Brazil. Mineral-beds, although sometimes occurring in primary rocks, are most common in secondary countries; and irregular masses, or pipe-veins, are most strikingly developed in limestone districts, where they probably occupy or ginal cavities in the rock. The metals are very rarely presented to us in a pure or metallic state, although native masses of copper and iron are occasionally met with; but gold, from its small affinity for oxygen and other mineralizing substances, although frequently alloyed, is never mineralized. The great bulk of the metals, therefore, is found in the state of ores, that is, chemically combined with one or more mineralizing substances, which completely disguise, and, in fact, till separated by metallurgical processes, destroy their usual recognised and useful properties. The most important of these is carbon, which, in most cases, is combined with the metal; the next in rank are chlorine, and the sulphur, carbonic, and phosphoric acids. The mode in which they combine with the metals is either in binary compounds, or in the union of two pairs of such compounds. Of the former we have examined the silver compounds, of which the principal is silver chloride, and which for some purposes is of the greater value. The other unimportant compound is silver sulphuret, iron pyrites, galena, and cinnaabar: we observe the latter in all cases where the metals are mineralized by acids, as in species of iron, or carbonate of iron, in which one binary compound, the oxide of iron, is united to another, the carbonate acid.

From this naturally compound state, in which the metals almost invariably occur, arises the art of metallurgy, which, although generally considered totally distinct from that of mining, is nevertheless most intimately connected with it.

Earthly Impurities.—Independently however of those chemical combinations from which the metals can only be freed by the smelter when treated in the furnace, there are other impurities in the mineral which must require to be partially separated from the ore and vein-stone, these being the pyrites, or sulphur compounds, contained in the ore in all mines, which is more or less intermixed with the vein-stone, or often indeed finely disseminated through it; and as the expense of fusing this large mass of ore is often extremely great, the greater part of the pyrites which are contained, which are of too large a proportion of the produce of most mines to be thrown aside and rejected, great skill has been shown in all mining countries in contriving mechanical processes for effecting its separation. When this separation has been properly accomplished, the metallic residue, before worthless, can be profitably smelted, to the great benefit of all, more especially the poorer class of mines, while those in which the precious metals are worked, it is entirely dependent for their existence upon the skill and care with which it is performed. The mechanical impurities here spoken of are often sufficiently obvious even in hand specimens of the metallic ore, which, unless purposely selected from the richest parts of the vein, will often contain fragments of other rocks, or pieces of gravel, to which they have been adhered, often in a chemical union. Besides these, sometimes irregular masses of ore of different sizes which are completely intermixed with and imbedded in sparry and stony matter, and this must be considered the character of a very large proportion of ores in their natural state. It frequently happens too that ore of a worthless character is mixed up with the more valuable ones; thus copper and lead are very generally accompanied by iron pyrites and blende, both of which must be regarded as impurities, and therefore separate them as soon as possible to any process in the furnace. The great bulk of the metallic matter in iron, when in their natural state, constitute in fact a most heterogeneous mixture, in which the really valuable metal exists only in a small proportion, chemically combined with other impurities, such as pyrites or iron pyrites, or sometimes metallic impurities combined with sparry and earthy matter and ores of inferior metals. A proper perception of this fact, which is scarcely noticed in works on mineralogy, is most essential to a right understanding of the art of mining, and of the various improvements which have been made in that branch of science. In considering the operation of separating the metal from the impurities, it is necessary to take into account the separation and concentration of the metallic matter drawn from the mine, previously to its being submitted to the action of fire.

Preliminary Mining Operations.—As the construction of a mine, or the arrangement of undergroung works, must depend in great measure upon the nature of the mineral deposit to be wrought, if we refer to the great division of mineral deposits into veins and beds, before noticed, it is evident that this construction must be principally of two kinds, adapted to each of the above classes, independently
of the less definite processes adapted to the working of irregular mineral masses and fragmentary deposits. Thus in working a mineral vein, as in a copper or tin mine, the excavations will be formed either vertically or in a highly inclined position, and pursued laterally, or, as the miner terms it, "upon the course of the vein," while the advanced points tend progressively downwards, or "in depth." In working a mineral bed, on the contrary, taking a coal-mine for example, the principal excavations will be formed horizontally around the pit or shaft by which access is first obtained to the deposit.

As a very large portion of the metallic produce extracted by the miner from the earth, and more especially of the soft masses, occurs within the zone of fissures or fractures, it is evident that the former of these arrangements that attention will be first directed. The working of coal and iron is considered hereafter, together with that of those minerals which are found in masses of a similar kind, viz., slate or schist: the general view of mining which falls within the limits of this article may conveniently be divided into the following considerations: the discovery of mineral veins or other deposits—the first opening of a mine and subsequent extension of the workings—the machinery and appendages required by these operations, both underground and at the surface, with a brief notice of the surface works, and of mining economy and statistics.

Works of Discovery.—Mineral veins or beds are seldom visible on the surface; they are hidden from the ground, being generally concealed by the thick covering of diluvial matter which is spread over almost every portion of the globe, and hides from our view the solid rocky strata in which they are enclosed. In some cases however where this covering is partially removed, or where it is naturally thin and still more frequently they are rendered visible by the indentation of excavated valleys, and the channels worn by mountain torrents. The same effect is often produced by cliffs on the sea-shore, where veins occur in the situations of many examples on the surface of Cornwall.

As mineral deposits however present in most cases no trace of their existence at the surface, certain general indications must be had recourse to for their discovery. The most general and obvious are:—

1. As noticed here) are furnished by geology, which teaches us that certain metals are most abundantly found in certain rocks, and further points out that they do not occupy any position indiscriminately in those rocks, but are almost exclusively found near their junction with other rocks of a different character, more especially near the contact of igneous masses with sedimentary strata, and that they commonly occur where rocks alternate together, and are broken and dislocated. Thus the tin and copper veins of Cornwall are situations, and this kind of mineralization is commonly termed "killas," and either near its junction with protruded masses of granite, or where it is intersected by channels of a porphyritic rock termed "elvan." In Wales and the north of England the lead veins are chiefly situated in the carboniferous and other associated rocks, especially in places where they are intersected and broken up by numerous faults and dislocations. Similar circumstances to these are very generally observed in all parts of the world, and it is also well ascertained that the local enrichment of veins is greatly influenced by their intersection with one another, and often indeed closely corresponds with the points of junction.

In addition to the general presumptions furnished by geology, a more precise indication of the existence of metalliferous deposits is afforded by finding pebbles or fragments of ore on or near the surface, generally either in the beds of streams or mixed up with superficial detritus. These scattered fragments, the result of diluvial action, indicate mineral veins, and may often be traced to particular spots, and thus the position of the deposits from which they originated may be established.

In the north of England they are termed "shod stones," and this mode of discovering veins is "shodding." We shall presently treat of the exact situation of the vein whose existence has been ascertained in this or any other manner not observable, it may be ascertained by opening trenches in the alluvial soil deep enough to expose the solid rock, their direction being at right angles to the fracture, or along the line of the fracture, if any. The position of other veins in the neighbourhood would render it probable that the vein or veins in question might lie. This mode of finding veins is provincially termed in Cornwall "coasting." The object of discovery may be still more effectually attained, but at a greater expense, by excavating a nearly horizontal passage termed a "level," "drift," or "adit," from the bottom of the nearest valley, carrying it through the solid rock in the direction before mentioned, so as to intersect or "cut" any mineral deposit which may exist in the ground through which it passes. This last plan is however seldom adopted, unless it is absolutely necessary, and is attained that they may actually exist there, as it is too slow and too expensive to be undertaken upon uncertain grounds. Discoveries are sometimes made also by driving on the course of veins which occur in cliffs or are exposed in the sides of brooks. Trials of this kind have been undertaken upon very small capital, and in some instances form the first step in opening mines which ultimately become of great importance.

Although the manner in which mineral deposits may be worked, and sometimes are originally discovered, has been thus detailed, it must not be supposed that the process is one of very frequent occurrence. The principal mineral districts in this and most other countries have been known and explored for ages, and by far the greater part of our mineral ground within from deposits which have long been worked, the principal new discoveries being either made upon untried portions of known veins, or simply by excavating passages or "cross-cuts" from mines now working, in a direction transverse to that of the vein upon which they are "wrought," so as to reach the adjoining points. Because the stone, etc.

Financial arrangements, &c.—When however a new vein or mineral deposit has been by any process discovered, if the indications of metallic produce are such as to render it probable to work, then the most immediately necessary step is, with the consent of the proprietor, the formation of a company for this purpose. For although mines are sometimes worked by individuals, experience has shown that a company is best adapted for carrying on mining operations, the amount of capital required being a large and important point. The first great, while a long period may elapse before adequate returns are made. Hence, not only in England, but in most other countries, the system of working mines by companies has been adopted, being found decidedly advantageous to the company and the proprietor of the land in which the vein or deposit is situated, or, should the mineral right not belong to him, with the person who does possess it. The principal terms of this agreement are generally determined at the time of formation, and other considerations of less importance which are determined by the custom of the neighbourhood and other circumstances.

Before commencing operations, it is necessary to ascertain for some distance with some precision (if it should not be previously known) the bearing or direction of the vein, and also its dip or "underlie," which may be done by sinking a few shallow pits upon it. These circumstances being known, there are two methods by which the vein may be explored, either by sinking upon its course from the surface, or by forming a horizontal passage to intersect it, commenced from some neighbouring valley or the lowest point on the surface which may be conveniently situated for the purpose; or both these modes may be tried together or one after the other as may be found expedient.

Early Progress of the Works.—A spot determined either by convenience or by some promising indication is selected as the site of a shaft, which is frequently sunk in an inclined direction upon the course of the vein, or, if it should be perpendicular, upon that side towards which the vein inclines or underlies, and at such a distance from its "back" or outer crop, as to come down upon it a given depth, say 10, 20, or 30 fathoms. This depth is regulated by the cost of working, and the depth at which analogy may lead them to suppose that ore in any quantity may be found, the superficial parts of veins being usually quite unproductive.

On cutting the vein, the shaft is for a time suspended,
and two horizontal passages, often termed 'galleries,' but by the miner in coal lodes, termed 'drifts.' These are occasioned by the nature of the enclosing rock. Should the shaft be intended to cut the vein at any considerable depth, it may be desirable to explore it above the point of intersection, and this is done by driving a short transverse level or 'cross-cut' to it, and driving shafts from the places where the 'cross-cut' meets it, as before described. Should the depth of the shaft before reaching the vein be very considerable, two or three of these cross-cuts will be driven first, and levels extended from them. The perpendicular distance of the vein from each other, is not well adapted for the application of pumps and machinery, an evil which may not at first be very sensibly felt, but which increases proportionally with the depth of the mine, and the quantity of water and stuff which require to be drawn from it.

After cutting the vein, there are two modes of proceeding—cutting the shaft perpendicularly through the vein, or obliquely upon the vein. Which of these two plans is followed will depend in great measure upon its produce and promise, as already ascertained by the upper levels, and proceed upon the vein, or 'drifts,' upon the being most expensive and requiring the longest time, although ultimately most advantageous, while the latter, though a cheaper and quicker mode of exploring the vein, since it renders cross-cuts unnecessary, and is itself continuous with the face of it. The objections to the application of pumps and machinery, an evil which may not at first be very sensibly felt, but which increases proportionally with the depth of the mine, and the quantity of water and stuff which require to be drawn from it.

The utility of winses for working out the ore is indeed so great, that it is only when little or no ore has been found in a level that it will have proceeded far enough for ventilation of the mine, and its general system of ventilation, which is generally arranged to ventilate the whole of the mine, and in such a way that the air is directed through the various workings, so that the air is clean and fresh. The air is conducted through the various workings by means of ducts, which are formed by the different levels, and the levels between which they are placed, so as effectually to explore the vein with the smallest number of excavations. The system of works by which a vein is thus laid open, although by no means so regular, is not quite such a numerous and important as the one described, but it may be as satisfactory. In such cases, the height from which these 'sinks' are carried depending on the extent of the ore in that direction.
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Should the vein be found to contain ore of good quality and in sufficient quantity, both laterally and in depth, the various operations which have now in an described may proceed indefinitely. The shaft will continue to be sunk, cross-cuts driven to the vein at every ten fathoms or thereabouts, levels extended in both directions from them (the upper level being always of course considerably more advanced than the lower, from having been longer in process), and the ground between them subdivided by winzes as before described. The excavations will now have assumed a regular form, and become what is properly termed a mine, the objects for which they were undertaken having been accomplished, or the contents of the vein thoroughly explored, and its produce, where of sufficient value, rendered capable of being economically and expeditiously extracted. In the accompanying sketch, fig. 1, this state of the works is shown, the shaded portion representing the parts of the vein already extracted as described below. Fig. 2 gives a cross section of the mine, and with the former will completely illustrate the foregoing description.

Cross Section, showing the progress of a shaft after cutting the vein.

Raising of Ore.—The operation last named, or the extraction of the ore, will not however have waited the advanced state of the works which we are now contemplating; a certain quantity will have been produced by driving the upper levels and sinking winzes below them, although not forming the primary object of these works; and wherever grey ore was seen in the ‘back’ or upper part of the level first driven, it will early have been pursued upwards towards the surface, and will yield the first returns of the mine. When by the further progress of the works the vein has been divided into the solid rectangular masses before described, the mine will have been brought into an effective state of working, and parties of men will be set to raise ore from all the most productive points. Where the vein is not very hard, the ore may be broken down with the ‘pick’ only, but it is generally necessary to blast it with powder, by which process large quantities are detached from the vein by every shot. In raising ore the men generally work upwards from the ‘back’ or upper part of one level towards the ‘bottom’ of another, and the excavations are so arranged that the ore may readily fall down to the level below which have been pursued with or even through the extent of excavation, so that a portion of the ore thus laid open may always be held as a reserve to keep up the returns of the mine during periods of temporary depression, when only poor and unproductive ground may be procured by the works of discovery. This judicious mode of proceeding is justly regarded as one of the greatest modern improvements in the economy of mining; it provides a compensation for those great irregularities and fluctuations to which all mineral deposits are continually subject, and the turns of the mine during temporary intervals of poverty, and enables those trials to be effected which may again place it in a productive state.

Extension of the Works.—As the workings of a mine become more extended, they gradually lose the simplicity which we have been describing: the number of shafts and other excavations, become highly complex, a result to which the irregularity of mineral deposits greatly contributes. The nature of those interior operations will now be briefly described, still considering the mine as a mere system of excavations from the surface of the ground to a greater distance it is carried, becomes more and more feeble; and this evil is still further augmented by the increasing number of men now employed in the works, the number of candles, and the frequent process of blasting. The expense of the transport of ore and masses of rock and rubbish from the shaft also becomes considerable; and if the prospects of the mine continue such as to warrant the expense, a new shaft must now be sunk on one or both sides of the former. Whether one or two shafts will be necessary will depend on the direction in which the ore is found to extend, and the indications exhibited by the vein; and they will be so placed as to command that portion of it which, for reasons before stated, is without the reach of the former one, which by this time also may have become inadequate for the various purposes of extraction, drainage, and descent, to which it is applied.

In order to avoid the expense and delay of unnecessary cross-cuts, the new shaft will be so placed as to intersect the vein much deeper than the former, and this point will so arranged to correspond either with one of the deepest levels, or some proposed level deeper still. The new shaft may have been commenced in anticipation, while the levels were yet distant from the point where it is sunk; and in this case its communication with the shaft already sunk will be accelerated by driving levels to meet those which are proceeding from thence towards it. When this communication has been effected, its benefits will be immediately felt, both in the thorough ventilation of the mine and the increased facilities afforded for the extraction of ore and stuff.

As the process of sinking a shaft is often extremely slow, from the hardness of the ground (one fathom per week being a very good average, and sometimes half that progress being scarcely attainable), and as the most productive workings of the mine may be greatly impeded for want of another outlet to the surface, expeditions are often of the utmost importance to remedy this evil, and it thus becomes highly desirable to accelerate the operation. The perfection which subterranean surveying and driving to late years attained to the extent of accomplishing this object by a very interesting process, whenever the workings of the mine have advanced near the spot where a shaft is required. The site of the shaft having been fixed upon and marked out at the surface, that is, a series of points, at the distance of the shaft, and perpendicular to the length, windings, and direction of the levels, is enabled to ascertain correctly their relative position with regard to this spot, and consequently at what point each of them approaches nearest to a supposed vertical line penetrating the rock below it. This being ascertained, it is evident that by pursuing the same process still further, he may determine in what direction and to what distance cross-cuts must be driven from each of these points, in order to bring him exactly to this line, or underneath the site of the shaft; and having arrived at such, that excavations exactly corresponding with it, both in form and dimensions, may proceed simultaneously both upwards and downwards from each cross-cut, while the shaft itself is being sunk from the surface, the work thus proceeding from the same time as shown in fig. 3. It is found in practice that the various separate portions may be made to unite with surprising exactness; so much so, that even in very deep shafts, when complete, daylight may be seen at the bottom of the shaft, and from the top the entire process effects, and the new frequently used in mines of great depth, the working of which is much facilitated by it, as the work of many years may thus be brought within the compass of one or two. The most remarkable instance on record of the successful adoption of this process occurred at the Consolidated Mines in Cornwall, about nine years ago, where a perpendicular shaft, 204 fathoms in depth, was completed in less than a twelvemonth, being worked from fifteen different points at once.
Cross Section, showing the progress of a shaft worked at several points.

As the working of a mine proceeds, the increase of shafts and levels tends to obviate, in a great degree, the uniformity and simplicity of operations which were at first apparent, the position of these works being entirely regulated by the irregular distribution of the productive parts of the vein, as developed in their progress. When the depth becomes considerable, many of the first shafts are rendered in great measure useless, either from being inclined, and thus inconvenient for machinery, or from having passed through the vein at a shallow depth, and thus requiring long cross-cuts previous to commencing the deeper levels. Hence, in very deep mines, a double line of shafts will often be found ranging along the course of the principal veins; and sometimes even these shafts will be found opposite each other, and intersecting the same part of the vein successively at greater depths. In this case, while the most recent shafts are used for drainage and extraction, the older and more shallow ones are often fitted up as 'foot-ways,' and serve for the partial ascent and descent of the miners. In some of the large mines of Cornwall it is usual to sink two shafts within a few fathoms of each other, one being of large dimensions, and intended for a drainage or 'engine-shaft,' the other smaller, and adapted to drawing stuff only. This arrangement is found more convenient than having a single large shaft arranged for both purposes, for which however one shaft might be considered as practicable were the shafts have been being divided down the middle by timbering, and one side appropriated to the pumps and ladders, while the other is occupied by the 'kiddles' or iron buckets used for drawing the ore and in many cases the rubbish, when the latter cannot be conveniently disposed of underground.

Shafts in this country are generally sunk of a rectangular form, except in our coal mines, where a circular form is often preferred. Those intended for the extraction of ores, or 'whim-shafts,' are commonly six feet by four: those employed for drainage, or 'engine-shafts,' as they are generally termed, vary from about six feet by eight to ten, or sometimes are rather larger. In coal-mines the pits are generally about seven or eight feet in diameter, the dimensions varying according to the nature of the ground, and the arrangements proposed in them.

As veins are generally found to run nearly parallel, and often at no great distance from each other, and as the neighbourhood of a productive vein affords the most favourable indications of the contents of others in its vicinity, transverse levels or 'cross-cuts' are frequently driven from mines at various depths, with a view to discovering side-shafts, or making trial of branches which diverge from the main lode. Should a productive vein be found in the neighbourhood of the first, the most usual mode of working it is by extending levels upon it, at the same depth as those in the mine from which the cross-cuts are driven, commencing at the points where these intersect it. In this case the same shafts will probably serve for both the old mine and the new one, the one being, in fact, a mere appendage, as it were, to the other. Should the distance of the newly-discovered vein be considerable, it will prevent the workings from being carried on in this manner, both from the length of the cross-cuts, and from the difficulty of ventilation and extraction; and it will therefore be necessary to sink shafts upon it, and lay open as a separate mine, in a somewhat similar manner to that which has already been described.

Metaliferous veins are often traversed by other veins crossing them nearly at right angles, which seldom contain ore, excepting perhaps near the points of intersection: they are termed the 'cross-veins,' or 'cross-cutting veins,' of the most mines. Cross-cuts are sometimes carried upon these veins, partly to explore their contents, and partly because the work will often proceed more rapidly than when in the solid rock; but this is not considered so effectual a mode of exploration as the former, and discovering new veins as by driving in the rock itself.

The intersections of veins are very generally accompanied by a shifting and derangement of the metaliferous veins, the two portions of which, on the opposite sides of the cross-cut, are often separated by a very considerable distance. As veins are most productive at or near the points where such intersections occur, the metaliferous mass on which the miner had previously been working is completely lost on crossing a 'cross-vein,' and it is from this work of considerable difficulty to recover it again, as the productive vein may be thrown or 'heaved' completely out of its former course. The first object to be ascertained, in the search for the dislocated vein, is in which direction the 'heave' has taken place, whether to the right or left; and from analogy the miner is generally, though not always, enabled to form a correct judgment on this head. He then continues the level upon the cross-vein in this direction, till the metaliferous vein is again met with on the other side, which is continued as previously before. If the search should be continued for a long distance without success, he will drive in the other direction, in expectation of meeting with it there.

Adits, or where a vein has been worked by driving a level towards it from a valley or other convenient point on the surface, the drainage to the point of intersection is, of course, complete; and hence in mountainous countries, where deep ravines occur, levels may be brought in on the side effects, as to produce a drain and the veins to a considerable depth, almost superseding the use of machinery for this purpose. Levels thus opening to the surface, and serving for drainage, are termed 'day-levels' or 'adits,' and few mines are without one. In cases where mines have been opened by a vein, and it is from this work of the common method, an adit is generally commenced from the bottom of some neighbouring valley (see fig. 4.), which is driven towards the vein with a slight inclination, so that the water may readily flow through it; and in the larger mines a 'great adit' is opened, extending through the productive mining district of Gwennap, in Cornwall: it commences in a valley near the sea, and very little above its level, and has been extended through all the neighbouring mines, which it drains to that depth, the entire length of which is about 15 miles, or in actual measurement of estimate 17 miles.

The celebrated Nent Force level, in the north of England, forms a similar drain to the numerous mines on Alston Moor, and has been driven in a direct line between three and four miles, independently of its minor ramifications. It is driven an adit, if it should be considerably before it reaches the mine which it is intended to drain, the distance is often divided into two or more portions by sinking shafts upon its course, and driving from the bottom of each of these shafts to the vein, and continuing the mining to the desired depth, in proportion to the number of points from which operations may be commenced. Adits may often be made valuable as works of discovery, by making them cross the direction of the veins occurring in the district, so as to intersect them in their course, when they are of course to be driven at a cheap rate, by driving upon them at the points of intersection. In some cases adits may be carried almost entirely upon veins, to which they thus afford an important trail.

It is evident that the shafts and levels may be indefinitely extended in the manner which has now been proposed, and should the produce of the mine be considerable, the portions of the vein successively laid open continue productive, and other veins be discovered by cross-cutting in the vicinity, the mines would have extended over many years. Thus, in the course of time, from a few simple excavations, we obtain that almost infinite complication of
shafts, levels, cross-cuts, and other workings, which characterise the workings of an extensive mine, with all its numerous appendages of pumps, machinery, and buildings.

The operations which have now been described are applicable to all large and regular metalliciferous veins situated in countries where no distinct stratification exists, and where therefore, from the homogeneous nature of the rock, the metallic produce may extend to very considerable depths without any great fluctuation. The mining districts of Cornwall, being of German and Masonic character, can serve as a model for Strata-Stratified Districts.—In working mineral veins in distinctly stratified countries, this geological feature has a great influence on the arrangement of the subterranean works; for it impresses a peculiar character upon the contents of the strata in question, which are in great measure confined to certain strata, while the intervening parts are poor and unproductive. Thus, instead of exploring the whole mass of the vein, as in the former case, it is only necessary to lay open those portions which are embosomed in the strata most favourable to enrichment, and to which therefore the workings are chiefly confined. The lead-mines of North Wales, of Derbyshire, and of the North of England, are worked in the carboniferous limestone, and the grits and shales resting upon it the two former being the productive rocks. In these mines therefore the mode of working above noticed is adopted, and, from the abrupt and mountainous nature of the country, great facility is afforded in carrying on the subterranean works, which are directed to propitiate the convenience of the miner.

A point is selected in some valley or ravine where the edges of the strata are exposed to view, and from thence a level is commenced, if practicable, upon the vein itself, and in one of the beds known to be favourable to its enrichment, that the ore may be driven to better advantage than in the manner hitherto pursued. Should the vein itself not appear in any spot from which it can be directly driven upon, the level is driven as a cross-cut till it is reached, being either carried on one of the productive strata, or in some other stratum, and the ore exposed thereby is driven upon, and admits of a convenient extraction of the ore. It will be seen that the ore may be driven in any direction, and that in being driven so as to give the greatest advantage to the mode of extraction, should the ore extend for an equal length of distance downwards as it does laterally, the work is in the plainest manner, and in which the dressing-rooms are usually placed. Fig. 4 represents the section of a mine worked in the above manner.

As the principal level of a mine worked in this manner is always, when possible, carried at or near the bottom of the lowest productive stratum, the whole process of working may often be carried on by raises, and no necessity will exist for sinking being the main level, or for making drainage and water-works. When however other productive strata exist below this, which from the nature of the country are inaccessible by day levels, recourse must be had to sinking winzes below it to explore them.

When a level has been driven to a considerable distance from its mouth or entrance, a shaft will be required, which is usually sunk from the surface so as to come down upon it near the end. The deeper workings are then carried on by means of this shaft, which is either continued perpendicularly, until it reaches the next productive stratum, upon which a level will be driven. By extending the day level or adit upon the course of the principal vein, and such others as may be found in its vicinity, and by sinking shafts occasionally where they may be found necessary; a mine worked in this manner be may be indefinitely extended, and the workings arranged so as to be accommodated to the nature of the metallic deposits which may be discovered in their progress.

Although the general principles which regulate the direction of mining operations will best be understood from tracing the various modifications from the beginning to a mature and systematic development, it must not be supposed that all mines are invariably worked upon the same plan, or even that the first opening of mines is a thing of very frequent occurrence. The local circumstances of mines are so variously varied as to render the regularity and complexity of mineral deposits so great, that a corresponding diversity must exist in the means adapted for exploring them, and hence, although the general principles and features are the same in all, no two mines will be exactly alike, nor would the same unvarying processes be suitable for them.

Mining Tools and Processes.—The tools and processes employed by the miner in the excavation of the rock or vein are simple, and will require only a brief notice. As his work is of two kinds—driving and extraction—so his tools are suited to each process, the ‘pick’ and ‘gad’ being used for the former, the ‘borer’ or ‘jumper,’ and the ‘hammer’ for the latter, with a ‘shunter’ or ‘shy-a-shy’ to assist in firing the shots, when the hole has been completed to its proper depth. The pick is a very useful tool and much employed by the miner both in working in the rock and in breaking down ore where the ground is not so hard.

It resembles the chisel in form and use, but is smaller and more convenient, the iron head being sharp and pointed at one end, and very short and hammer-shaped at the other, a form which peculiarly adapts it to underground use. The wedge or gad is sometimes used in conjunction with the pick, and is a long narrow tool, and often with curved sides. The borer or jumper is an iron rod or circular bar usually about two feet in length, steeled and formed into a flat sharp edge at the end; it is driven into the rock by the man with a hickory pickaxe, while the other continually turns it round so as to expose the cutting edge to fresh surfaces of rock. The pulvoused matter is drawn out from time to time by a tool called a scraper, and when the hole has proceeded to a sufficient depth with both the gad and jumpers, it is charged with a copper point, or, what is still better, a piece of copper wire, with a loop at the end, is introduced, when the charge having been firmly rammed down with clay or other soft mineral substance, the wire or needle is withdrawn, and a train of powder inserted in its place. The powder is then set off with a slow match (often a piece of brown paper smeared with grease), and the miners retire till the explosion has taken place. A very ingenious contrivance for firing the charge was invented some time ago by a man called Master Cor- ford, called the ‘safety fuse,’ which is now getting into very general use in our mining districts. The safety fuse consists of a small train of powder inserted in a water-proof cord, and being cut to the required length, regulates the time of the explosion by its known and steady rate of ignition.

The use of this contrivance and the substitution of copper for iron in the ‘needle,’ have contributed of late years to prevent the accidents arising from premature explosion, which were formerly of very common occurrence in mines.

Auxiliary Operations.—Having now considered mining in the most simple point of view which the subject admits— as the arrangement of a system of subterranean works adapted to effect the great objects of discovery, extirpation, utilization, and removal of the produce, it only remains to consider the auxiliary operations which the progress of these works will have required, and the complicated machinery which will thus have been called into action, both on the surface and under ground.

The principal works will be directed towards the construction of various portions of the mine, and the other directed to the mechanical preparation of the ores extracted, so as to render them fit for the smelting works, to which they are finally consigned for reduction, this last process being sometimes carried out upon the spot and by the same parties, and in other cases being per-
formed at a distance by a distinct agency. We now proceed to consider the former of these two classes.

The underground workings of a mine will not have proceeded far before it becomes necessary to provide for several very important contingencies: water filters rapidly in, and, excepting where mines are worked by day levels or adits (or even then on sinking below them), requires some power to be provided for drawing it out; excavations are formed which require support; ventilation in places requires to be aided by mechanical means; and lastly, the continually increasing extraction of ore and rubbish renders powerful and efficient means indispensable for its discharge.

Drainage: Horse-whim.—The drainage of a mine is one of the earliest things which it becomes necessary to provide for, as mineral veins are generally more open and porous than the surrounding rock, and thus form natural reservoirs into which the surface water collects. When penetrated by the workings of a mine, this natural drainage is rendered still more complex, and water pours abundantly into the excavations. The most obvious mode of relief, where local circumstances are favourable, is of course the formation of an adit, but excepting in some of the abrupt and mountainous countries, where this work can be readily executed, mechanical power soon becomes necessary. This may be in the first place afforded merely by a 'horse-whim,' which will serve to raise both the water and the stuff broken in sinking; an it was before the skill and ingenuity of the working of the mines, this simple apparatus was the only power used in their drainage and extraction. Its application on the large scale is however so enormously expensive, so complicated, and so inconvenient, that in mines of great extent, it is at present only used in limited places, and mechanical power is substituted as soon as possible for animal labour. The machine alluded to consists of an upright shaft carrying a large cylindrical cage or drum, and turniing round by a long lever to which the horses are attached. A rope is coiled round the cage of the whim, with both end at liberty, so that while one end is winding up, the other is unwinding, and both pass over a pulley placed above the shaft, having large iron buckets or kibbles attached to them which by this arrangement are kept alternately ascending and descending, one kibble being loaded at the bottom while the other is emptied at the surface. This apparatus is termed a 'whim' in Cornwall, but in the north of England a 'whimsey' or 'gin.' Where mines are not very deep it is a convenient auxiliary to the extraction, but it is not very useful for drainage when the quantity of water is very trifling, as in sinking a mere trial shaft. See fig. 5.

**Fig. 5.**

**Water-wheel.**—When the influx of water in a mine becomes at all considerable, recourse must be had to the power of either of water or of steam to discharge it to the adit, or to the surface, as the case may be. Should local circumstances be favourable to the application of water-power, it will of course have the preference, being recommended both by its economy and steadiness of action. The nearest streams of water available for this purpose will be turned into an artificial watercourse, or 'leat,' and conducted to the mine so as to obtain a sufficient fall to turn an overhead water-wheel, whose diameter and width will be regulated to receive it. Where a constant and abundant supply of water can be obtained, this power becomes extremely valuable, and the miner avails himself of it with great ingenuity, constructing large reservoirs in the valleys, through which the stream passes, to render the supply more equal in time of drought, and erecting as many water-wheels on the mass, each receiving its supply from the tail of the other, as the declivity of the ground will admit. The water-wheels used in mines are invariably overshot; they vary from 10 or 11 feet in diameter to more than 50 feet; and from 2 or 3 to 6 or 7 feet in breast: some of the largest exceed 100 horse power. The German mines have long been celebrated for their skilful application of water-power, which, from the mountainous nature of their mining districts, easily presented itself to their notice. In this country, from the general application of the steam-engine to the drainage of mines, it has been less cultivated; but many fine instances of its use may be seen in some of our mines, where circumstances have been favourable to its adoption. Among these may be named the Fowey Consols Mines in Cornwall, the mines of Wheel Friendship and Wheel Baby in Devonshire, and of Grasstoneing in Yorkshire. The application of a water-wheel to the drainage of a mine is shown in fig. 6.
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The Steam-engine.—From the great abundance of coal which exists in this country, and the cheap rate at which it can be generally obtained, the steam-engine has been the great auxiliary of the English miner, and in its present improved state it has greatly contributed, as before noticed, both to the perfection of our mining system and the enormous extraction of minerals and metallic substances by which the mineral districts have been transformed, where the fuel is of scarcely more than nominal value, the steam-engine is the only power ever employed for drainage, and in all deep and extensive works for extraction also. In our copper, tin, and lead mines, on the contrary, where the carriage of coal renders the use of it more expensive, water-power is always, as far as possible, rendered available. In all the deepest and most extensive mines of this description the steam-engine is however indispensable, and both the drainage and extraction have been in great measure performed by it, since its use has been so greatly economized by the reduced consumption of coal consequent upon late improvements.

The history and progressive improvements of the steam-engine are so intimately connected with its general application to mining purposes, and consequently with the present perfection which the art of mining has attained, and the vast produce afforded by our mines, that it requires some description. The efficiency of a steam-engine for mining purposes is estimated in Cornwall (where, from the great expense of coal, all the late improvements have originated) by the standard termed duty, which accurately and conveniently defines the work performed, with reference to the consumption of a given quantity of coal. Thus, by the duty of an engine is expressed the number of pounds (always millims.) of water which have been raised through the height of one foot by the consumption of a bushel of coal, the data for this calculation being the quantity of water discharged in the pumps in a given time, and the quantity of coal consumed by the engine in the same period. This mode of calculating the efficiency of steam-engines was first practised by Watt, who thus estimated the saving of fuel effected by his engine compared with the atmospheric engine perviously in use, one-third of this saving being the remuneration claimed by him for the use of his invention.

An admirable system for the registration of the duty and other peculiarities of the engines employed in Cornwall was observed in the year 1819. The system has been ever since continued, the results being monthly ascertained and published in a convenient form. The effect of this system has been to excite an extraordinary degree of competition among the engineers, each of whom strives to improve on the duty of the engines in every possible manner. The improvements which have thus resulted have been so unexpected and so extraordinary as to excite suspicion and incredulity among those engineers who resided in other parts of England, which have only been removed by the most rigorous scrutiny and experiments.

The progressive improvement of the duty of steam-engines has been very accurately traced by Mr. John Taylor, in his Reports of Mining; and the following is a summary of the principles which he obtained:

In 1769 the old atmospheric engine, by consuming a bushel of coal, raised 5,000,000 lbs. 1 ft. high.

1772 as improved by Smeaton, 9,500,000 lbs.

From 1773 the steam-engines in Cornwall—

1815 improved by Watt . . . . 20,000,000 lbs.

1820 as improved by the Cor-

1826 . . . . 30,000,000 lbs.

nish engineers . . . . 28,000,000 lbs.

1828 . . . . 37,000,000 lbs.

1829 . . . . 41,000,000 lbs.

1830 . . . . 43,350,000 lbs.

During the present year (1839) the duty has advanced to 54,000,000 lbs., at which it was stated in the usual return for the month of April last.

The above statement, it should be observed, refers only to the average duty, many of the best engines having always greatly exceeded this; and at the present time the duty of the best engines in Cornwall varies from about sixty to eighty millions. In the latter case therefore one bushel of coal performed much work as fifteen bushels effected seventy years ago, or as was accomplished by four till within the last five and twenty years. When it is stated that some of the most powerful engines in Cornwall consume from three to four thousand bushels of coal per month, that some mines employ several of such engines, and that the mere expense of drainage 12,000 to 13,000/. per annum, the vast importance of the improvements above noticed will at once be appreciated.

Independently of the vast and practically unlimited power which the steam-engine possesses at our command, it may be considered as universal in its application, and entirely unrestricted by those limitations of local circumstances which circumscribe the utility of all other modes of drainage. The steam-engine may be erected on any spot which convenience requires, and possessing whatever degree of power may be considered requisite; fuel and water alone are needed for its operations: and while successive improvements have reduced the former to a fraction of its earlier consumption, it can always supply itself with the latter from the ground. This independence of local circumstances is of the more importance to the miner, as it is not in his power to make choice of localities: the manufacturer may erect his mill wherever water-power is abundant for driving his machinery, but the miner must carry on his operations on whatever spot nature has deposited her mineral treasures, and make the best of circumstances over which he can have no control. Thus the steam-engine smokes in the narrow valleys of Cornish and Welsh level, on the verge of the cliff at Botallack, and on the elevated table-land of Mexico.

The steam-engines employed for drainage are erected close to the shaft in which the pumps are fixed, which is called the 'engine-shaft'; one end of the beam hangs over the centre of it, and is attached to the pump-rod, which is raised at each stroke of the engine, afterwards sinking with its own weight, which is always counterbalanced by a balance-box, so that the whole power of the engine is exerted in raising the column of water in the pumps. The engine is generally enclosed in a large substantial building, either two or three stories high, which affords convenient access to every part of it. The centre of the beam is supported by the front wall of the house, and a low building attached to it contains the boilers, which in Cornwall, together with the steam-pipe and cylinder, are carefully cased and covered up with some non-conducting substances. The arrangement of the engine, with that of the 'capstain' and 'shovels' used in raising and lowering the pit-work, is shown in Fig. 7. The engines employed in draining rainies have generally cylinders of not less than 40 inches in diameter, and the cylinders vary from that size to a diameter of 60 or 90 inches, the latter being the largest that has yet been constructed, and there is a 360 horse power engine. The chief peculiarities of the Cornish engines consist in using high-pressure steam (40 or 50 lbs. to the square inch) expensively, by cutting off the communication with the boiler at one-fourth or one-fifth of the stroke; in allowing a short interval between each stroke for the perfect condensation of the steam, and in carefully preventing the radiation of heat from the boiler, cylinder, &c. The engines employed in our
collieries present no peculiarity worthy of notice, nor has any great attention been paid to their improvement, owing to the cheap rate at which they can be supplied with fuel.

Support.—The support of mines is the next subject which requires our attention, and the extent to which it is necessary will depend very much on the nature of the enclosing rock, which may be either so hard as to stand of itself, or so soft as to crush together unless the excavations be properly secured. The mode of support used in mines is of three kinds—by leaving pillars of the vein, as before noticed, for which purpose the poorer masses are of course selected; by timbering; and by walling either with brick or stone. Timbering is a very common and convenient plan, and is thus practised:—In the case of a shaft, four pieces of timber of the requisite strength are framed into each other and fixed within it at intervals of about four feet apart, the intermediate ground being supported by driving thin boards between each set of timbers and the rock. Levels are supported by three pieces of timber placed in the form of a doorway, rather narrower above than below, and framed together at the top (see fig. 8), the ground between each of these doorways being supported in the manner above noticed. Shafts and levels are sometimes also supported by walling, and in coal-mines the pits are generally lined throughout with brick-work. The 'gummers,' or large open excavations from which the ore has been taken, are kept open by strong pieces of timber placed across them, and pressing against the two walls of the vein, which they thus prevent from closing together, as might otherwise be the case, especially where the vein was much inclined, and the pressure of the unsupported hanging wall is consequently great. These open spaces are very useful for disposing of the deads and rubbish which are continually accumulating underground when the workings are carried on in the rock or in unproductive parts of the vein, and which it would be useless and expensive to raise to the surface. For this purpose a 'stull' is formed by placing strong timbers in the backs of the levels, upon which boards are laid, so as to form a close covering on which the deads and atile (or rubbish) are then thrown, till the space above has been completely filled up. The pressure of this mass gives it sufficient solidity to support the walls of the vein in an effectual manner; but notwithstanding the large quantity of rubbish thus disposed of in mines, a great deal always remains to be taken to the surface, as the waste heaps on the surface of every mine will show.

Ventilation.—The ventilation of mines is most generally and most effectually accomplished rather by a judicious arrangement of the works and frequent communication with the surface than by mechanical means, although it sometimes becomes necessary to resort to the latter. It will be evident that in mines constructed on the principles which have previously been explained, the disposition of the shafts, levels, and winzes is such that the entire workings will always be traversed by currents of fresh air, and it is only in particular cases where circumstances prevent the sinking of a shaft in places where it may be required, or where great delay is experienced in effecting the usual communications, that any mechanical process of ventilation is rendered necessary. A very efficient machine for this purpose was invented some years ago by Mr. John Taylor. It consists of a cylindrical exhausting apparatus, which may be fixed at the mouth of a shaft or level, and placed in action by any convenient power, when, by means of a series of tubes connected with it, the foul air is extracted from the interior of the works, and of course the pure atmospheric air rushes in to supply its place, and complete ventilation is effected. For raising shafts a simple contrivance is often found sufficient; small wooden pipes made tolerably airtight are fixed in the pit from near the bottom to six or seven feet above the top, terminating in a funnel-shaped wooden box, through which the air is allowed to escape under the influence of the wind. The air rushing in passes down the pipes to the bottom of the shaft, in which a constant current is thus kept up (see fig. 5). When levels have to be carried to any great distance without any communication with the atmosphere, they are often divided by placing a box or trough placed a foot or two above the bottom, and in this manner a sufficient current of air is obtained to enable the miners to proceed. In the north of England a contrivance called the 'water blast' is often used for draughting large iron and water ground; it consists in putting down either a bore-hole or small shaft near the end of the level, and turning a small stream of water into it, which falls into a cistern placed at the bottom, and is found to carry with it a sufficient current of air to work the works. In this case the air is much more difficult, and, from the rapid generation of explosive gases, more important also. It is generally effected by two shafts, one of which is called the 'downcast,' and the other the 'upcast shaft,' the latter of which occupies the highest point of elevation, and is lined with wooden rails, and has a large furnace continually burning near the bottom of it. The air being considerably rared at this point, an ascending current is formed, which passes upwards to the surface, and is used to work the upcast shaft, thus causing a descending current to pass through the downcast shaft to supply its place, and by a very ingenious arrangement of the workings this current of pure atmospheric air is made to traverse every part of the mine in succession as it passes from one shaft to the other.

Extraction.—The extraction of mines will require but little notice here, since it may be stated in general terms merely to require the adaptation of an efficient prime mover to any convenient form of winding apparatus, a purpose for which the steam-engine is very usually employed, although where water-power can be obtained it is equally effective. The horse-whim, or gin, as already noticed, is very useful in small mines or isolated workings, and before the introduction of more powerful machinery was very extensively employed for raising ore. The stuff from one or other of the preliminary excavations the common windlass is often employed, and in underground work is much used for various purposes, especially in sinking winzes, and raising the stuff from working levels, it is often used in cases where no regular shaft has been opened. The extraction of an extensive mine is enormous; indeed the quantity of ore raised is seldom more than one-third or one-fourth, sometimes indeed a fifth, or less, of the mass of stuff which is brought to the surface. At the Consolidated Mines in Cornwall the daily extraction is from 200 to 300 tons, a large proportion of which is raised from a depth of from 200 to nearly 300 fathoms. In the coal mines in the north of England the extraction is still greater, but here in considerable quantities, of the mass raised is more or less valuable; coal mines being much less encumbered with dead or unproductive works than those of the metals. The South Hetton Colliery in Durham sends about 500 tons of coal to bank daily, and is capable of affording a much larger extraction.

Mechanical preparation of Ores, or Dressing.—Having now traced the nature and progress of those subterranean works by which access is obtained to mineral and metallic deposits, and their produce extracted, we may briefly glance at the kind of processes of separation, termed 'dressing,' which fall within the province of the miner, and to the carrying on of which a large portion of the surface works of every mine is devoted. The object of dressing is to separate out the earthly matter accompanying, and, as before said, often mixed with the ores, from the metallic portion, which is alone valuable; and the great principle upon which all the varied apparatus and processes which are used in different mines, and in different circumstances, is based, to effect this, is the difference in specific gravity between earthly and metallic matter, the one being generally double that of the other.
The dressing-floors of a mine are always arranged as near as possible to the mouths of the principal shafts and level with the surrounding surface. The ore is brought into a small railway, and they are always provided with an adequate supply of water by an artificial channel, or 'lest.' The floor itself is paved, and there are on one or two sides ranges of sluices for the persons employed to work in, and which are collected and transported to the treatment in the operation, which commences by picking the ore, which is brought from the mine in large irregular lumps, as blasted or broken from the vein. These lumps, of which more than half is often merely spar and veinstone, are subjected to a process of crushing, commonly performed by boys and young women, when a good deal of the sparry matter is picked out by hand and at once rejected: the residue is moderate-sized pieces of ore, more or less mixed with veinstone, and these are broken free from it by means of large hammers, or by being subjected to the large proportion of the ore is obtained in a very pure state, and in this case it is only necessary to break down the large irregular masses into small fragments of a pretty equal size, in order to render it marketable and fit for the furnace. Here being no earthy or sparry matter to separate from it. This rich ore is immediately therefore arranged in circular heaps upon the dressing floors, containing a certain number of tons each, commonly fifteen or twenty, and in this state it has much the appearance of fine gravel, and is subjected, with some of the broken, by hammers, and partially separated from the matrix by picking, have still a great variety of manipulations to undergo, which depend on the nature of the metal and the quality of the ore itself. Of these, the most generally practiced are crushing or 'grinding,' 'jigging,' and 'stamping,' each of which is performed by an appropriate machine. The crushing-mill, or grinder, consists of one or more pairs of iron rollers, placed within a very short distance apart, and kept in close contact by the perfect action of a water-wheel or cog-wheels attached to it. Immediately above the rollers is a hopper, into which the lumps of poorer ore are thrown, when, falling through between the rollers, they are completely ground into small fragments. In this process there are two or three intermediate separations, those below being placed very near together, so as to reduce the stuff falling from above still finer, and by an ingenious application of sieves, kept in motion by the machine, the stuff can be sorted into two or three different sizes. Although by passing through the crushing-mill the ore, with its accompanying veinstone, has been reduced to very small fragments, the two substances are still as completely intermixed as ever; but in the next process, by the jigging-machine, or 'brake-stone,' they are, to use the eponymous extract of a wooden frame, open at the top, and provided with a strong screen, or iron grating, at the bottom: it hangs over a cistern of water, being suspended to a long lever, the motion of which alternately plunges the cistern within and raises it out of the water, several times each time. The ore being placed in the sieve, and subjected for a short time to this operation, the heavy metallic fragments settle at the bottom, while the lighter fragments of spar and veinstone are thrown to the top, and every now and then very dexterously skimmed off with a piece of board by a man who stands by. In the operation of jigging, a very important separation is thus effected, as three products are obtained by it—the small rich particles of ore, which pass through the sieve into the cistern below, and are removed occasionally as may be necessary; the larger rich fragments, which occupy the bottom of the cistern; and the poor earthy matter, which forms a layer at the top. This last product, although poor, still contains too much metal to be thrown away, and buildings containing the apparatus, which may be represented by a gentleman of the highest eminence as a mining-engineer, Mr. John Taylor, who has thus treated it, in connection with late mechanical improvements in the art of mining:

Management and Internal Economy of Mines. — Having now taken a general view of mining operations, and the auxiliary processes required for the working of a mine, we shall now treat of a most important branch of the subject which requires some notice, the management and internal economy of mines. As it is on the due regulation of this point that the success of mines in a very great degree depends, it has, besides received great attention, and been reduced to a system as perfect as possible. In England, more especially, all the practical improvements suggested by experience as essential to the profitable and well-regulated existence of large mining establishments, have been freely adopted, as we are here unfettered by those formalities and restrictions which influence the continental systems, individual interest being allowed a full and unlimited scope. The nature and importance of the subject now under consideration cannot be too strongly expressed, and I refer the reader to the able address of a gentleman of the highest eminence as a mining-engineer, Mr. John Taylor, who has thus treated it, in connection with late mechanical improvements in the art of mining:

Important as the improvements in machinery are, which have been of late years experienced and introduced, it is impossible to overlook the progress of medical science in the management of mines. The skill and knowledge of the community, to which we are indebted for the improvements in machinery, must be esteemed of the utmost importance in this branch of business, and the application of medical science to the management of mines is an object of peculiar importance. It is not the purpose of this address to enter into a detail of the subject, but rather to point out the necessity of a correct and accurate knowledge of the science, and of the application of its principles to the management of mines.
original labour of a vast number of men. The regulation of the force of this, and its due application, is, after all, more important to the success of mines than even the most ingenious mechanical expedients. As an army would undoubtedly fail, however well provided with the most perfect artillery and all the best constructed implements of war, unless the men of which it might be composed were well directed, their efforts well combined, and their courage well assured by reasonable prospects of success, so in mining we may collect and apply the most complete mechanical arrangements; but if the greater power of manual labour be not brought to bear upon the performance of the amount of manual labour requisite in these operations, and in the subsequent process of dressing the ores, that the great expenditure of mining consists; and the great merit of the Cornish plan lies in performing the whole by a system of machinery usually under the control of the miner and his employer, while, being renewed at moderate intervals, it continually allows of that re-adjustment which the fluctuating circumstances of the mine may require. Such work is denominated tunnel work. The raising of ore's tribute*; these two species of employment being, by an excellent division of labour common in all mines, kept entirely separate and performed by different individuals, who thus acquire great skill and judgment in their respective branches. The man employed in tuntun work and tribute is entirely different; in the former case, where the miner is employed in sinking shafts, driving levels, &c., the object being to extract as much useful labour as possible from him for a given sum, he is paid at so much per fathom, according to the work done; in the latter case, where the quality of the ore raised is a consideration equally important with its quantity, the miner receives a certain percentage on the actual value, being paid at the rate of so many shillings in the pound upon that value. The excellent arrangement of this principle will result in much advantage, but still an opportunity of the intelligent and energetic employer to exercise his talents. The usual period for making new arrangements with the men is at the end of every two months, when, all previous bargains having expired, both parties are again perfectly free to regulate their contracts. Previously, then, to this day, every part of the mine is visited and inspected by the underground agents, who afterwards consult together, and determine their plan of operations for the next two months, registering in detail the work to be performed, and what they consider fair prices to be paid for each separate operation. On the day appointed for the ‘setting’ or ‘survey’, as it is termed, the men who usually work in the mine, together with others who may wish for employment there, assemble round the office, upon a small covered platform, in front of which the agents, at a stated time, make their appearance with a book in which their previous examination has been registered. Every piece of work to be performed in the mine is then called out in succession, and according to the men's several abilities, they are paid for each separate operation for working it on certain terms. The price thus offered is, in the first place, usually more than would be fair, or than the men themselves expect to get; consequently, the moment a price has been named, another offer will be made somewhat more than the former, till fairly precise is proposed, when the competition (except in rare cases) will cease, and the work or ‘bargain’ is considered as taken by the last and lowest bidder, whose name is immediately registered opposite to its description in the setting-book. As each piece of work will require the labour of not one individual but of many, the transaction is still further simplified by the bargain being taken and the contract made with one person only, each gang of men accustomed to work together always selecting one of their number to represent and act for them on these occasions. It is evidently desirable that there should be some plan for binding the men to the employers, in order to prevent their being capriciously given up previous to the expiration of the term; and this is the more necessary, as, owing to the frequent fluctuations of richness or of hardness incident to the vein or to the rock in which they may be working, large sums are at times advanced for a little work, in the shape of wages which they had anticipated: sometimes indeed the change may be so great, that it is not worth their while to go on with it at all. To meet these contingencies there is an arrangement made by the system, by which, in all the mines working there must subscribe; and by which fines are established for the non-performance of contracts, sufficiently heavy to prevent them from being given up while any fair probability exists of their being completed at any reasonable rate of remuneration. In this manner the exertions of the working miners are called into action, and prompted to surmount many of the more obstacles and fluctuations which often baffle his calculations. Although it may appear harsh to exact a fine when a losing piece of ground is abandoned, yet it is argued that the performance of the amount of manual labour requisite in these operations, and in the subsequent process of dressing the ores, that the great expenditure of mining consists; and the great merit of the Cornish plan lies in performing the whole by a system of machinery usually under the control of the miner and his employer, while, being renewed at moderate intervals, it continually allows of that re-adjustment which the fluctuating circumstances of the mine may require. Such work is denominated tunnel work. The raising of ores 'tribute'; these two species of employment being, by an excellent division of labour common in all mines, kept entirely separate and performed by different individuals, who thus acquire great skill and judgment in their respective branches. 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for the science that is metalurgy is established. Again, we have seen that machinery and mechanical contrivances are to be traced to the industrial processes and a circumstance which renders a knowledge of mechanics indispensable; and in pursuing the complicated operations of underground discovery, loss and error can only be avoided by the aid of geometry and subterranean surveying.

The same may be said of the principles of practical knowledge in mining, there is a wide scope for the application of scientific knowledge also; in fact it is continually in requisition, not merely in the general arrangements, but in the details also, and ought therefore to be possessed, to a considerable extent, by those engaged in mining. Among the countries of Europe by which mining is most successfully cultivated, the value and necessity of scientific knowledge among miners has long been perceived, and ample provisions have been made for its promotion; may be said in the mining-

The greatest rich and productive mines in the world, it is a singular fact that, till within the last two or three years, nothing has been done in this country to provide the means of instruction to those who are engaged for the profession of mining. Thus both the working miner and the mine agent have, in this country, no knowledge whatever of the principles on which the success of their operations depends, but proceed entirely upon the practical skill which they have by nature or from the example of those who have had the same experience. It is true that, notwithstanding this disadvantage, the English miner has accomplished the most difficult undertakings, has conducted mines on the most extensive scale, and has met with most successful results; yet, we believe, represents a greater portion of our population than are willing to be exposed to foreign countries, it will be obvious that this defect should at length be removed, and that the English miner should add to his acknowledged and invaluable practical skill all the benefits and resources to be derived from scientific knowledge.

Mineralization.—When treating of the history of mining at the beginning of this article, the establishment of several institutions for the attainment of those requirements which are necessary to enable parallel operations, it may be supposed that the mining was formed as the most recent event connected with the subject, and in a few years' time the benefits derived will no doubt be strikingly apparent. The mining-school of Cornwall recently placed in operation by Sir Charles Lemon, is one of the best instructed in all that relates to the working of our tin, copper, and lead mines; while the University of Durham will produce mining engineers whose qualifications will have a more extensive and superficial knowledge of the circumstances in which the mining is conducted. Thus may be formed and improved the industrial uses of the minerals which occur in the strata of the great north of England. Thus by introducing the system of science by which the mining is to be directed, the results there would be most useful, and the mining interest, we may hope still to maintain our mines in a flourishing condition, notwithstanding their depth, their heavy expenditure, and the increasing competition of other countries.

MINING, COAL. Although it would be impracticable to enter upon the various modifications of mining processes which are required in the working of all the various natural deposits of mineral wealth, the peculiarities of coal-mining are such as to require a brief notice, important and extensive as the industry is in this country, and the arts and manufactures supported by them.

The nature and distribution of our carboniferous deposits have been already fully described in the article Coal-Mines. In working mines of coal, or indeed of ironstone or rock-salt, and other minerals which are found in beds, the object to be attained is the effectual opening and extraction of a tolerably uniform mass of small thickness, yet of great horizontal extension. The process thus differs essentially from the operations on the surface. However much the object of research is fluctuating and irregular in its produce, and either vertical or highly inclined in its position. The thickness of beds of coal may be said generally to vary from three or four to eight or nine feet, although sometimes, when situated in different parts of the earth, or in different strata of rock, they may expand to twenty or thirty feet, of which we have an example in the 'ten-yard coal' of Staffordshire. In every coal-field there are many seams of coal at greater or less intervals, one below another, of which as many as three or four are frequently worked in the same mine; and intersected with the rock which divides them there are many coal-beds of extremely productive beds of ironstone, which are wrought at the same time, and in a similar manner with the coal.

The mode of working coal-mines will be most clearly understood by tracing the works from their commencement, in the first place. From the geological indications of coal and the known extension of its beds over very considerable areas, it is pretty certain to be found in the trials which are made for it, if carried on with proper judgment. The probable existence of beds of coal in some extent is, therefore, almost certain, and when we have once convinced ourselves with being discovered by boring, the first process is to sink a perpendicular shaft from the surface so as to intersect the various strata containing the coal, and of course as many of the beds of coal that are considered to be worth working. The shaft is generally circular, and may vary according to circumstances from six to seven or eight to ten feet in diameter; the upper portion, as far down as the solid rock, is either bricked or walled, and where the ground is weak this masonry may be continued through it. On reaching the first workable seam of coal, the sinking of the pit is for time suspended, and a broad straight passage termed a 'bord' or 'gate' is driven from it upon the seam of coal in opposite directions. The breadth of this passage is usually from twelve or fourteen feet. It is formed along the length of the seam of coal, so as to expose the stratum above, which is called the 'roof,' and the one below, which is termed the 'thill,' and its direction is always arranged so as to follow the cleavage of the coal which forms its sides, which thus presents a more uniform surface. Where a 'mother-gate' has proceeded some distance on both sides of the pit, narrow passages, termed 'headways,' are driven from it at regular intervals, and exactly at right angles; and as these have proceeded eight or ten yards, they are made to communicate with another bord, which is opened parallel to the first and on each side of it. It will be seen that by continuing this system of excavation the bed of coal will be entirely laid open and intersected by a series of small bords, or shafts, without the expense of communicating with each other by narrower passages or 'headways,' which cross them at right angles, and likewise traverse the whole extent of the mines; immense square or rectangular pillars of coal being left standing between the two. A coal mine in this state is not in fact unlike a regularly-built town; the bords and headways may be compared to the principal streets and the narrower streets which cross them; while the pillars of coal may be said to represent the houses of the town.

The water encountered in the above operations is drawn to the surface by a powerful steam-engine erected on the shaft, which is so arranged as also to raise the coal and rubbish, for which purpose either 'corves' or baskets are used, and the whole shaft is therefore termed a 'passage.' The shafts have been successful as regards the prospects of the mine, another shaft will now be commenced at some distance from the first, and when the communication between them has been effected, the one being made downcast and the other upcast, the air is conducted from the latter to the former through all the bords and workings, which it must traverse in succession in consequence of terminations or doors which are fixed in various places to obstruct its progress and give a proper direction to the current passing to the upcast shaft. Till such communication can be formed, the first shaft may be divided by a 'brattice' or partition, and be made to answer the purposes of both; some few coal-mines are indeed worked entirely in this manner, but the danger of explosion is considerably when the air is conveyed in this manner.

While the workings on the first seam of coal are thus going on, the shaft may be sunk to a second or third seam, where similar operations will be commenced, small underground pits or 'staples,' being sunk at intervals, and communicated to those on the seam below, by which ventilation will be provided. These operations, like those described in the former article, may be carried on indefinitely, and will thus in time form an extensive colliery. The regularity of the results obtained under these circumstances are greatly modified by the occurrence of faults and other local accidents, and the pillars themselves are finally removed to such an extent as to cause subsidence of the roof and undulations of the floor, which present a most frightful appearance to the stranger.
The mode in which the pitman carries his excavation upon the coal is by cutting a narrow fissure in the seam on each side of the bord, and undermining the coal between, finally detaching the great cubical mass thus circumcised by putting in two or three shots, which are simultaneously fired at the top of the seam. For the deepest seams, five shots may thus be brought down at once, when it is put into curves drawn along a tram-road to the shaft, and thence raised by a steam-engine to the surface, where it is often passed over gratings or 'screens' in order to separate the small coal from the larger masses, which in coal countries are alone valuable.

In mines which are not endangered by explosive gases or 'fire-damp,' the coal-miner or 'pitman' is guided in his operations by the usual system of light—a small candle stuck in a piece of moist clay; but where the fire-damp is apprehended the safety-lamp is used, which has long superseded the primitive contrivance of the steel-mill, the light of which was produced by the contact of a flint with the edge of a wheel kept in rapid motion. Notwithstanding the use of the Davy lamp, and the improvements which have taken place in ventilation, accidents from explosion are unfortunately still of frequent occurrence, although perhaps in most cases they may be traceable to some neglect or misunderstanding on the part of the miners themselves.

MINNIUM. [Lead, vol. xxiii., p. 370.]

MINK, a name for the Vision-wasel, Mustela vison. [Wesb.]

MINNISGERS. [Germany—Language and Literature.]

MINNOW. [Leuciscus.]

MINOR, (Latin) Less, or Lesser, is a term used to distinguish the mode or key that takes a minor 3rd. It is also applied to a minor division into a larger number of smaller divisions, and is used to denote a key which is not fully a major key. The minor 3rd consists of a tone and a semitone—A, C: the major 3rd is composed of two whole tones—C, E. [Key. Mod.]

MINORCA. [Menorca.]

Those critics who consider all the personages of mythological history as little more than names to which is attached the history of social development, would view Minos simply as the concentration of that spirit of order which about this time began to subdue in the island of Crete the forms of a regular polity. But we are not to consider, because there is much undoubtedly mythological about the history of Minos, that therefore he never existed. The concurrent testimony of Thucydides and Aristotle shows it to have been an actual fact that the kings, Minos and his son, were held among the Greeks who possessed any amount of naval power. According to the latter author, he conquered and colonised several islands, and at last perished in an expedition into Sicily.

In the second book of the 'Politics,' Aristotle draws a parallel between the Cretan and Spartan institutions, and he there ascribes the establishment of the Cretan laws to Minos. This comparison, aided probably by the connection which existed between Crete and Sparta, owing to colonies, as early as the time of Homer, has no doubt suggested the theory invented and supported by Müller, that Minos was a Doric prince; a theory, as Mr. Thirlwall asserts, utterly unknown to the ancients. The subject is ably discussed in the History of Greece, i. 135.

Some post-Homerian authorities make Minos a judge in Hades in company with Æacus, Rhadamanthus being chief judge. In this character he appears in a short Platonic dialogue called 'The Minotaur,' on law, which however some critics consider spurious.

Minos is a son of Jupiter; this being the usual method taken by the mythographers to express a person so antient that they could put him on a level with no mere mortal; and from Jupiter as father he learns those laws which he afterwards delivers to men.

Minos is chiefly remarkable as belonging to a period when history and mythology interlace, and as uniting in his own person the chief characteristics of both. He is a son of Jupiter and yet the first possessor of a navy; a judge in Hades, but not the less for that a king of Crete. It is very curious, that Crete, so famous at this age, both for its naval power and for being the birth-place of the Olympian, should afterwards be esteemed merely like that celebrity which its position seemed to promise. Its office seems to have been that of leading the way in naval supremacy. Too insulated for power of a durable nature, it was lost in the confederate or opposing glories of Athens and Sparta; but while they were yet in their infancy, its insular form (together perhaps with some Asiatic refinement) gave it that concentrated energy which in an early age was irresistible.

(Homer, II., ii. 65; xiii. 450; xiv. 321; Odyssey, xix. 117.)

Thucydides, i. c. 3; Plato, Luca, b. ii. and iii.; and Minos: Aristotle, Polybius, &c. iii. and viii.; Philological Museum. 'On the Names of some of the Anti-Hellenic Inhabitants of Crete.'

MINOTAUR, son of Pasiphae, wife of Minos, by a bull. He lived on man's flesh, for which reason Minos put him in the labyrinth of Dædalus, feeding him with various food, and his flesh is the same as that of the Minotaur. Theseus, by help of Ariadne, killed him thereby delivering the Athenians from the obligation of sending their children to be eaten. Such is the mythological story. Its meaning is uncertain. It very likely belongs to the class of mythological tales which express political fact, and the connection in which Theseus stands with the Minotaur adds probability to this theory, for the exploits of Theseus are generally such effects as would be produced in historical times by the course of events in the disintegration of a society. Such are the events of Minos and Ariadne for Theseus, in mythological language, may be taken to mean a union of Cretan and Attic tribes. It should be observed that Schwenk, in a very fanciful but ingenious treatise on mythology, considers the first two syllables of the name as an abbreviation of 'Minotaur,' the bull of Minos; the other part of the name, 'meant the introduction of the Attic worship, in place of the previously prevalent Dorian form.' (Hoech, Kreis; Schwenk, Hofburg, und fremdenkungen, p. 39.)

MINSK, a government of European Russia, in the division called West Russia (formerly Lithuania), lies between 51° 19' and 55° 50' N. lat. and 26° 16' and 30° 54' E. long. It is bounded on the north by Witte, on the east by Mohilev, on the south-east by Tcherewinsk, on the west by Grodno, and on the north-west by Wilna. Its area is about 37,000 square miles, and the population 1,205,000. This government is divided into ten circles. The face of the country is one vast plain, broken only here and there by a hill or the high banks of the rivers. In the north and east there are large forests, and on the south and south-west extensive marshes. There is a great diversity of soil; in the north it is dry, and the poorer plains are only fertile, being traversed by heaths and barren sandy tracts. In the south it is marshy, yet it contains large tracts which are very fertile; the marshes also are rendered productive with little labour, and even the heaths yield to the efforts of cultivation. The principal rivers are the Svisloch, which is the principal of which however only touch the frontier; the former flows for a short space between this province and Wilna, and the latter on the south-east divides it from Tcherewinsk.

Among the rivers that flow into the Duna are the Berezina, which enters the Duna, and the Dnister. The Dneiper receives from this province two of its most important tributaries, the Dniester and the Don, which come from Grodno, and the Berezina, which rises in the Circle of Wilna, having received several minor streams falls into the Dniester.
on the frontier of this province. In the fatal retreat of the French army from Russia in 1812, it sustained great loss on the banks of this river. There are many other rivers of less note. The province has no great lakes.

The climate is not very different from that of White Russia. The cold in winter is so severe that the rivers are every year frozen over for some time; in spring there are frequently frozen fronts at night; the river is hot, and dries in the north than in the south; in autumn it slakes; it is agreeable and not variable, but the night frosts return in September, and winter begins at the end of October. On the whole the climate is healthy, but more so in the north than in the south. The pines Polonics is more common than in Lithuania and White Russia.

Agriculture is the chief occupation of the inhabitants, and might raise them to a considerable degree of prosperity if they applied themselves properly to it; but Minsk is one of the most backward of all the provinces in the empire with respect to its agriculture. The fields are ill cultivated, the agricultural implements wretched, and the cattle miserable. The circles of Finok and Mosry are real deserts. The grain generally cultivated is wheat, but in the provinces the pikes Polonics is more common than in Lithuania and White Russia.

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who played and sang, and even the dancer and mimico, were all considered as of one community, and were even all included in the common name of minstrel, hence we may add their Latin names of Mimi, Sorrium, Histriones, Joculatores, &c.

Joculator Regius is an officer holding no less than three vills in the return of the Domesday Survey for Gloucestershire, and in the same survey, in Surrey, we have a Joculator. Wace, Gaimar, and our other historians William of Malmsbury and Huntington, all concur in the statement that a warrior-minstrel of the name of Tallieser rode before the conqueror's army previous to the battle of Hastings singing his sword in deditance, and singing the song of Roland.

To trace the existence of the minstrel profession minutely through the reigns immediately subsequent to the Conquest seems unnecessary. Rahere, the founder of St. Bartholomew's Priory in Smithfield, is recorded as the *minstrel* Henrici I.; nor can we forget the cruel punishment inflicted on Lucas de Barre by that king, for excoriating the minstrel art to his disadvantage.

If king Henry II. was not an encourager of minstrels, his son Richard was himself of their number. The story of Blondel de Nesle, who went in search of Richard in his captivity, needs hardly to be repeated here. It is not so apocryphal as many have supposed. He came to a castle in the certain knowledge that his privileged character gave him a near access to the fortress, and he began a song which he and Richard had composed together. When Richard heard the song, he knew it was Blondel that sang it; and when Blondel paused at the end of the stanza, the king began the other, and completed the song.

The minstrels, it appears, were no less patronized by Richard than by the favourites and chief officers of his court. His *Langua* and *Verification of Chaucer* (Cont. Tales, 4to. ed. vol. i., p. 39) shows from Hoveden that William bishop of Ely, Richard's chancellor, is expressly mentioned to have invited singers and minstrels from France, whom he loaded with rewards; and, in short, he glorified him as the most accomplished person in the world.

Walter de Hemingford relates an anecdote of the fidelity of a minstrel who, in 1272, rushed into the tent of Edward I., at that time only prince, while on his expedition to the Holy Land, to rescue his master from a Saracen assassin.

In Rymer's *Federas* (old ed., tom. iii., p. 978) we find king Edward II., in the sixteenth year of his reign, rewarding his minstrel William de Mortes, *also* known as de Norton, for his invention of Pontefract, which had lately belonged to John de Boteler, called 'Roi Brunard' (probably another minstrel), the king's enemy.

The instances of regard shown to minstrels in subsequent reigns are abundantly numerous. King Henry V. was prevailed upon to go to France in 1415, eighteen minstrels accompanied him, with an allowance of 124. a day each (Rym., Fed., tom. ix., pp. 255, 260); and in the 34th Henry VI., A.D. 1446, an ordinance occurs for the imposition of youths to supply vacancies by death among the king's minstrels, 'ad quosdam pueros, noctuarii naturale, libusi elegantia, in arte ministriatu instructos, ubicunque inventi potest, tam infra libertates quam extra capiendum, et in servito nostro ad vaca nostra ponendam.' (Ibid., tom. ix., p. 372.)

Warton, in his *History of English Poetry*, vol. ii., p. 105, has cited several instances of the high pay to minstrels at this period:—"During many of the years of the reign of Henry VI., he says, 'particularly in the year 1430, at the annual feast of the fraternity of the Holy Cross at Abingdon, a town in Berkshire, twelve priests each received four pence for singing a dirge; and the same number of minstrels were rewarded each with two shillings and fourpence, beside due allowance of their wages, coming of them from Maidenhead or Maidenhead, a town at no great distance, in the same county. In the year 1441 eight priests were hired from Coventry, to assist in celebrating a yearly obit in the church of the neighbouring priory of Maxstoke; as also by an occasion which occurred to the king, of Lord Clinton, who lived in the adjoining castle of Maxstoke, to sing, harp, and play in the hall of the monastery, during the extraordinary refestation allowed to the monks on that anniversary. Two shillings were given to the priests, and four to the minstrels; and the latter are said to have savoured in camera picta, or the painted chamber of the convent, with luxury of variance furnished eight many tapers of wax.'

In the reign of Edward IV., a sergeant of the king's minstrels occurs, and in a manner which shows the confidential character of this officer, and his faculty of access to the king at all hours and on all occasions. Hearne has printed the passage relating to him in a fragment concerning the ninth year of Edward IV. at the end of Sp loos's 'Chronicles':—"And as he (the king) was in the north country, in the month of September, as he lay in his bed, one nimidde, the Last, the King of the mynstrallis, came to him in grete haste, and bade him arise, for he haddes enemies comming.'

From this period however the real character of the original minstrel was becoming rapidly extinguished, and the name seems to have been gradually appropriated to the musician only. At Queen Elizabeth's magnificent entertainment by Leicester, at Kenilworth Castle, in 1575, it is true a personage was introduced to amuse the queen, in the attire of an ancient minstrel, who called himself 'a square minstrel of Middlesex; but this was, no doubt, a part of the masquerade: it was the representation of a former day, not one of existing profession. Lanham ("Princely Pleasures of Kenilworth, Nicholas's Progresses of Queen Elizabeth") in his *Vitae*, vol. i., p. 186, says, that the king had been pleased to have his voice with a hem and a reach, and spout out with; wipe his lips with the holo of his hand, for fying his napkin, temper'd a string or too with his wrist, and, after a little warbling on his harp for a prelude, came forth with a familiar song, warranted for storty coust of king Arthur's acts."

Before Elizabeth closed her reign the degradation of minstrelsy was completed. By a statute in her 59th year concerning minstrels, together with jugglers, fencers, common players of interludes, tinkers, and pedlars, were at one sweep included among rogues, vagabonds, and sturdy beggars, and adjudged to be punished accordingly. Ritson quotes some satirical lines in allusion to this statute, written by a Dr. Bulwer.

* * *

"When Jesus went to Jails' house, Whose daughte was about to dye, His turn'd the minstrels out of doors, Among the rascally race, They say they are with one consent, And rogue by set of people.""

This act put an end to the genuine old minstrelsy as a profession; and the modern definition of minstrel is no more than 'a musician, a player upon some instrument.'

MINT, the place where money is coined, from the Anglo-Saxon *miestra,* and that in all probability adopted from the Latin *moneta.*

Of the manner in which the Britons conducted the coinage of their rude substitutes for money no notices can now be obtained; but the regulations indeed would be required where an equality of weight and purity appeared from Cesar's account, to have been the sole object in view.

If the Romans actually coined money in Britain, of which we presume, there can be no doubt, their mints were probably superintended by the same officers as were employed in other parts of their dominions; but no documents have yet been produced in proof of it: nor is anything known respecting the mints of the British kings after the departure of the Romans.

In the Anglo-Saxon coins are found, in addition to the names of the kings, those of other persons also upon the same piece, who are with great probability conjectured to have been the moneymen, because on later Anglo-Saxon money the names of the officers frequently occur, with the addition of their title of office. Besides the circumstances of their names being inscribed on the coins, it is reasonable to conclude that they were responsible for the integrity of the money; and likewise that they were the principal officers of the mint. The moneymen are mentioned in the Domesday Book as to other officers of the mint, while they so frequently mention the moneymen, strongly corroborates the opinion that they were the only persons employed in the Anglo-Saxon and early Anglo-Norman mints, except persons employed in the coinage factories.

In the reign of Henry I., the money was so much debased as to call for exemplary punishment on the offenders, which is said to have been inflicted on moneymen only, without the least notice of any other officer. (Sax. Chron., sub An. 1145.) This was also
the case upon a similar occasion in the reign of Henry II. (Chron. Joh. abb. S. Petri de Burgo, Sparke, p. 78.)

In the Anglo-Saxon times an officer called the reeve seemed also to have had some kind of connection with the mint or some jurisdiction over it; for in the laws of Canute it is provided, that if any person accused of false coinage should plead that he did it by licence from the reeve, that officer should clear himself by the triple ordeal. If he failed to do this he was put to the fine of the area under the diocese. If he should clear himself, which, in the same chapter of the law, is said to be the loss of that hand by which the crime was committed, without any redemption either by gold or silver. (Leg. Angliae, II. 1. 1. &c.)

After the Norman conquest the officers of the mint appear to have been, in some degree, under the authority of the court of Exchequer, as they were admitted to their respective offices in that court, and took the usual oath of offices before the sealed barons.

Ruding observes that if the gerefa, or reeve, above mentioned was not the presiding officer of the Anglo-Saxon mints, he is unable to ascertain at what period it became necessary to place some permanent supervising authority in the mint to prevent any ill-practices of the moneyers: but he thinks probably that such an officer was appointed between the 26 Henry II., when the moneyers alone were punished for the adulteration of the money, and the third year of Richard II., when the mint-house, or the officers of the mint, seem to have been held accountable for the profits of the cumbium of all England. (Wincheste. (Madox, Hist. Excheq., vol. ii. p. 132.]

The mint however did not attain its full constitution of superior officers until the 16 Edward II., when a comptroller first appeared, and in 17 Edward II., Richard de Aysyn, the first of the warden of the wardens and master, whose accounts also were distinct from each other. Thus they operated as mutual checks, and no fraud could be practised without the concurrence of all those three persons.

Noisy, however, generally, that of curator, and probably others, descended by inheritance even in the female line, and the inheritor was sometimes allowed to sell it.

See Ruding's account of this office in his 'Annals of the Coinage of Britain,' 3rd edit., vol. i., pp. 109-114, where it is said to have existed from the time of Domesday Book to the 4 Richard II.

In the Anglo-Saxon and the early Norman period there were many mints besides the king's, and some were continued to a much later time. Barons and bishops struck money, especially in King Stephen's reign, and in two or three instances the privilege of coinage was granted to greater monasteries. Worsley's exercise of this franchise, both as bishop of Durham and archbishop of York, is well known. It was granted, or usually renewed, by the king, and the privilege of the mint was in a manner the most ancient of the crown, distinctly marked as such, at intervals from Jaerbert, consecrated in 793, to the close of the reign of Henry VIII. Of the lay barons of Stephen's time, we have but one coin now extant, usually ascribed to Robert earl of Gloucester. Perhaps some of those of the bishops of Canterbury, noble's on those of the bishops of Durham, and more particularly Ruding's enumeration of the places where Mints and Exchanges have been fixed in Britain and its dependencies, will supply the reader with the most ample information upon this subject.

From a very early time the moneyers seem to have enjoyed exclusive privileges. In the 33 Henry II. the moneyers of York were expressly exempted from the payment of taxes. The alms and the charters of a mint town of that city. (Madox, vol. i., p. 635.) In the 18 Henry III. the mayor, &c. of London were commanded not to infringe upon the liberties of the king's moneyers of London, by exacting from them tallages or other customs contrary to their privilege, to private persons. (Stat. 3 Edw. 1, c. 41.) From before this time those privileges appear to have been extended to the whole body of officers belonging to the mint; for at that time the bailiffs, &c. of Canterbury were ordered to appear in the Exchequer to receive judgment for having distrained upon the officers of the mint. (M. Ezch, vol. i., p. 748; Ruding, Annals, vol. iv., p. 273.)

The earliest grant of these privileges by charter was in the reign of Edward I., when the officers of the exchange and of the mint were (by the name of the keepers of the mint and Comptroller, the landors, or workers, money-makers, or coiners, and other ministers or appointed unto those things which touch the office of the changes aforesaid) freed from all tallages, and were not to be put into any assizes, juries, or recognizances, and were to plead before the said keepers of the changes only, except in pleas appertaining unto freehold, and the like.

These privileges were granted to them so long as they should continue in the above-mentioned offices, and were confirmed by Edward II. in his second year, with this addition, that they were to be quit of all manner of aids and subsidies of whatsoever kind, and that if at any time they should, of their own proper will, grant any aid or contribution, such should be levied upon them by the keepers of the exchanges aforesaid, and that no other should intermeddle. The keepers themselves were in such case to be taxed by the officers of the Exchequer; the same effect were issued by Edward III., Richard II., Edward IV., Henry VII., Henry VIII., Edward VI., and Philip and Mary. * All these are referred to in the charter of incorporation which was granted by Elizabeth in the first year of her reign, but those of Edward I. and Edward II. alone are given at length.

In that year Queen Elizabeth, at the humble suit of the keeper of the changes, the labourers, coiners, and ministers deputed or appointed to those things which touch the offices of the change, and in consideration of certain general words in the former grants which had occasioned them and their predecessors to be molested, inquieted, and vexed, and because they should be able more especially to apply themselves to the execution of their proper offices, it pleased them to grant and confirm to them the letters-patent and grants aforesaid; and to remove all the doubts and ambiguities to which the former grants were supposed to be liable, incorporated them, and confirmed the keepers of the office of the changes, the labourers, coiners, and other ministers deputed to the said office; to be from thenceforth one body perpetual and one commodity perpetual, in deed and in name, and to have perpetual succession; to be of capacity in law to purchase lands, &c. by the same, and to hold to them and their successors for ever; to implead and to be impleaded; to answer and to be answered in all pleas, &c. in any court, and to have a common seal.

By this charter all the officers had privilege of not being molested, inquieted, or vexed, either in any assizes, jurys, inquisitions, attainds, grand assizes, or recognizance whatsoever, even although they touched the crown. The workmen, coiners, and ministers were to stand right before the keeper of all manner of pleas, suits, actions, and plaints, touching themselves, pleas to freehold and specially pertaining to the crown excepted. None of the officers was to be made mayor, bailiff, collector, searcher, or assessor of the tenths, fifteenths, subsidies, tallages, or other impositions to be levied or assessed, or to be engaged in the suit of the crown, against his will. And all of them were to be quit and exonerated for ever, in the city of London, town of Calais, and all other cities and towns, from all and singular assizes, loans of and for wine, ale, beer, and other victuals whatsoever, and from all such tallages, aids, gabels, contributions, fifteenths, tenths, scots, subsidies, and all other impositions to the crown, or to her provitors late kings of England, granted or to be granted; and none of them to be distrained or molested in their lands, &c. for any of the premises, but to have due allowance and discharge of such tallages, &c. before the treasurer and barons of the Exchequer for ever; and no corn, hay, pigs, carts, oxen, poultry, or other merchandise, things, goods, victuals, and whatsoever, to be taken from any of them, or from any purveyor of the queen, or her heirs, any statute to the contrary notwithstanding. This charter bore date at Westminster on the 28th February, and there were subsequent confirmations of it in the second, third, fourth, and fifth years of her reign.

Ruding has cited various instances in which these privileges were intrenched upon: they were nevertheless confirmed by King James I. in the second year of his reign; by King Charles II. in his first year, and those in both the years 1742 and 1744, which established the officers in their houses, places, &c., in their charters and privileges.

These privileges they continue to enjoy to the present day. (Ruding, p. 473.)

The following is the establishment of which the Mint at present consists: *

* There were also confirmations in the 1 Henry IV, Pet., 5., m. 29; 1 Henry V, Pet., 5., m. 17; 18 Henry VI, Pet., 5., m. 84; 23 Henry VIII, Mich. Common, rot. 17; Madox's MSS., No. 69, p. 94.
The Company of Moneymen receive a rate on the coinage, conditionally 40s. to each member when the coinage is under 500,000.

Ruding has given some slight notices as to the wages of the officers of the mint from the records of early times. In the 16th century the rate was 1s. a-day.

In the 33rd Edward I. the porter of the mint and exchange received ninepence a-day, and the same in the 9th Edward II. and 23rd Edward III. The warden's salary in the 23rd Edw. III. was, as before, two shillings a-day, at which time his assistants, the Chief Engraver and the Keeper of the dies, received sixpence a-day. In the 25 and 31 Henry VI. it was two shillings and sixpence. In Henry VI.'s 32nd year the engraver had twenty pounds per annum. The person who held the post of Deputy Engraver, assayer, and assayer, in the 1 Edward IV., was to receive the usual daily wages, amounting to 26l. 13s. 4d. per annum. In the second year of the same king the engravers' wages were, as before, twenty pounds per annum, and in his sixth year the salary of the warden was increased from sixpence a-day. In the 10 Edward III. the workmen of the mint of London petitioned the king for an increase of their allowance for coinage, alleging that they were at that time at greater expense, and bestowed more labour in forming the moneys than had been usual in former times; so that they could not maintain and continue such expense and labour, unless their allowance was increased. The king, being willing to grant their petition, if just, commanded John de Wyndesore, warden of the mints of London and Canterbury, together with Lapine Rogers, and the Deputy Assayer, repeatedly, to inquire whether the allowance was sufficient, and if not, to determine what addition should be made; and they were ordered to make their report in Chancery, under their seals, without delay. The report was made, and it was ordered that the consequences issued, and Lapine Rogers and Roger Pikeman, exchangers of London, and Stephen Bokes, having been examined upon oath by the warden, the following report was made:—That, having inquired diligently respecting the necessary expenses occasioned by the waste arising from the whitening of the halfpennies and farthings, on account of the increase of the alloy, and from the hardening of the metal of the said coins in working and coinage, they were of opinion that the work could not be carried on without an increase of threepence for each pound, at least, and with that the workmen ought reasonably to be contented. Then, whereas of old they received for all costs, colour, &c., for a pound of halfpennies sevenpence-halfpenny, and for a pound of farthings ninepence-halfpenny, and so would receive for the former tenpence-halfpenny, and for the latter twopence-halfpenny; so that the master should have of increase twopence, and the workmen one penny.

Ruding (vol. i., p. 51-58) has given the tables of fees and wages for all years in the years 1584, 1599, 1649, 1669, 1739, 1743, and 1797.

A comparative statement of the salaries and allowances, contingent expenses, and rates of coinage, between the establishments of the French and English mints in 1836 will be found, p. 87-93 of the Appendix to the "Report from the Select Committee of the House of Commons on the Royal Mint," ordered to be printed 30th June, 1837.

In antient times extraordinary methods were resorted to in order to furnish the mint with workmen. Thus in the 31st Henry III., a writ was issued, authorising Reyner de Brussel to bring into England, from beyond the seas, persons skilled in the coinage and exchange of work in the king's service aforesaid, and in the 25th Edw. III., Henry de Brussel and John de Cicester, masters of the mint, were appointed by letters-patent to choose and take as many goldsmiths, smiths, and other workmen in the city of London and other places, where it might seem expedient to them, as should be necessary for the works of the mint in the Tower of London; and to bring the said workmen to the said Tower, and to place them there to work at the wages allowed by the said masters, in order to prevent their resorting in that case, to seize and arrest, and to detain in prison within the said Tower, and to keep in safe custody until the king should determine upon their punishment. These letters were directed to all sheriffs, &c., who were commanded to make the said masters proceed in their provisions into execution. (Pat. 25 Edw. III., p. 2, m. 13 dorse.)

This power to take workmen, &c., for the service of the mint was not discontinued in the reign of Elizabeth. (Int. with Larsson, 14 Elisabeth, in Harl. MSS., Brit. Mus., 698.)

The custom of placing the moneymaker's name upon the coins prevailed, as already observed, at a very early period in thus distinguishing one coin from another; and it is now the custom of the king of Kent, which is the second in point of antiquity in the Anglo-Saxon series, and must be dated about the middle of the seventh century. It was usually stamped upon the reverse of the coin, but in some few instances it was found upon the face of the piece, when the device is removed to the other side. The names of two moneymakers sometimes occur upon the same coin. From the time of Asyllus, with some few exceptions only, the name of the town was added, probably in conformity to the usual business of rebellions. (Wilkins, Leg. Anglo-Sax., p. 319.)

The name of the moneymaker is not found lower than the reign of Edward I., but that of the mint was not entirely disused in the last year of Queen Elizabeth.

Metal brought to the mint was assayed, reduced to standard, and then formed into money, by the instruments which at different periods have been invented for that purpose.

The mode of coinage in early times, at least in this country, as far as it can now be traced, was rude and irrational; the sole expedient employed being to fix one die firmly in a wooden block, and to hold the other in the hand as a puncher; when, by striking the latter forcibly, and with great hammer, the impression required was at length worked up.

This method appears to have been nearly coeval with the first invention of coined money; and it is a singular fact that no description of the hammer, or method of striking, has been recorded until the power of the screw was applied to coinage in the French mint about the middle of the sixteenth century. (Le Blanc, Traité Hist. de Monnayges de France, p. 265.)

The new invention was not however admitted into our mint before the year 1561, when it was used together with the old method of coining by the hammer, until the latter was wholly laid aside in the 14th Charles II., A.D. 1662. From that time to the present, only very trivial improvements have been made, and the machine continues to be worked. It consists of a screw, to which the upper die is connected; this is worked by a fly, and forces that die which is attached to it with considerable force upon the other die, which is firmly fixed below. The advantage of this machine (known as the screw-press) is, that of striking with a hammer consists chiefly in the increase of force, which is so great as to raise the impression at one blow. The edges of the hammered money were left in a rude and unfinished state, which rendered them peculiarly liable to be diminished by scraping. After the screw was introduced, the coins began to assume a form nearly circular, which admitted of some addition to the impression, for the purpose of preserving the outward edge. This was first attempted by placing a graining so as to form a regular circle on the outside of the legend or the design of the coin. The earliest specimens of Elisabeth's milled money present instances of this invention. Afterwards, a legend was impressed upon the edge of the larger pieces; but this, it is believed, did not take place until the year 1641, and the earliest instances of it which are known occur upon.
the coins made by Blondeau and Ramage, for the Commonwealth, of that date. This impression is given to the edges by passing it between two plates, one of which is fixed, and the other moveable by a pinion which works in teeth on the back edge of it. One half of the legend is engraved on each of these plates, so that when the coin has been carried by the moveable plate to the end of that which is fixed, it is then marked which the sword passed through it. This machine was invented by M. Castaing, in 1685, and was introduced by him into the French mint. (Boizard, _Traité de Monnayes_, tom. I., p. 142.) Before this invention the edges of the coins were engraved upon by being made to blanks in a collar which contained the legend, and was of the same diameter as the piece, but of less thickness. The metal, thus placed, being struck with the die, expanded under it, and received the form of whatever was engraved on the inside of the collar, which opened with four joints in order to permit the coins to be taken out.

As it is scarcely practicable to impress a legend upon the rim of the smaller coins, a graining has been devised for the protection of their outer edge. This, which is generally known as the Buckingham, or, in the English, the Mersenne, rather than the Buckingham, is not a coin, and was first used in 1663, the strokes at that time going at right angles across the edge. That mode continued until 1669, when diagonal strokes were introduced. But these also have been found insufficient for the purpose, amongst other reasons, in preventing the difficulty of counterfeiting the milling; and the edge of the coin was still further protected by placing the top of the letters as close as possible to it. The position of the letters close to the edge of the coin has been a matter of experience. I mean the guineas of William and Mary, is still continued.

From the money, when completely finished, two pieces are to be taken from every fifteen pounds weight of gold, and two, at least, from every sixty pounds weight of silver, one is put into an assay within the mint, and the other for the trial of the Pfr. The following is the process which at present takes place, from the time at which an ingot of gold is imported into the mint, to the period when it is issued from the mint in the shape of gold pieces.

For the assay of gold, an ingot is put into a box, in which the king's assay, they are taken into the master's assay-office, where pieces are cut out for him to assay; the ingots are then locked up under the keys of the deputy-masters. In the box, an ingot is being assayed of the weight, the second piece of gold, and both are repeated; but as it seems to have been introduced, in order to put with hoops and hair-powder, so it passed away with them, and, except now and then on the stage, is only seen in the dancing-schools. As an exclusively musical movement, in which, each strain generally comprises sixteen bars, both strains being repeated; and it is followed by a second, called the trio; after which the minuet is played once more, straight through. But composers are not very strict as to its length, or to that of its supplement the trio. For the latter kind of minuet we are indebted to Germany: its time is always quick—allegro; and when repeated after the trio, the movement is rather accelerated.

MINUET (minuutum, portio minuta). [Angle; Time; Sexagesimals.]

MINX, a name for the Vison-weasel.

MINX-OTTER, Pennant's name for the Vison-weasel.

MINZONI, ONO'FRIO, more distinguished for the quality than the quantity of his poetry, in which last respect he is only one of the minor bards of Italy, was born at Ferrara, in 1734. He was educated by the Jesuits, and applied himself with great diligence to the study of theology and mathematics; but was rather a poet than a scholar, and a great poet, at least, that his name is handed down to posterity. Imbued with the study of Dante and Ariosto, he had caught much of their vigour of thought and energy of expression; and was comparatively careless of those mechanical beauties of versification which are too generally accepted as equivalent to genuine poetry. Freshness of thought, distinctness of imagery, and nobleness of language are the characteristics of his poems, which consist chiefly of sonnets. He likewise distinguished himself by his eloquence
in the pulpit so highly, that the citizens of Ferrara struck a
cold in honour of him in 1783. In 1780 he was made
carneal by that city, which office he discharged with the
most exemplary zeal.

MIOSEN, Lake. *Chrestiana.*

MIRAUD, JEAN BAPTISTE DE, born at Paris, in
1674, first espoused the military profession, but left it
for the one of States-General, which office he received in 1684.
He was afterwards made a member of the French Academy, of which he became
secretary on the death of the Marquis de Madaubert in 1690. Besides the
above-mentioned translation, and a very inferior one of
Ariosto's 'Orlando furioso,' he wrote—1, 'Le Monde, son Origine et
son Antiquité, 2, 'Opinions des Anciens sur les Juifs, 3, 'Sentiments des Philosophes sur la Nature de l'Amour,' and
other minor works. The atheistical work called 'Système
de la Nature,' which made much noise at the time of
its publication, was attributed to Mirabeau, but is known to have been written by the Baron d'Holbach, with the assist-
ances of some of his friends.

MIRAUBE, HONORE' GABRIEL DE RIQUETY. COUNT OF,
was born at Bigon, near Nîmes, in 1749, of a family which had emigrated from Florence in the thirteenth century, the name of which, Arrighetti, had been changed by their access to that of Riquet. He was the
son of the marquis de Mirabeau, a man of some literary note, the
author of 'L'Ami des Hommes' and other works, and one of the leaders of the school of the 'Economistes.' The
marquis, though a great advocate of liberty and philanthropy in his own family, was a harsh despiser of the
freedoms of his own family, on the ground of his harshness probably contributed to sour the temper of his
son, and to drive him into the excesses which stained his
earlier career. Young Mirabeau had violent passions, an
ardent imagination, and great abilities. He was fond of poetry, painting, and music, and of money, and his
father knew no better means of checking his irregularities
than by obtaining 'lettres de cachet' against his son, and
confining him in several state prisons in succession. His
father's death made no inconsiderable difference in his
affairs, for which Mirabeau served for some time in the army, on
leaving which he married a young lady who had been pro-
mised to another. His dissipation however rendered the
match an unhappy one; he became embittered with debts,
his father obtained an interdict against him, which declared
him incapable of administering his property, and moreover
a lettre de cachet, by which he was confined in the castle of
Joux, in the Jura mountains. He was then twenty-five
years of age. His captivating address won over the com-
munity of a town in the Jura, which after him walk about the
neighbouring town of Pontarlier, where he made the ac-
quaintance of a young lady, the wife of an old man who was
a magistrate in that province. Mirabeau seduced her, and
came to reside at Pontarlier. This person to whom he
afterwards addressed several licentious works under the
name of Sophie. For this offence the parliament of Dijon
condemned him to death par contumace.

In Holland Mirabeau began to work for the book-sellers
as a means of subsistence. While he was thus employed, he
was seized by the agents of the French police, with the
counsel of the Dutch authorities, and was finally shut up in
the dungeon of Vincennes near Paris, where he re-
mained more than three years. During his confinement he went through a course of general reading, made translations
from Latin and modern foreign authors, formed a collec-
tion of extracts, and wrote several works, most of which
were of the amorous kind, and some of them obscene. He
sent them in cipher to the then mistress Sophie de
Mirabeau, which was published after his death.

On his release in 1780 he wrote his work 'On the Lettres
de Cachet, and on State Prisons,' which made a deep im-
pression on the public. Repairing to Pontarlier, he pleaded
his case and that of his mistress Sophie, and compelled his
husband to enter into a compromise by which the prosecu-
tion was quashed.

About 1784 he visited London, where he became ac-
quainted with Romilly. From England he wrote his
'Letters to Chamfort,' in which he praised the institutions of
the country. 'Mirabeau,' says his friend and biographer
Dumont, 'was then engaged in a work on the American
order of Cincinnati, and he had in his portfolio plans
and sketches of several other works, upon which he took
good care to consult every person capable of affording him
information. He was then poor, and obliged to live by his
writings. He wrote his "Doutes sur la Liberte," (two
editions on "of finding out the Scheide," from a letter by Mr. Chauvet, which gave him the first idea
of the work."

'Having become acquainted with a geographer, he began to
think of writing a universal geography. Had any one shown
him the abilities of Chauvet, I should have thought, I
have no doubt, have attempted a treatise on the Chinese
language. He studied a subject while he was writing it,
and he only required an assistant who should furnish
him an idea of the elements of that study. I did not
have the skill of doing out men of talent, and of successfully flattering those who could be of use to
him; he worked upon them by means of insinuations of
friendship and of ideas of public benefit. His interesting
and animating conversation, like a hone which he used
to sharpen his tools. Nothing was lost to him; he collected
with care anecdotes, conversations, and thoughts; appro-
priated to his own benefit the fruits of the reading and
study of his friends; knew how to use the information thus
obtained, and by consequences contrived, or rather had
when he had begun a work in earnest, it was soon to make a
rapid and daily progress.' (Dumont's 'Recollections of
Mirabeau.')

The above sketch by a clever and impartial friend of
Mirabeau, may give an insight into the versatile character
of this remarkable man, who might be styled the Alcibiades
of the French revolution.

In 1786, Mirabeau's abilities having become known, he
was employed by the French minister Calonne, on a secret
mission to Berlin, where he was not permitted to send money, and
witnessed the last days of the great Frederic, and the begin-
nning of the reign of his weak successor. On his return to
France he wrote his work, 'De la Monarchie Prussoise,'
which was connected with Calonne and the other
Dumont's 'Recollections of

Mirabeau.'

It was about this time, in the latter part of 1786, that
Dumont became acquainted with Mirabeau, whose character
he has endeavoured to render known in "his translations of
law-suits with his family, his elopements, his imprison-
ments, and his licentious characters, so that his ac-
quaintances were almost ashamed of seeing him. He was at one
occasion connected with Calonne and the other
functions of the state, with whom he wrote pamphlets. He published also a 'Letter' to the king of Prussia, an
'Address to the Batavians' on the disturbances then exist-
ing in Holland, and a 'Letter to Joseph IL, all of which
are remarkable for their turbulent tone. He wrote likewise an
'Essai sur la Socéte des Illuminés,' and a 'Lettre sur l'Acad-
émie,' in which he exposed that impostor. His reputation
as a writer stood very high, although he was indebted to his
friends for most of his materials.

The translation of the 'States-General,' in 1789, opened
Mirabeau a new and brilliant career. Two years before he
had attended the assembly of the Notable, to which he acted
as secretary. He now presented himself before the states
General, was elected a candidate for representing that province at
the States-General, but he was rejected by the nobles on the
ground of not being possessed of any title. The true
reason was that he was disliked, not so much for his
military conduct as for the bold attacks which he made upon
the ancien régime.

He then offered himself as a candidate to the Tiers Etat,
or Commons, and was returned to the States-General for
both the towns of Aix and Marseille. He chose to sit for
the former, but he paid a visit to Marseille to testify his
affection for that city, to which he had given them their votes, and
was received in triumph. In the midst of his success
however he showed himself a friend to social order, and by
his personal influence restored the disorders of the pop-
cles, which had broken out in alarming riots both at Mar-
seille and at Aix. It is Mirabeau's peculiar boast, that
Throughout his political career his passions and party feelings never got the better of his judgment; he always remained master of himself; he knew where to stop, and where others ought to have stopped. Whilst Brissot, Babeau, Séyès, Fétis, and others had chiefly in view the temporary triumph of their respective parties or systems, Mirabeau, on the contrary, investigated the consequences of the measures that were agitated, and he looked to the permanent welfare and security of France, and to the establishment of an orderly rational government.

Our constituents, between the two privileged orders and the third estate concerning their mode of sitting and of voting, Mirabeau opposed the motion of the Bécon members, that the third estate should assume the title of the National Assembly, regardless of the other two; he meant, however, that the foundation of aristocracy and despotism is a thing which I ought to invite them to, 'in the name of the God of peace,' to join the Commons. This step however proved fruitless. Séyès proposed to send a last message to the privileged orders, to request them to repair to the common-ball of the States, in order to verify their respective powers to judge as in default those who should not appear. That very day Mirabeau, foreseeing the consequences of the motion, requested an interview with Malouet, the personal friend of the ministers Necker and Montmorin, and told him that he believed the question which was impending, and that the question now was, whether the monarch and monarchy should outlive its fury. 'There are,' said he, 'among ourselves (in the third estate) two friends of the nation, without whose assistance I fear that the monarchy will extinguish itself in despotism and aristocracy the clever men have no common sense, and among the fools I know several who are capable of setting fire to the gunpowder and blowing us all up in the air. You, sir, are the friend of M. Necker and M. de Montmorin; I have no doubt of their abilities, and I do not suppose that they like me, but that is of no consequence, provided we can understand each other. I should wish to know their intentions, and I request a private conference with them. They would be very guilty or very short-sighted, if they expected any assistance from us. They have dealt with these assemblies in the old times of the monarchy. That cannot now be. They ought to have a plan of conduct based upon certain principles for the interest of the monarchy; if that plan is reasonable I shall support it. I have put all before them, and I do not suppose that they appreciate it as I do, but that is of no consequence; provided we can understand each other and not let ourselves be divided.' Malouet was delighted with the proposal, for he was aware of Mirabeau's power among the Commons, but the two ministers received the offer coolly, and, Necker, looking at Mirabeau, said in a respectful manner, what proposals he had made? Mirabeau answered with the word 'proposals,' answered in a few sharp words and went away to the assembly. In passing by Malouet he whispered to him: 'Tell him, Sir, I don't want to speak and I don't want to be spoken to and by.' To the honour of Mirabeau it must be said this feeling of irritation was transient, and that in the momentaneous discussions that followed, his pique against the minister did not carry him beyond the bounds which he had already prescribed to himself. (Doux, Histoire du Règne de Louis XVI., Paris, 1839.)

On the 15th of June, when the Commons were deliberating on the name which they were to assume, Mirabeau, after observing that the obstinacy of the privileged orders was general, that the third estate had consented to sit, and that for this reason they ought to avoid taking extreme measures, which are the last resource of despair, and theirs certainly was not a desperate situation, continued thus: 'You cannot constitute yourselves as the States General, you cannot sit there without the third estate, and you are not the place to sit and vote where the third estate is not. You tell me what is the plan of the ministry? You ask me to declare that the people are without any rights. It is to say the absence of the minority duly invited and not appearing. But this title was too long. The discussion occupied four sittings. Séyès, Babeau, and Cambon denied the necessity of the royal sanction. 'As for me,' replied Mirabeau, 'I hold the king's sanction to be so indispensable, that if he had not it, I should prefer living at Constantinople rather than in France. I declare to you that nothing appears to me more fearful than the sovereign aristocracy of six hundred deputies, who to-morrow perhaps might take it into their heads to declare themselves permanent, the next day hereditary; and which would end, like all aristocracies in the world, by inveterate, and the union of a general state.' And he continued to support his proposed title of representatives of the people. 'Are you not the elect of the people? And do you blush at the name? Will you tell me that a name which they have conferred upon you, that it is not brilliant enough, nor pompous enough for your taste? More clear—sighted than we, the heroes of the Netherlands adopted the name of "gueux" which the insolence of their tyrants had cast upon them; they are nobility; the founders of Switzerland have themselves in that of "boors," and these names, by riling to their cause whole multitudes oppressed by aristocracy and despotism, became their strength and the pledge of their success. . . . Mirabeau's opinion however was violently opposed and the denomination of National Assembly, which had been sometimes used to designate the States-General, was adopted on the 17th of June, on the motion of Séyès, the minority who voted against it consisting of ninety deputies. Mirabeau absented himself to avoid voting upon this question. He desired to know of the Prussian service as follows: 'Supposing even that the king should give his sanction to the new title which we have assumed, it is still true that the deputies of the third estate sit at a game of cards, which I wished to play at a game of chess in which I was the strongest. It is certain that the nation is not ripe. The excessive ignorance, the frightful disorders of the government have forced a hot-house revolution, and we are carried away by our interests and our interest.' (Lettres de Mirabeau à un de ses amis en Allemagne.)

But their great step once taken by the Commons, Mirabeau was faithful to them, and boldly supported the rights which they had assumed. After the memorable royal sitting of the 23rd June, in order to deliberate in separate chambers, the deputies of the Commons still retained their seats in the common hall; and when the Marquis de Brézé, grand master of the ceremonies, reminded them of the king's orders, Mirabeau rose and said: 'We have listened to all, the intentions which were suggested to the king; but you, who cannot act as his interpreter to the National Assembly—you, who hold here neither seat, nor vote, nor right of speaking—you are not a fit person to remind us that agitation and tumult could have sent to you, that we are seeing here by the power of the people, and that bayonets alone can drive us hence.' All the deputies cried out, 'That is the vote of the Assembly, and our firm resolution; and the grand master withdrew. Mirabeau then reminded the king, after a few moments' silence, said peevishly, 'Well, if they will not quit the hall, let them stay in it.' Mirabeau was now acknowledged as the chief leader in the National Assembly, and he continued to hold this supremacy for nearly two years, till the time of his death. Without belonging exactly to any party, he was courted or feared by all. He wished to form a party truly national; and on the 27th June he made a speech, in which, after telling his colleagues that it would only be favourable to the enemies of liberty, he exhorted them to calm the people, and save them from the excesses into which a furious zeal might lead them. 'The number of our enemies is greatly exaggerated, for we must not consider as enemies all those who do not think as we do. Many of them wish the public good as much as we do, but they seek it by a different road; many are still biased by early impressions and the habits of education; others, seeing us take a position without a precedent, are alarmed for their liberty more from a fear of licentiousness and anarchy. All these men deserve our regard, our consideration.' And he drew an eloquent sketch of the advantages which a rational constitution would ensure to France. He prided himself on the equality of the nation in the finances, the written law substituted for ministerial caprice.

Lous XVI., after having sanctioned and even commanded the union of the three estates into one National Assembly, allowed his couriers to collect a great number of troops near Paris and Versailles, as if to overawe that assembly.
It was then that Mirabeau, on the 8th of July, in an eloquent speech, denounced the measures of the court as a plot against the independence of the representatives of the nation, and moved a firm though respectful address to the king, whom he accused, as if unconfounded of what was being done in his name, requesting him to remove the troops from the neighbourhood of the capital. The address was voted in the midst of acclamations. It has been said that this address, as well as many of Mirabeau's speeches, was written by Danton. But he has been approved by his extemporary speeches and replies, which, as well as his prepared speeches, have the same form and pressure, the same logic, the same inspiration, and his own peculiar bold and somewhat careless manner. He doubted not to be understood by the mass of the people, whom he held to be capable of understanding him. He had the art of making them his own, and stamping them with his original character. This is fully and honourably acknowledged in many places by Dumont himself, who, in his claims (and we see here, as for questioning of statement) the greatest share in having written for Mirabeau.

Louis XVI. made an evasive answer to the address; the people of Paris took the alarm, which was increased by the sudden popular excitement, and an insurrection, led by Danton, Camille Desmoulins, Santerre, and others belonging to the club of the Palais Royal, broke out in the capital, which led to the destruction of the Bastille on the 13th of July, and the organization of the militia of Paris. During this period Mirabeau was constantly in the assembly, day and night, at Versailles, supporting the firmness of the members, insisting on the necessity of the king withdrawing the troops from the capital, and sending representatives at large in the place for that purpose. The king at last consented to remove the troops from Paris, and went himself to Paris on the 17th, where he sanctioned the formation of the new municipality, the armament of the militia, and other popular measures. The Revolution was now complete, and the old monarchy was constantly cast aside. It has been said that Mirabeau had conspired with the Paris insurgents, in order to make the duke of Orleans lieutenant-general of the kingdom; but this accusation, as referring to that epoch, was at least premature. Mirabeau may have known or suspected the intentions of the members of the house of Orleans, but he also knew the weakness of the duke's personal character, his bad reputation, and his want of popularity; whilst Louis was still very popular with the people at large. At a later period, on the 5th and 6th of October, when the popular forces of Paris were in all insurrection, led by royal family, and threatened their lives, a plot was attributed to the duke of Orleans, and Mirabeau was implicated in the supposed conspiracy; but the National Assembly declared no ground either of agreement or suspicion. Dumont, who lived at that time in Mirabeau's intimacy, examines the matter pretty closely, and, in the end, leaves it in doubt. That some communications from the duke's party were made to Mirabeau through Laclau, this general was not; Mirabeau was not one of the members who composed the cabinet of the 'Ligue'. In the last, the duke's intrigues were discovered, a familiar of the duke, seems certain; but the intentions of the conspirators, and how far Mirabeau participated in them, are still involved in mystery. Dumont seems to think that the object of the movement was to frighten the king away, and then to appoint the duke lieutenant-general of the kingdom, in which case Mirabeau might have supported him in the Assembly, and have been appointed in return prime-minister, which was the post of his ambition.

Mirabeau was one of the committee of five appointed to present the model of a declaration of the rights of man, on the motion of the metaphysician Sieyes. Mirabeau was, from the first, opposed to this declaration, which he considered as a pure fiction. He however set about the task with his friends Dumont, Claviere, and Duverrey; and 'there were we, writing, disputing, adding, striking out, and exhausting both time and patience upon the subject, until our mind was reduced to the mere repetition of our old piece of patchwork, our mosaic of pretended natural rights, which had never existed. The principles intended to be established by this declaration are dangerous in themselves; for legislators should not be tied down to general propositions, which are never when adopted as laws, as they must not be cramped by false maxims. Men are born free and equal! That is not true; on the contrary, they are born in a state of weakness and neces-
sary dependence. Equal! how are they so, or how can they be so? If by equality is understood equality of talents, of virtue, of industry, of fortune, then the falsehood is manifest.' Mirabeau, on presenting the project to the assembly, ventured some objections to it, and proposed to defer the declaration of rights until the constitution should be completed. 'I can safely predict,' said he, 'that any declaration of rights anterior to the constitution will prove but the almanac of a single year!' He therefore refused to appropriate political power to the monarch, and the declaration was decreed. (Dumont's Recollections.)

During this discussion the violent members of the Breton club (afterwards the Jacobin club) charged Mirabeau with abusing his talents, as if he wished to involve the assembly in confusion. He replied by a letter, which was published. He reproached Mirabeau with the irregularity of his private life. Mirabeau answered, with dignified calmness, 'No doubt that in the course of a stormy year, partly by the fault of others, but chiefly by my own, I have committed many wrongs, and that there are few men who have afforded more matter for bad report and more pretenses for slander; but I dare attest to you all, that as a public man, as a political writer or speaker, no one can boast of greater courage, independence, vital importance to the monarchy, his severity, and consistency of principles. Thirty volumes of writings are there to prove my assertion.'

Then came the famous night sitting of the 4th of August, in which the assembly, on the motions of several members, voted the king's dissolution. The motion was supported by the representatives of the whole of the monarchical party, laws, tithes, privileges, and indemnities, pensions not for actual services, the corporations of trades, and all the provincial franchises, states, and assemblies, as well as the charters of corporations; questions involving an entire political system were decided by a vote of too few hours, and passed by general acclamation. From this sitting Mirabeau, Sieyes, and other leading members happened to be absent. The following day the first two strongly reproved this hurried and inexpedient action; Sieyes met the king with the sudden abdication of tithes, which he ended by the words, 'They want to be free, and know not how to be just.' Mirabeau exclaimed to Dumont, 'This is just the character of our Frenchmen; they are three months disputing about syllables, and in a single night they overturn the whole venerable edifice of the monarchy.'

The next important discussion was that on the king's veto. Mirabeau had determined to support the absolute veto, which, in the absence of a second or upper house, he thought would destroy the effect of the measures. He proceeded to remark upon the dangerous state of the public credit, the failure of the revenue, and represented a national bankruptcy, with all its horrors, as the probable consequence of the rejection of the plan. The force with which he presented his objection was carried. Mirabeau did not vote on that occasion; and such was the impression made by the attempts of the antagonists attached to his name, that Camille Desmoulins and other democrats boldly asserted that he had voted in their favour.

A speech on the national bankruptcy was to be a complete triumph. In this speech he supported the minister Necker, to whom he was personally hostile, in his plan of a forced loan to make up the deficit in the revenue. Several members had proposed modifications, which Mirabeau thought would destroy the effect of the measure. He proceeded to remark upon the dangerous state of the public credit, the failure of the revenue, and represented a national bankruptcy, with all its horrors, as the probable consequence of this rejection of the plan. The force with which he presented his objection was carried. Mirabeau did not vote on that occasion; and such was the impression made by the attempts of the antagonists attached to his name, that Camille Desmoulins and other democrats boldly asserted that he had voted in their favour.

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vacation.' Mirabeau was by no means displeased at this singular compliment.

After the removal of the assembly to Paris, some negotiations were entered into for bringing Mirabeau into office. Necker had nearly agreed to it, and the king was about to consent; but Mirabeau's condition was, that he should remain a member of the assembly and that his taking office would be of no use. Suspicions of the scheme having been bruited about, some of his antagonists, of Lameth's party, moved that no minister should be a member of the assembly; and a motion was proposed to this effect, which was carried by a feeble majority. He appealed to the usage of the English parliament, but this appeal told against himself; for the least idea of imitation offended the pride of the innovators, who pretended to establish a monarch, which in the age of reason, was a simple element of monarchy. 'We are not English, and we want nothing English,' was the reply on such occasions.

Mirabeau was one of the first to propose a martial law to put down the insurrections which had then become extremely frequent all over France. The law was passed on the 19th of October, notwithstanding violent opposition; and, strange to say, Mirabeau's popularity was not affected by it.

About November of the same year Mirabeau unexpectedly communicated to Dumont a plan to draw the king away from Paris. After placing him in Metz or some other strong fortress, amidst faithful troops, he was to appeal to the people by proclamation, to dissolve the assembly, and ordain a new legislature. If of this department Mirabeau was to remain in Paris, and watch the motions of the assembly; and, as soon as the royal proclamation should appear, he expected to induce all the moderate members to separate from the rest and follow the king. Mirabeau represented this plan as the only way in which the French could be rescued from complete disorganisation. Dumont strongly represented against the plan, and Mirabeau acknowledged to him that it had originated with the court party, and that he had intended to co-operate in the movement, in order to dissuade from such a project, and 'otherwise, that it was the only lead to new errors and the total ruin of the country. If the plan does not succeed, the monarchy is lost.' Dumont represented to him that he would most probably be made use of only as a tool, and then discarded as a victim. A few days later Mirabeau told him that the plan was given up, and the affair remained a secret.

During the year 1789, Mirabeau continued to hold the first rank as a leader of the National Assembly. He supported the law for the sale of church property in order to pay off the national debt. He was a partisan of the revolution in favour of the actual possessors, which restrictions were however disregarded. He also supported the issue of assignats or bonds on the security of that property, but limited them in the case of the churches to one-sixth. During Mirabeau's suggestion, a plan of gradual elections, by which a citizen should have to exercise certain civil functions for a stated period in order to qualify him to become a deputy to the legislature. This motion was at first received with favour by most men in both of the right and left sections of the assembly, but Lameth, Barnave, and some others looked upon it as an aristocratic snare; they moved and carried an adjournment, and the motion was ultimately lost.

In the important discussion on the right of peace and war, he declared in a spirited defence of the decentralists, that the king ought to be invested with this prerogative, and supported his opinion by a logical and brilliant speech. Barnave opposed him, attacked Mirabeau violently, accused him of inconsistency, ridiculed his system, was cheered by the people, and received with acclamations by the people out of doors, whilst cries of 'à la lanterne' resounded against Mirabeau. The debate was adjourned. The next day a libel was hawked about the streets, which was put down only 'by the large rebellious treason of the Count de Mirabeau,' in which he was se cured of bribery. The paper was shown to him as he entered the assembly: he glanced at it, and said, 'I know it all; I shall leave the house either triumphant or in pieces.' He ascended the tribune in the most profound silence; rumours of treason and corruption are artfully spread about; popular speeches are looked to support the tyranny of party opinions. I also, whom a few days ago they wanted to carry in triumph, I hear myself now proclaimed in streets as a great conspirator. I did not require this lesson to remind me that there are only a few steps between the capitol and the Tarpeian rock; but a man who wishes to be useful to his country, who cares little for the vain celebrity of a day, is not easily overcome; he expires by degrees, and from time to time, the incorruptible judges of us all. I shall therefore resume the question in debate, and explain the true point of contention with all the clearness I am capable of.' Then, supposing Mirabeau the objections of Barnave, maintained his former opinion, and urged it with a becoming vehemence. 'I saw in the eyes of the audience the certainty of his triumph, and stopping rather abruptly, he concluded, in an ordinary and careless tone, with these words:—'I think, gentlemen, that the real name is not known, and that M. Barnave has not at all touched the question at issue. It would now be for me a task too easy and irrelevant to follow my opponent throughout his accessory details, in which, if he has shown a certain talent, he has not exhibited the least knowledge of state or worldly affairs. He has declaimed at length about the mischief which absolute kings can do and have done, but he has not observed that in our constitution the monarch is no longer absolute, and cannot act arbitrarily, and he has, above all, completely aban doned from such evil the evils of the extreme movements.' Mirabeau left the tribune amidst a thunder of applause, which lasted for many minutes. His triumph was again complete, and his opinion prevailed.

He opposed the measures proposed against emigration, saying that it was tyrannical, and incongruous with the locomotive faculties of individuals—that such restrictions could not be carried into effect—that lie, for one, would not obey them—and as the extreme left became louder and louder in their marks of disapprobation, a voice was heard upon them imperiously, and cried out with a voice of thunder, 'Silence aux trente voix!' (silence, you thirty votes); and the extreme left quelled before him, and was silent accordingly.

On the question of the regency he told the assembly to judge for themselves, and not to heed the shouts out of doors; he told them that the very people who were appealing them to-day would shout still louder were they to see them some other day on their way to the scaffold; and at that moment a loud cheer from the galleries seemed to confirm Mirabeau's prediction.

Thus did this extraordinary man, while crushing the old aristocracy with one hand, repress the fury of the democratic faction with the other, and by disguising his con tempt for the intellectual capacity of rank, and by presiding, in his own words, 'like a man who had kept all in awe; and while openly asserting his independence of clubs, and factions, and mobs, he retained his popularity to the last even with the lowest population.

Our little mother Mirabeau was the endearing nickname which the fishwomen of Paris, who sometimes graced the galleries of the legislature with their presence, applied to him.

Mirabeau, assisted by Dumont and others, edited a journal entitled at first, 'Journal des Etats-Généraux,' and afterwards 'Courier de Provence,' which gave a clever and tolerably impartial report of the proceedings of the National Assembly, until about the middle of 1790, when it was for a time closed, and then revived and retained nothing of its former character except the name.

In January, 1791, Mirabeau was named president of the National Assembly. 'Never had this office been so well filled; he knew his place in the first rank of talents. He introduced a degree of order and clearness in the proceedings of the Assembly, which no member had previously the least conception. He simplified forms; he could render the question clear by a single word, and also by a single word put down the debate of others. He demanded a certain novelty, and retained nothing of its former character except the name.

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foregone his most valuable prerogative. His enemies, who were jealous of his eloquence, and had voted him president in vain, and when he was reduced to silence, were bitterly disappointed when they saw him add another wreath to the chaplet of his glory. He was far from enjoying good health at this time. "If I believed in slow poisons," he said to me, "I should think myself the most6 man. They are as clear as ten crowns: I have only to choose my conversation and alternations; agitations of mind and excitement of every kind; too high living, at least as regards food—for he was very moderate in drink. "You must," I said, "be a salamander, to live in the fire which is consummated out of every man's inner man, in every moment of ennui and fatigue, he entertained at times thoughts of retiring from public life. The irritation of his system at this time produced violent attacks of opisthalmia; and I have seen him, while he was president of the National Assembly, sometimes apply lozenges for his eyes in the interval during the adjournment of the sitting from the morning to the evening, and attend the Assembly with his neck covered with linen to stanch the blood."

He went to the latter part of the month, was going to (Geneva for six months), he embraced me with an emotion which I had never before seen him evince. "I shall die at the stake, my dear friend," said he, "and we shall never perhaps meet again. When I am gone, my value will be gone. I am a man of no fortune to convey for the present were overwhelming France in every direction; but that base faction, which I now overawe (the Jacobins), will again be let loose upon the country. I have none but direful anticipations. Aht my friend, how right were we when, at the beginning, we tried to prevent the Commons from being declared a National Assembly. That was the origin of the evil. Since they have carried that point, they have not ceased to show that they are unworthy of any consideration; that they must not be considered as being governed by him; but soon neither they nor he will govern; a vile faction will rule the country, and debate it by the most atrocious crimes." Three months after this conversation Mirabeau was no more." (Dumont's Recollections of Mirabeau.)

Mirabeau died on the 2nd April, 1791, of a short but violent disease, the result of his mode of living and of continual excitement. During his illness he suffered much, but endured his pain with sufficient calmness and resignation. He was not a weak mind, who was ready to break under gloomy prognostications on the result of the actual struggle in France which he had before expressed to Dumont, and his determination, had life been spared to him, of supporting his constitutional authority against the attacks of the monarchical party. 'I speak,' said he once, 'the last shreds of the monarchy.' He had for some months in correspondence with the court, and had proposed a plan for dissolving the Assembly by the force and will of the nation itself, by getting up addresses from the departments, without having recourse to foreign armies or destroying the people's hope of freedom; for a new assembly was to be convoked forthwith, which would have revived the constitution. Mirabeau never intended to remove absolute power: he knew too well that he would have destroyed himself by such a measure; but all his ambition during the latter period of his life was centred in the idea of becoming prime minister of the constitutional monarchy of France, and he immediately that office, 'that, if the king should elect every minister who had preceded him, and that he would attract within the sphere of his patronage all men of distinguished abilities, and thus form a halo of talent, of which the brightest should dazzle Europe.' (Dumont's Memoirs.) Cabot appeared having played the part of a physician and published an account of Mirabeau's illness and a copy of his will. He died encumbered with debts. 'Much has been said of the vanity of Mirabeau,' says Dumont, 'as if it did not fairly put up to the highest bidder; but this is an exaggeration. It may be said that he was not over-scrupulous in money matters, but he was too proud to be dishonest; and he would have thrown through the window any one who dared to make him a humiliating offer of money.'

Mirabeau was a brilliant orator, and a fluent though not original writer. The great characteristic of his genius was his political sagacity, his anticipation of events, and his knowledge of mankind. It was no easy matter, at least in France, saw so far as he did into futurity, and his forebodings of impending calamities were attributed to disappointed ambition. But while he prophesied the destruction of the Jacobin institutions, he had a holy dread of the execution of the future destinies of his country. In a letter to Major Finwill, of the Prussian service, he said that he considered France as able to resist all Europe; and his correspondence contains many singular passages which show the almost instinctive penetration of the feelings of the principal members of the National Assembly, and often embarrassed his opponents by revealing their secret motives, and laying open plans most anxious to conceal. The serenity of his judgments has been justified by succeeding events; and there has not been a man of any consequence in that assembly who has not corresponded with the opinion which Mirabeau had formed of him. His death, which had been long foretold, was both moving and affecting, and others, who dwindled into insignificance before him, immediately became great men, when no longer overawed by his presence. His death was felt as a public calamity by the nation in general; a public examination was ordered by the Convention, for the purpose of exhuming the last ground for the suspicion of poison: his funeral was conducted with great pomp; all the theatres were closed, the deputies, the ministers, all the public authorities, and a number of other persons, forming a procession of more than two miles in length, followed his remains to the Pantheon, where they were deposited among the illustrious dead.

Little more than two years after, in November, 1793, the body of Mirabeau was disinterred by a decree of the Convention, and was conducted to the Pantheon, where his remains were placed among the illustrious dead.

As the history of Mirabeau's political life is closely connected with that of the States-General, and of the National Assembly, which grew out of them, and which effected the French revolution, it may be proper here to give an account of the formation of that assembly.

The States-General were an old institution of the French monarchy. They were at first composed of the deputies of the two orders of the nobility and clergy, and were composed by the crown in order to consult with him in important cases, and also to furnish the monarch with his so-called 'free gifts.' It was a feudal institution, like the early Spanish Cortes and English parliaments. Afterwards, deputies of the chartered towns were admitted into the assembly; and the States-General, as thus constituted, would appear that the third estate, or commons, were first introduced into the states-general under Philip le Bel in 1303, on the occasion of the quarrel between that monarch and pope Boniface VIII, about half a century later than the introduction of the knights of the shire into the parliament of England.

There were in France provincial states also, consisting of the three orders, in Provence, Brittany, Burgundy, and the other great fiefs of the crown, which provinces were accordingly distinguished, by the appellation of 'Pays d'Etats,' during the last six months of his life, one from the king; but he considered himself as an agent entrusted with their preservation, and he immediately that once a cloud be removed a permanent barrier to the Sainted Spirit of Monsieur (afterwards Louis XVIII), and subsequently, during the last six months of his life, one from the king: but he considered himself as an agent entrusted with their preservation, and he immediately that once a cloud be removed a permanent barrier to the Sainted Spirit of Monsieur (afterwards Louis XVIII), and subsequently,
Louis XVI, in his letters of convocation, which decreed that the states should consist of at least 1000 deputies, of whom each bailiff should return a fraction in proportion to its population and the taxes which it paid to the treasury. But the important question remained, whether the three orders of the realm, clergy, nobility, and the commons, should be represented in convocation by a head or by head, in forming, in short, one house: the Commons desired it, but the other two orders refused. This question the king or his ministers did not decide, and that was the rock on which the monarchy was dashed.

When at last the Commons obliged the other two orders to join them in one National Assembly, the members of the whole body consisted as follows—48 bishops and abbots, 80 archbishops and bishops, 35 abbots and canons, 208 parochial incumbents; 202 recentors and provosts, 80 old masters, 70 of the order of chanoines, and 241 gentilhommages or nobles; in all, 291 deputies of the clergy and 270 of the nobility: the third estate was represented by 80 inferior magistrates, 272 lawyers, 16 physicians, 2 clergymen, 11 of the nobility, who, like Mirabeau, had been returned by the Commons, and 178 merchants, landholders, and farmers; in all, 557 members of the third estate. In the course of the session however several members of the nobility and clergy emigrated.

The National Assembly continued its labours for several months after the departure of Mirabeau, when it met to consider the new constitution which it undertook to make for France, it presented it to the king for his sanction in September, 1791. The king accepted the constitution, and the assembly, on the 30th of November, 1791, generally agreed to call the French generally designate the first national assembly as 'l'assistance constituante,' from its having framed the constitution for the kingdom. That constitution lasted about twelve months, after which the republic was proclaimed.

Miracles of the French Revolution. It is said that some event in either of two ways; by his own observation, or by information from others. The knowledge of an event which a man obtains from his own observation is generally, to him, the highest degree of evidence and the surest ground of his belief; but when it is obtained from others, there is a doubt. The knowledge of an event which a man derives by information from others is not, to him, so high a degree of evidence as that which he obtains from his own observation; yet it does not lose, though it is weakened, its character as a ground of a true opinion. All the knowledge which a man derives from his own observation may be called experience; all that he derives from the observation of others may, for the sake of distinction, be called evidence; it is the experience of others communicated to him, either orally or in writing.

Every event which has taken place, or is said to have taken place, may be the subject of evidence. A man who has witnessed an event himself entertains no doubt of its reality, unless he has some suspicion that a fraud was practiced on him. If he depends on the testimony of others, he is not sure that even the witness to which he has listened was not such an event as it appeared to him to be. An eye-witness therefore of an event has nothing to guard against, so far as concerns his own conviction, but deception by others, or mistake or misapprehension, on his own part. When a man derives his knowledge of an event from the information of others, there is, in addition to the causes of error which may exist where he is an eye-witness, the further cause of error which may arise from the witness whose evidence he receives being interested in deceiving him, or being, from whatever cause, disposed to deceive him. There is no supposable event which may not be the subject of evidence; and when all reason for supposing deception, mistake, or intention on the part of the witness to which he has listened is removed, there is no reason to suppose that the witness is not true, and does not thereby acquire some degree of probability. It must be admitted that the ascertaining that there is neither deception, mistake, nor intention to deceive, is generally the main matter in estimating the value of evidence; and the estimates of the value of evidence in different cases is a different thing from determining what may be the subject of evidence, which is the matter that we are here considering.

Man is so constituted, that any event alleged to have taken place is at once placed by the mind either among events which are common or among events which are uncommon. In the former case, before any evidence is furnished as to the fact, there is a disposition to believe that it is true; and even the soundest judge of human events, though he will believe no alleged event without sufficient evidence, readily acquiesces in the probability of an alleged.
The true cause of all the dispute about the reality of the event called miraculous is this: the estimation of the evidence in the particular instance, or instances, has been confounded with the question of evidence generally. As a matter of evidence, any fact may be alleged as the fact to be proved, and supported by the evidence derived in vain, if the proof derivable from a man's own observation cannot be denied. But whether any alleged fact has been proved or not, is quite a different question. It is not here said that any supposable fact or event can be proved, but it is said that the supposable fact or event may, by possibility, be supported by evidence as strong as that arising from a man being an eye-witness.

The assertion that any alleged event is inconsistent with experience, may mean either the experience of the objector, or the evidence (that is, the experience) of others; or it may mean both. Taken in its widest acceptance, the assertion cannot be properly made of any fact or event alleged to have taken place; for by the supposition, the event is consistent with the experience of the person who bears evidence to it. If a fact or an event should be told to a person, of which there was no similar event on record, it might be said that experience did not show any similar event; but though this might be a very good reason for examining the evidence much more closely than all the evidence in support of it which is free from all the objections above enumerated.

But it may be said, what does this lead to? It leads to this,—to the admission that any alleged fact or event is a possibility, and is proved to the possibility of the event by evidence by which it is supported. Suppose the event to be a shower of stones recorded in Livy. The investigation is relieved of one difficulty by the fact of showers of stones being witnessed by evidence in modern times much more satisfactory than that of Livy. A man may therefore commence such inquiry by admitting that the particular circumstance recorded by Livy may have taken place; though,

"He had not satisfactory evidence of such a kind of event—taken place before, he could not commence his inquiry by making such admission; for the admission that such an event might have taken place could only be made when the event was proved to have taken place, and then be useless. Further, prior to receiving any evidence, we cannot say that the event is one that could not have taken place. Whether a shower of stones, as recorded by Livy, did fall or not, depends for proof on the same principles as other events, as recorded by him.

Now many of the facts or events which are called miracles are of the kind which may be considered as no other events on record; the fact, for example, of Jesus raising Lazarus from the dead. In the present purpose, it is to be the first event of the kind on record. With reference to an event of this kind, Hume remarks, 'In order to increase the probability against the testimony of witnesses, let us suppose that the fact which they affirm, instead of being a miracle, is something for which we may suppose also that the testimony, considered apart, and in itself, amounts to an entire proof; in that case, there is proof against proof, of which the strongest must prevail, but still with a diminution of its force, in proportion to that of its antagonists.' The opposing proof here referred to is what Hume calls experience, a word which he has used in his Essay in a very loose sense. From what has been said in this article, it will be perceived that the view of this kind of evidence is, in itself, no evidence whatever from that of Hume. If the testimony, considered apart and in itself, amounts to an entire proof, the thing or event is proved, whether it be one kind of thing or another; and this conclusion is logically contained in Hume's words. It is only in the case where he did not mean by his words do mean; for he urges against this, which would be entire proof if the thing were not miraculous, the objection that it is miraculous; and this is the whole of the matter that his Essay in effect contains, which, as it has been well said, 'is that miracle is a phenomenon for which there is no relation to which it is to be applied.' (Starkie, On Evidence, i. p. 473, note.)* This is the case in the first part of Hume's 'Essay on Miracles;' the second part merely professes to show that no miraculous events have ever been established on so full a proof as a man of sense can give.

Every person understands what is meant by the laws of nature. The material world and the world of thought are subjected to certain general laws, or, to speak more accurately, the phenomena succeed one another in a certain order, which, as far as evidence extends backward, has been generally unaltered. We say, generally, for deviations from this order are alleged to have occurred at various times and in various places. Now deviations from those laws are supposed to owe their existence to something which affects the belief of many persons, and which are regarded by others as totally untrue. Some have gone so far as to say that such events are impossible; thereby destroying the very ground of all evidence, for we can never determine beforehand what it is that we are supposed to believe. In order to prove, unless indeed the thing asserted and proposed to be proved should be a general proposition, and a man should be able by his own experience to contradict it in one or more particular instances: in such a case, a man might be forced to deny the thing proposed to be proved. This is in fact Tillotson's argument against the real presence, which Hume 'flatter'd himself was of 'a like nature' with the argument that he 'had discovered.'

Hume's definition of a miracle, at least the first part of it, appears unobjectionable: it is defined by him to be 'a transgression of a law of nature by a particular volition of the Deity, or by the interposition of some invisible agent.' The true notion of a miraculous event then is an event that was not consistent with the present state of the world, and would be inconsistent with it if it were to take place now; and further, it must be such an event as by the supposition is inconsistent with and cannot take place by virtue of the laws of nature. This is the law of causation. What happens by virtue of what is called a law of nature, known or unknown, it is not a miracle as the term is properly understood.

If the raising of Lazarus from the dead was an event which took place by virtue of a pre-established law or course of events, in which this one event, to us an apparent exception, was in fact a necessary consequence of this pre-exis-

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* It may not be improper to add, that the writer by no means amount to all the arguments contained in the note referred to.
Much has been written on the subject of miracles, both in connection with the general principles of evidence, and by way of reply to Hume's Essay. Though a great deal of it is of little value, by a misapplication of doctrine by those who are desirous of forming clear notions on the subject of evidence.

(Rutherford, Discourse on Miracles, 8vo., 1761; Credibility of Miracles defended, 8vo., 1761; Adams, Answer to Hume on Miracles, 8vo., 1754; Critical Discourse on Miracles, in Answer to Hume, 8vo., 1762; Bishop Douglas, Criticism, &c., 8vo., 4th ed., 1832; Locke's Posthumous Works, Discourse of Miracles; Bishop Conybeare, On the Nature of Miracles, Possibility of the Supernatural, &c., 8vo., 1830; Chubb, Discourse on Miracles, in his Miscellaneous Works; Lardner's Credibility; Middleton, Free Enquiry; Paley's Evidences of Christianity; Price, On the Nature of Miracles; Woolston, Six Discourses on the Miracles of Our Saviour, &c., 8vo., 1730; Bay, Christ's Miracles the result of Divinity, 8vo., 1731; Bentham, Rationale of Judicial Evidence; Brown's Inquiry into the Relation of Cause and Effect.)

The above-mentioned works will furnish references to others.

MIRAGE. This word, which is French, has been received into our language. It is the name given to a phenomenon of unusual refraction, for which we have no specific apppellative unless it be the sea term booming. As a general definition, it is a natural illusion occasioned by the refraction of light through contiguous masses of air of different density, such refraction not frequently producing the same sensible effect as direct reflection.

The illusion of the mirage differs according to circumstances, but they may all be arranged under one or other of the three following classes—vertical reflection, horizontal or lateral reflection, and suspension.

In the vertical reflection the mirage presents the appearance in which an object is reflected into the surface of a sheet of water, and of course reversed as they would be in a lake. It is this kind which is observed in Egypt, and which so cruelly tantalised the parched throats of the French soldiers during the campaign of Napoleon in that country. The effect of the mirage is to make a mirage of the cultivated crops, or the soldiers who accompanied the army. The soil of lower Egypt is a vast plain perfectly horizontal, its uniformity is interrupted only by a few eminences on which, in order to secure them from the inundations of the Nile, the crops are reflected, and in the morning and evening the aspect of the country presents nothing remarkable, all objects appearing in their natural positions and at their proper distances; but after the soil has become heated by the presence of the sun, the prospect is greatly altered, the objects which were previously only seen beyond appear as islands in the midst of a great lake. Under each village its inverted image is seen as it would be if reflected from the surface of a sheet of water. On approaching however, the deceptive inundation recedes, and the surface is unbroken by another as some more distant object comes in sight.

This kind of mirage is not peculiar to Egypt; it is known in Persia also, where it is called Sarab or Sirab (miraculous water); and it is seen by those who cross the western deserts of India, where it is known by the name of Tithtram (picture). Neither is it exclusively confined to inland countries nor low plains. Biot has observed it over the sandy beach of Dunkirk, and it is not unfrequent along the coast of the Mediterranean. The author of this article has seen it at the Cape of Good Hope. Captain Maudsly states, that he observed an effect of the mirage at the Shallow Pass in India. 'A deep precipitous valley below us,' says he, 'at the bottom of which I had seen one or two miserable villages in the morning, borne towards evening a complete resemblance to a beautiful lake. The vapour, which played the part of water, ascending nearly half way up the sides of the vale, and on its bright surface trees and rocks being distinctly reflected.' In the horizontal and lateral reflections the mirage presents the reflected image sideways. Thus, on the 17th of September, 1818, Messrs. Jurine and Soret observed a lateral mirage on the lake of Geneva. A bark, about 4000 toises distant, was seen in the ordinary effect. The boat, which was not much more than a mile from the lake, and at the same moment there was seen above the water an image of the sails, which, in place of following the direction of the bark, receded from it, and seemed to approach Geneva by the left bank of the lake, the image
sailing from east to west, while the bark was sailing from north to south. This lateral mirage is known to the inhabitants of Methow, who call it Strokiel (castle of the cold season); and by such as live in the plains watered by the Chumbul and the Jumna, where it is termed Disusher (prognostic).

Colonel Todd mentions having witnessed this kind of mirage at Jaypore, Rotial, and Hassar. He describes it as a high dark wall bounding the plain, which, as soon as the sun's rays break in upon it, presents various fantastic forms of ruins, such as, we may imagine from his description, may have been originally figured by the natural designs in what is called Florence, and its representation is said by the Colonel, that it presented to my view the fort and bastions of Agaraoa, distant thirteen miles. The natives of Hassar call it Hirtchendaraja ku pauri (the city of the phantom Pauri), a celebrated prince of the brazen age of Hindustan.

In like manner Dr. Vicer, on the 6th August, 1806, at 7 p.m., saw the whole of Dover Castle brought over and placed on the Ramgatie side of a hill situated between the two places and he adds, the object so strong, that the itself could not be seen through it. The French coast is sometimes brought almost in contact with our own by the illusion of the lateral mirage. Thus, on the 26th July, 1798, at Hastings, at 3 p.m., Mr. Latham saw the French coast as far as 50 miles distant, as distinctly as through the best glasses. The sailors and fishermen could not at first be persuaded of the reality of the appearance; but as the clifs gradually appeared more elevated, they were directed, that they pointed out and named to Mr. Latham the different places. They had been accustomed to visit, such as the bay, the windmill at Boulogne, St. Valery and other places on the coast of Picardy. All these places appeared to them as though they were sailing at a small distance into the harbour. From the eastern cliff Mr. Latham saw at once Dungeness, Dover Cliffs, and the French coast all the way from Calais, Boulogne, on to St. Valery and, as some of the fishermen affirmed, as far as Dieppe. The day was extreme bright both of sun, breath of wind, and objects at some distance appeared greatly magnified.

In particular situations both the vertical and lateral mirage may be observed together. Thus the late Mr. Blackadder has described some phenomena of both vertical and lateral mirage, as seen in the time of George's Bastion, Leith, which are very instructive. The extensive bulwark, of which this bastion forms the central part, is formed of huge blocks of heath sandstone, and from this to the eastern end it is calculated to be 200 feet in elevation. To the east of the tower the bulwark is extended in a straight line at a distance of 50 feet. It is eight feet high towards the land, with a footway about two feet broad and three feet from the ground. The parapet is three feet wide at top, and is slightly inclined towards the sea.

When the weather is favourable, the top of the parapet resembles a mirror, or rather a sheet of ice; and if in this state another person stands on it also, but at some distance, with his face turned towards the sea, his image will appear opposite to him, giving the appearance of two persons talking to or saluting each other. If, again, when standing on the footway and looking in a direction from the tower, another person crosses from the eastern extremity of the bulwark, passing through the water-gate either to or from the sea, there proceeds the appearance of a moving object presenting itself being converted into immense bridges; and on going to the eastern extremity of the bulwark and directing the eye towards the tower, the latter appears curiously modified, part of it being, as it were, cut off and brought down, so as to form another and more extensive set of forms. Elaborate monuments. At other times it bears an exact resemblance to an antient altar, the fire of which seems to burn with great intensity.

The phenomenon called suspension, which is the third kind of mirage, and is that to which the term looming is most strictly applied, is the picturing of an object immediately over it in the air, frequently without reversion of the image. Sometimes the objects are merely raised above the height at which, under ordinary circumstances, they would appear. Thus Sir R. K. Porter mentions a phenomenon of suspension or looming in the plains near Bagdad. A little before midnight, when he stood on a plain and stream of water, which, from its situation, must be the Tigre, the surface was brilliantly illuminated by the moon, but the longer I kept my eye fixed on this noble river of many interesting phenomena, the more my surprise became excited at the extraordinary appearance of the waters and the difficulty till at length I began to suspect that some optical illusion from refraction was assisting the apparent elevation of the stream; but I had not conceived the extent of the deception, for as the dawn advanced the phantom river totally sunk from my sight.

The phenomenon of the looming is most generally observed at sea or near the shore. At Reggio the celebrated Fata Morgana is visible, which for many centuries astonished the vulgar and perplexed philosophers. An spectator on an eminence in the city, with his back to the sun and his face to the sea, a when the sun shines from that point whence its incident rays form an angle of about 45° on the sea, sees upon the water numberless series of pilasters, arches, castles well defined, regular columns, lofty towers, superb palaces with balconies and windows, villages and trees, plains with herds and flocks, armies of men on foot and on horseback, all passing rapidly in succession on the surface of the sea. These same objects are, in particular states of the atmosphere, seen in the air, though low down, and when viewed from ashore, they are seen vividly coloured or fringed with all the prismatic tints. The image raised by suspension is sometimes reversed: the most remarkable instance of this is perhaps that mentioned by Captain Scoresby, who, in 1822, recognised his father's ship, the Fame, by its inverted image in the air, although the ship itself was below the horizon, and thirty miles off.

It frequently happens that the phenomenon of the vertical mirage is combined with that of suspension; so as to show in the air a mere direct and an inverted image of the object, the latter being undermost.

Now all these phenomena and their various modifications depend on the different density of the lower strata of the air, and as this difference of density may be occasioned both by heat and moisture, and as it proceeds from the mountain's side as well as from the horizontal surface of the plains, from the sea as from the land; and further, as contiguous columns of air, as well as horizontal columns, made up of different densities, it is easy to conceive why the mirage may be seen in very different situations, as also why it presents such varied appearances. It will also be evident that any cause which re-establishes the equilibrium of density in the different portions of the air must cause the phenomenon of the mirage.

Supposing the nature of refraction to be understood, the explanation of the way in which difference of density in different strata of the air occasions the mirage becomes very simple.

Let A represent an object on a hill; a b c d, a stratum of air heated by the reverberation from the soil beneath, so as to have a less density than that of the air above. Now if an observer's eye be at E, he will see the object by direct vision in its proper place, and also a reverse image of the same, just below it at B, because the rays coming from it obliquely towards the ground are refracted from their direct course on entering the less dense inferior stratum of air, and, taking at first a direction inclining to the horizontal are afterwards reversed, and form an image of the object at E, which thus sees the indirect image in the direction B, or exactly as it would appear reflected; and moreover as the rays from that part of the heavens which form the background to the object are refracted in the same manner, the sky is reversed as well as the object, and presents the appearance of a sheet of water.

If the lower part of air be denser than the strata above, and
denser stratum, then the curve or trajectory, instead of being convex towards the earth, will be concave, and the reversed image will be seen as if suspended in the air above.

Double images, and such are not uncommon, are explained in this way. Let $S\ P$ be a ship in the horizon, seen at $E$ by means of rays $S\ E\ P\ E$, passing in straight lines through a tract of air of uniform density lying between the ship and the eye. If the air is more rare at $c$ than at $a,$ which it may be from the coldness of the sea below $a,$ its refractive power will be less at $c$ than at $a.$ In this case, rays $S\ D\ P,$ which, under ordinary circumstances, never could have reached the eye at $E,$ will be bent into curves $P\ C, S\ D;$ and if the variation of density is such that the uppermost of these rays $S\ D$ crosses the other at any point $z,$ then $S\ D$ will be underbent, and will enter the eye $E$ as if it came from the lower end of the object. If $E\ P,$ $E\ z,$ are tangent to these curves or rays, at the point where the eye enters, the part $S\ P$ of the ship will be seen in the direction $E\ P,$ and the part $P\ z$ in the direction $E\ z$; that is, the image $S\ P$ will be inverted. In like manner other rays $S\ n, P\ m,$ may be bent into curves $S\ n\ P\ m,$ which do not cross one another, so that the tangent $E\ P$ to the uppermost of these rays or ray $S\ n$ will be underbent, and the tangent $E\ m$ upperbent. Hence the observer at $E$ will see an erect image of the ship at $s'$ above the inverted image $s.$ It is quite clear that the state of the air may be such as to exhibit only one of these images, and thus these appearances may all be seen when the real ship is beneath the horizon. It is also evident, that if these different densities affect vertical columns of air instead of horizontal strata, the same phenomena may occur.

All the phenomena known by the names of the enchanted island, Cape Fly away, the flying Dutchman, &c., are effects and modifications of the mirage.

These unusual refractions were known to the ancients, and are mentioned by some of them. They were not understood of those who did not have a clear mind, of the nature of the phenomena. Quintius Curtius (vii. 5.), speaking of the desert of Sogdiana, says, "for the space of 400 stades there is not a drop of water; the violence of the sun's rays in summer kindles such an intense heat in the sand, that everything is burnt up; there also arises such a quantity of exhalations from the overheated earth, that day-light disappears and the plains offer the appearance of a deep and extensive sea."

A remarkable example of this name were mentioned in Miiano's 'Dirico Geogr. de la Peninsula.' The following are worth notice:

In Portugal,—Miranda do Corvo, 45 leagues south-east from Coimbra, is situated on the Douro, over which there are two bridges. It contains 3881 inhabitants, or 6298, if we include two parishes that are without the boundaries of the town.

Miranda do Douro (perhaps the Roman Concia or Sequoe Paramea) is the capital of a district of the same name in the north-east part of Tras-os-Montes, a province composed of other similar divisions, the communes of Bрагanza, Torre de Moncorvo, and Villa Real. It is divided from the Spanish provinces of Zamora and Salamanca by the Douro, on the right bank of which river this city stands. It was destroyed by the barbarians and rebuilt by Alfonso I. in 1136. The population of the city is 7096, and of the comarca 31,700. It is in 42° 22’ N. lat. and 6° 10’ W. long.

In Spain.—Miranda de Arga, situated on the left bank of the river Arga, 54 leagues south of Pamplona, and 25 west of Olite and of Talava. The population is 1643. At this place (not at Miranda de Ebro) was born Sanceho Caranza, the master of Gines de Sepulveda, and the author of a well-known Latin discourse delivered before Leo X., printed at Alcala, in 1503. It is also the native town of Louren Caranza (a nephew, not a brother, of the former), one of the luminaries of the council of Trent. The second dignity in the Roman Catholic church, the Spanish primate, together with his eminent talents and virtues, which were fully esteemed by the Pope, could not Charles V., and the Pope, convince his majesty of the necessity for this ornament of the church from the Inquisition, which, after keeping him prisoner in Spain and at Rome, wrung an abjuration from this old man in his seventy-second year, and confined him in the Dominican convent of his order, La Minerva, where he soon died.

Miranda de Ebro (Mirooa, Miranda Iberica, Deobliga) is intersected by the Ebro, the two principal parishes being on the right and a third on the left bank. It is 14 leagues south of Bilbao, and 120 of Madrid. The town is built and conveniently situated on the chief north road of Spain, and within the frontier of Old Castile. Travellers who come from the free Basque Provinces are examined here, and their goods are subject to the payment of duties. Here also is port, which extends to Guipuzcoa, the expense of which was defrayed by the province of Alava. This town has a strong bridge of six arches over the river, and a fine square, with fountains. The surrounding country is very picturesque and fertile. It abounds in secondary lime.

The book of Miranda de Duero (Duoro, in Portuguese), 3 leagues from Soria, which gave birth to the cardinal Inigo Lopez de Mondada y Zuniga, archbishop of Burgos, ambassador to England and ambassador to the Holy See, and the mentioned Sanceho Caranza. There is also a Miranda in the kingdom of Naples, in the province of Sannio, one league and a half north-east of Isernia.

MIRANDA, SA DE, one of the earliest poets of Portugal, and one of the founders of Portuguese literature, was born at Coimbra about the year 1492. He was of a noble family, and being intended by his father for the legal profession, was educated accordingly, and became professor of law in the university of his native town. Having however no inclination for such studies, he left his father he resigned his appointment, and visited Spain and Italy, chiefly for the purpose of studying the languages and literature of those countries. On his return to Lisbon he obtained an appointment at court, where he was regarded with much esteem, and was at last permitted to retire to his country seat of Tapada, near Ponte do Lima, in the province of Entre Douro y Minho, in consequence of some unpleasant affair in which he involved himself. In his seclusion, he retired to his castle, and, with a clear mind, he devoted the remainder of his days to rural enjoyment, to his literary studies and occupations, and to music, of which he is said to have been passionately fond. It was also his good fortune to have for the companion of his retirement a wife as tender and devoted as himself; she was neither very young nor very beautiful when he married her. In 1553 he had the misfortune to lose his son, who was killed in Africa, and whose death has bewailed in an elegiac composition of a strong devotional cast. His death happened in 1558, and was an event that excited general regret. Sa de Miranda has been styled the poet of reason and virtue; and it has been said of him that he was a philosopher in poetry and a poet in philosophy. Yet considered as the literature of his country is indebted to him (and he was the first to adopt the metres of Dante and Petrarch), few of his productions are of a class to interest the modern reader. Except as specimens of language and versification, frigid elegues and detached thoughts in the form of sonnets—not many of which are of lasting merit—possess scanty attraction at present, for they have not even historic value as portraying the manners and sentiments of their own age. A considerable number of his compositions, and among them some of his best, are written in Spanish, a language which afterwards he was allowed by his imitators, by way of prelude to the prejudice of the native literature. As a dramatist, again, he not only imitated those of Italy, Macchiavelli and Ariosto, but laid his scenes in that country, and described Italian manners and characters. His plays are spoken of, as neither of his two pieces, 'Os Estrangeiros,' and 'Os Vilhalpandos,' (and he produced no others,) shows much dramatic skill in contrivance, or comic power in execution. What is chiefly remarkable in them is the freedom with which the absolute morals of the Italian
clergy are delineated by one who was himself a rigorous Catholic. His Cartas, or poetical epistles, are of far greater intrinsic value than any of his other productions, and are interesting, as records of untiring and matchless activity in the first half of the fifteen century. They also throw some light on the poet's personal character, and show him to have been of a good disposition and a sincere well-wisher to his countrymen.

Although Francisco, the founder of the independence of Spanish America, was born about the middle of the last century, at the city of Caracas, of which province his grandfather had been governor. He travelled on foot at the age of twenty through various parts of the New Continent, and became familiar with the Spanish army, and was entrusted occasionally with important matters by the government of Guatemala. In 1783 he visited the United States, and afterwards travelled on foot through England, France, Italy, and Spain, a country which he detested at that time he was to speak of the emancipation of his own country to Pitt and to Catherine II., who treated him with great regard, especially the empress, who entreated him to enter into her service; but the high expectations which he had of his own talents and sagacity, and which were congenial to his own, drew Miranda from Petersburg to Paris in 1790. He was warmly welcomed there by Pétion, to whom he was recommended by the leaders of the opposition in the English parliament, and in consideration of this recommendation, he was himself occupied with his ship, and emigrated to the United States in 1791. However, he was appointed major-general to Dumouriez, who was sent against the Prussians, then intent on putting down the French cause lest it should become a European question. But unfortunately Miranda did not anticipate the goodness of his master, who was not only shown the siege of Maatsch, on account of General Valance not coming to his assistance, nor at the battle of Neerwinden, where the left wing of the army was defeated, a reverse which Dumouriez imputed to Miranda. This, however, had been occasioned by an error in the triumphal arch of Bonaparte, accompanied by the manoeuvre of Trono Ducoudrai, before the revolutionary tribunal, which sat eleven days on this case, and, greatly to their credit, acquitted an innocent foreigner whose life was demanded by humiliated national pride, a man who was the hero of the Girondists. After being again seized and condemned by the Directory on the 18th Fructidor, Miranda escaped, and came as a refugee to England. He returned to Paris in 1803, whence he was banished, a second time from France; but, being far from a prisoner, he devoted himself exclusively to his country's independence. He sailed from New York, in 1806, with a ship and some volunteers, and touched at St. Domingo, where he chartered two schooners, which were captured by Spanish cruisers (guarda costa), and was taken with his ship and landed in Venezuela in the month of August. He sustained however a complete defeat, which prostrated the American cause till 1810. The supreme junta of Caracas for a moment roused the Spanish Americans again in favour of Ferdinand, who was in Naples, and Napoleon, on hearing of Napoleon's sway, April 9, 1811. But the cause of independence went on prosperously till the same day of the following year (1812), when a tremendous earthquake destroyed 28,000 persons in Caracas, Lima, Guayaquil, and Merida. The clergy took advantage of the calamity and stigmatised the patriots as enemies to God, whose anger they had provoked by their rebellion. This fanatical outcry worked on the terror of the people, which was already great, and gave the Spanish army a handle. General Marquez, who was first a deserter, surrendered, but he surrendered last of all, and not without honour. But a hard fate still awaited him; for, when he was about to leave the country, he was arrested by some of the officers of the independent party, and accused by Bulnes of being a traitor, and a secret ally of the British cabinet. Such a charge was strange indeed (if it does not provoke a heavier censure) at a time when both British interests and sympathies so effectually coalesced, in spite of diplomatic pretences, in forwarding the emancipation of the Spanish colonies. The knowledge and the money which it was alleged that Miranda had derived from English officers and friends, ought to have endeared him to all his countrymen whom envy had not debased. Nor should it be forgotten that Bolivar, the founder of the Spanish general Montenegro, to whom he delivered his prisoner Miranda. Montevideo, instead of protecting a man who was the victim of jealousy and envy, violated his agreement with Miranda, and sent him in chains to Spain. He was lodged in the prison of the restored Inquisition at Cadiz, till 1816, when death released him from his sufferings this most unfortunate veteran and martyr of America.

MIRANDA. [Gerr.]

MIRANDOLA. [Modena; Pica della Mirandola.]

MIRECOURT. [Voygers.]

MIRE-CROW, a name for the Laughing Gull. [Larid, var. M.]

MIRE-DRUM, a name for the Bittern. [Refeo.]

MIREPOIX. [Ariege.]

MIREVELT, MICHAEL JENSEN, born at Delft in Holland, was one of the most successful painters of the Dutch school. He was a disciple of Abraham Blokland, and at the beginning of his professional career painted historical subjects. Finding however a great demand for portraits, he was induced, as many other artists have been, to abandon the truly artistic for the more lucrative branch of portrait-painting, in which he acquired such extensive reputation, that he was invited by King Charles I. to visit his court; but as the plague was raging at that time in London, he was deterred from accepting the offer. His portraits were esteemed for the extraordinary accuracy of the likeness, for good taste, high finish, and great freedom of pencil. The esteem in which he was held and the extent of his practice are proved by the number of portraits which he was commissioned to paint, among others, for Lord Sandringham, and after him Descamps, and the 'Aigre de la Vie des Peintres,' says ten thousand, which is quite incredible, though Sandringham indeed makes himself to have lived to the age of ninety, whereas all other writers agree that he was not at the age of ninety when he sat in his picture. He travelled in the town of Delft, which he had never quitted, except occasionally to visit the Hague, to paint the portraits of some of the princes of the house of Nassau, by whom he was highly esteemed. He must have made a large fortune, for he never received less for his smallest pictures than 150 florins (154), and more in proportion for those of a larger size.

MIROUNGA. Mr. Gray's name for a genus of Seas.

PHOCIDE.

MIROR (from the French miroir), any polished surface which reflects light so as to form an image. The mathematical theory will be found under SPECULUM.

MISCHNA. [Mishna.]

MISDEMEANOR is a term applied in the law of England and crimes and offences, as well as commission or omission, less than felony. [Felonv.]

At common law, persons convicted upon an indictment (INDICTMENT) for a misdemeanor are punishable by such fine, or by such term of imprisonment short of imprisonment for life, or by such fine and imprisonment, as the court before which the offenders are convicted, in its discretion awards. By several statutes special modes of punishment are provided for some particular misdemeanors. But it frequently happens that even in creating the misdemeanors, they are not sufficiently aggrandized by the legislation, and the law is more severe in one case than in another, so that in such cases, the newly constituted offenses are punishable as a misdemeanor at common law. Generally, wherever a statute prohibits an act, as a matter of public convenience, or commands an act, as a matter of public convenience, all things done or omitted contrary to the prohibition or command are punishable as misdemeanors at common law; it being a common-law offense to disobey a statute, even though the act or omission be not attributable to a failure to observe the statute, unless the statute, which was a misdemeanor at common law, provides a mode of proceeding different from that of the ordinary course by indictment, either the extraordinary or the ordinary mode may be adopted. Thus if a statute give authority to the personal or public authority to make certain inspections to the public matter, and prescribes a particular remedy in case of disobedience, a party disobeying an order made pursuant of the statute may be proceeded against either as a misdemeanor or as a crime, according to the statute or by indictment. He would be guilty of a misdemeanor, as well as having disobeyed a public statute, as having disobeyed an order made by a public authority to make such order. Where however a statute has made a matter a felony which is a misdemeanor, or only, the offender cannot be indicted for the misdemeanor; if he be a minor or lower offence is said to be merged, that is, drowned or absorbed, in the higher. [MISPRISION.] Where a statute creates a new offense, by making unlawful
that which was lawful before, and appoints a summary mode of proceeding, the specific statutory course must be pursued, or the threat of a further proceeding will not lie. An act done in contravention of a statute which extends only to private persons, or relates to disputes of a private nature, cannot be the subject of an indictment; for no injuries of a public nature result therefrom to the peace, the king, and not accompanied by a breach of the peace, can be the subject of a criminal prosecution. Nor will an indictment lie for an infraction of the bye-law of a corporation. But under some circumstances an indictment will lie for an act or omission, and amount to a violation of duties incumbent on the party as a member of civil society, as in the case of a parent wilfully omitting to supply proper food to an infant unable to provide for itself. Where a child is put out apprentice by the parent, and the child, being a minor, is assembled, the king, for the child, may be indicted for disobedience of such order. Any act of wilful negligence, whereby human life is endangered, is a misdemeanour; and to put on board a ship a package containing gunpowder, oil of vitriol (sulphuric acid), or other dangerous articles without giving notice of the contents of the package, so as to enable the master of the vessel to use proper precautions in stowing it. Every act done for the purpose of committing either a felony or a misdemeanour is also a misdemeanour.

As to the course of proceeding upon indictments for misdemeanours, see TRAVERS.

Where a peer or a commoner is impeached by the House of Commons for a misdemeanour, the lords spiritual as well as temporal, in their capacity of lords commissioners, are summoned by the lord chancellor, and it is binding though the king dissent from such judgment; whereas in capital cases the royal assent is necessary, and the judgment is pronounced by the king himself. [STRAYD.] MISE'N’UM. [NAPLES.]

MISHNA. [HEBREW LANGUAGE.]

MISILUS, a genus of Foraminifera.

MISITRA, or MISTRA. [LACONICA; EPISTRA.]

MISPRISION. [ANTIQUE.] The term is used in English law in different senses.

I. In the sense of criminal nonfeasance, or neglect to perform important public duties, the term is applied to cases where the public interest requires that a person should have done or continue to do something, which he has the power or opportunity to do, but which has sometimes to deal improperly with, sometimes to treat with contempt, is a term used in English law in different senses.

II. In the sense of a personal criminal act, the term is applied to a conduct of a person committing a personal act of malfeasance; and in the sense of an omission, the term is applied to a omission of duty or negligence in performing a public duty.

III. In the sense of a public act, the term is applied to a public act, or a public act of omission, committed by a public officer, or by a person acting under the authority of the public.

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we shall advert to some of the more striking facts connected with it. The seeds in germination seem to offer an exception to the law, that the radicle of the embryo shoots downwards, and the plumula upwards; for it is found that the radicle of the misseltoe invariably turns itself down upon the body to which it is attached, whatever may be the position of the surface of that body with respect to the earth. For the shoot of the plant being at first seedling, is glued on all sides, be suspended by a cord some distance from the earth, both the upper and under seeds, as well as those at the sides, all direct their radicle to the surface of the body. This property ensures their growing upon the branches of trees, however whatever they may happen to stick. According to Dufrochef, they owe this property to a tendency on the part of the radicle of the misseltoe to avoid light; he attached seeds to the inside of a square of glass, and directed the radicle one way; he then directed it to the interior of the apartment; he then glued others upon the outside of the squares, and they turned their radicles down upon the glass, thus directing themselves towards the dark interior; and other experiments were tried with the same result.

In fixing itself upon a branch, the embryo of the misseltoe curves its radicle down upon the bark, and then adheres firmly to it, and it is a twelvemonth before the plumula begins to grow; it may be in this time the radicle turns, pierces the bark and introduces itself below the liber, where it expands and acts the part of a root by attaining the fluids which are necessary for the support of the parasite. It is not a little remarkable that in the structure of its ovule the woman is of the same species with the man, and that it is singular fact of the ovule not existing at the time of impregnation, nor appearing till from six weeks to two months later; at present no explanation has been offered of this very unaccountable circumstance.

The fruit, which is covered with a viscid pulp, is made by the Italians, and even in Herefordshire, into a kind of birdlime; and as it is a favourite food of the large or misty thrush, it is thought to have given rise to the proverb 'as exact.'

The plant is not of any known use to man, and is of popular interest chiefly as having been connected with Druidical superstitions. The misseltoe of the Druids was exclusively that found upon the oak, and was so polished by its use as to have no real existence. But it has lately been found in Asia, and in the wood in India, and it is probable that it was plentiful in the oak woods of Snowdon before the damp western parts of Britain were disforested. A good account of the misseltoe will be found in Loudon's Arboretum Britannicum, vol. ii., p. 1521.

The 15th and 16th chapter of Mark is the great scriptural authority for missions. In the sixth century (590-604) Pope Gregory the Great sent missionaries to Britain, to convert the people to the Christian faith. Similar means were adopted in other countries, until, about the close of the tenth century, when the Christian religion had become the prevailing faith throughout Europe. Other fields for missionary exertion were then sought. Attempts were made to propagate Christianity in Tartary and China; and the Portuguese, who visited Armenia about 1490, endeavoured to bring over the Christians of that country to the Catholic faith. The history of this mission may be seen in Spences's ' Ecclesiastical History.' [Apostolus, etc.]

With the earliest maritime discoveries of the Portuguese the desire for the conversion of heathen people was excited with renewed zeal, and may even be said to have been instrumental in stimulating the passion for maritime expeditions. About 1430 Pope Martin V. granted plenary indulgence to the Portuguese who conquered pagan and infidel countries. Columbus himself was strongly urged to discover by the desire of propagating the Roman Catholic religion.

Modern missions may be said to have commenced at the same period with these discoveries, in which the popes took great interest. On the return of Columbus to Spain from his first voyage, the results were formally announced to the pope.

The work of converting heathen people was at first undertaken in a barbarous spirit. The commanders of the expeditions which Don Henry of Portugal sent out in the fifteenth century had 'orders to convert the natives of the coast of Africa.' This was the period of the Mohammedan and conversal conversions were often effected by the sword.

In 1484 Diego Cau brought four natives of Africa to the court of Portugal; they were sent back with presents and a message to their sovereign, desiring him to embrace Chris- tianity. This was the period of the Portuguese discoveries. They were baptised, the king and the prince his son acting as sponsors. In his second voyage to the new world, Columbus was accompanied by priests with church vessels and ornaments, and they received orders to bring the natives within the sphere of the Christian faith, which was hung with rich mantles and adorned with flowers. Cortes then ordered four of the native priests to cut off their hair and to put on white robes, and placing the cross upon the altar, he committed it to their charge. They were taught to make wax candles and Cortes enjoined them to keep some of the candles always burning on the altar. A lame old soldier was left by Cortes to reside in the temple, to keep the native priests to their new duties. The church sent to Mexico in 1535 for the Conquests of New Spain. Father Almeda, who accompanied Cortes in his expedition, explained to the Mexicans the 'mystery of the cross.' He then showed them an image of the Virgin, and told them to adore it, and to put up crosses in their houses, and to be governed by the Virgin. The Mexi- cans began to feel the power of Cortes, some of the church conciliated his favour by presents. Twenty native women were presented to him, who were baptised by one of the ecclesiastics, and Cortes gave one to each of 83 captains.

These were the first Christian missions. The natives both of India and the New World soon perceived that one of the means of conciliating their conquerors was to make a profession of Christianity. In Hispaniola, the natives were to offer a native to his conqueror in order. Columbus. In 1528, Andrea Galvano, governor of the Molucca islands, sent a ship commanded by Francisco de Castro towards the north, 'with orders to convert as many as he could to the Christian faith.' Castro himself baptised many of the principal chiefs of Ambonya. Many similar facts might be adduced to show that at this period true religion made little or no progress in newly discovered countries; and yet during the sixteenth century not a fleet sailed for India or the New World without its missionaries.

The stream of missionary work was at length directed and regulated by different religious orders and distinct institutions. One of the objects of the Society of Jesus, established in 1540, was the extension of the Ro- man Catholic faith. They were numbered among the active and energetic missionaries to heathen countries. Their activity roused the zeal of the Franciscans, Dominicans, and other orders, and early in the seventeenth century institutions were founded with a view of rendering the labours of missionaries more effective by a preparatory course of training. In 1622, Pope Gregory XV. founded at Rome the 'College de Propaganda Fide,' which was soon richly endowed. Pope Urban VIII. was one of its principal benefactors. This college consisted of 32 cardinals, 6 priests, 1 monk, and a secretary. It sent out large numbers of missionaries to aid the propagation of the Catholic faith in all parts of the world; published books to facilitate the study of Arabic; distributed works of piety among various nations in their own language; and maintained in various institutions young men intended for foreign missions. To the above institution was added the 'College or Seminary for the Propagation of the Faith,' founded by Pope Urban VIII. in 1627, which became the central institution in which missionaries were prepared. This establish- ment was endowed by a Spanish nobleman, who presented his palace and all his possessions to the pope for the purpose. His liberality had soon many followers. Numerous institutions of a similar kind were founded after in France. The ' Congregation of Priests of the Foreign Missions' was instituted by royal authority, and about the same time the 'Parian Seminary for Foreign Missions' was established. Both these, however, were to a great extent the agencies of the bishops and missionaries of the 'Society of the Holy Sacrifice,'
also a French establishment, was another of these institutions. These establishments were under the authority of the 'De Propaganda' of Rome. Henry III. of France took considerable interest in foreign missions, and Henry IV. and Louis XIII. assisted in founding their foundations. Religious associations were also formed in France, in the time of Richelieu, for sending missionaries to Canada, which were joined by many persons of rank and distinction. The Jesuits of this period were the most active in these undertakings, which were conducted on a large scale and with a regularity and combination of means altogether superior to the efforts made immediately after the discovery of America end of the path to India round the Cape of Good Hope.

India, Japan, and China were the principal fields of exertion. Xavier, who was canonized by Urban VIII. under the title of the 'Apostle of the Indies,' proceeded to India at the request of John III., king of Portugal, for the purpose of extending the Christian religion in that quarter. The king being disappointed with the little progress which it had made. Xavier was a man of superior genius and laboured with all the energy of his faith with considerable success at Goa, on the coast of Comorin, at Malacca, in the Moluccas, and in Japan, where he died in 1552, on the frontiers of China. In Japan, where Xavier was succeeded by missions from Portugal, great numbers of converts were added to the number of Christians. China, for instance, had 400,000. The exercise of practical charity, which was inculcated by the Christians, is said to have been the main cause of this success; the native priests let the sick and needy die of neglect and starvation. After the existence of nearly a century, the protection which the Christian religion had received from the rulers of Japan was withdrawn, and a cruel and bloody persecution commenced, which the native Christians endured with a spirit worth the highest respect, and which the Spanish missionaries were able to continue for another generation. The private lives of the missionaries have been attributed to the intrigues of the Dutch, who wished to possess themselves of the commercial privileges enjoyed in Japan by the Portuguese. Puffendorf, in his 'History of Europe,' says that a letter or pretended letter of the Jesuits was shown to the emperor of Japan, in which they had promised the pope to bring Japan under his authority. Since this period no successful missionary operations have been carried on in Japan. (Charlevoix, Privations des Missions du Christianisme dans l'Empire du Japon, Rouen, 1715.)

China was, for a long time, a scene of successful missionary exertion under the direction of the Jesuits. Father Roger, a missionary of this order, first preached the gospel in the Chinese language. He is considered to have been the first missionary who obtained an introduction to the court, and is justly regarded as the founder of the Chinese mission. Ricci proceeded to China in 1583, but he was not introduced to the emperor until 1601, when he presented to him a picture of Christ and another of the Virgin, and obtained permission to preach. Individuals were chosen for this mission on account of their scientific accomplishments, and it was Ricci's mathematical attainments which rendered him acceptable to the emperor and court. The mass and ceremony of the mass were afterwards practised in several places of the court, and under the old laws the right of conferring degrees was conceded to the Jesuits by the emperors. The first church was erected at Pekin with the permission and under the protection of the emperor. Under these favourable circumstances Christianity made considerable progress. In 1664 the mission obtained permission to erect churches in China, and a few years after the privilege was extended to the emperor, and Father Verbiest was appointed president of the Tribunal of Mathematics, and five years later was made a member of the Privy Council. In 1665 five French missionaries arrived at Pekin, with the title of 'mathematicians of Louis XIV.' One of them attended the emperor when he travelled, and the others were expected to assist him in the sciences twice a day. In 1692 Pekin having obtained the privilege from the emperor a more favourable edict for their religion. He also granted them a site for the erection of a house and church within the walls of the palace, giving them building materials, and afterwards a grant of 200,000 to adorn the work. The church was consecrated and opened in 1705. In 1710, a cardinal legate was sent by the pope to settle differences which had arisen amongst the members of the mission, but he died at Macao, and his successor did not reach China until 1721, when he was honourably received by the emperor, with whom he had several interviews. In 1717 however the missionaries had been again accused of sedition and, the emperor confirmed a decree prohibiting the building of churches, and Europeans were in future only allowed to remain in China on condition of their promising never to return to Europe. In 1723 the throne was filled by an emperor who at first was rather favourably disposed towards the missionaries, but he afterwards issued edicts forbidding the building of churches, and only tolerated at Pekin and Canton. Dubois, on whose authority the above statements are given, says that above 300 churches and more than 300,000 Christian converts were descended from religious instruction by this act. Several families of rank are at this day members of the emperor on account of professing Christianity. In 1723 the missionaries, thirty in number, were banished to Macao, having from motives of conscience disobeyed the edict which forbids the propagation of the Christian religion. Converts were at this period kept together by native catechists, and a few of the missionaries remained in China in concealment, or re-entered the country by stealth. The mission is still carried on, in spite of the occasional attempts of the government to close it down. The number of Christians in years which the Christians were actively persecuted. In 1816, 23 missionaries and 80 native agents were engaged in China, and the number of native Christians was 215,000. In 1820 a European missionary was sent to the provinces by order of the government. At present there are Catholic communities in all the provinces, where service is performed by native priests. The Catholic community of Pekin amounts to 26,000 members. In the province of Kweicho-chuen, China, for instance, in 1843, it is stated that there are 400,000, and the cross is planted at the head of the dead. If a native clergy can be formed, greater toleration may be expected, as Christianity is chiefly objectionable as an instrument of European influence. The local authorities, having once entertained a contrary opinion, are now disposed to promote the circumstance being known in higher quarters. (Medhurst's China, 1838.)

In November, 1836, a violent decree was issued against the missionaries and Christians of the Po-Kien mission; the churches were closed, and safety was sought in flight; but the decree was not a general edict, and was issued only by the provincial governor. In August, 1837, several Catholic churches were destroyed in Cochín-China, and one of the churches of the Christians was executed by a Chinese missionary. The College of St. Joseph at Macao is for the education of Chinese students. The number of missionaries who proceed to the interior from Macao is considerable in every year. Notice is given to their adherents on the eve of their departure, and at least three months' notice is given to missionaries, whether they are in the country, or living in the villages, to which they often live in great seclusion, the conversions coming to them secretly for instruction. In some parts the worship is conducted openly. In 1836 a new church was opened at Pekin. Mr. Rudge, an English gentleman that the different superiors of the missions in Macao negotiate bills in Europe to the amount of 40,000l. annually. Dr. Milne, the coadjutor of Dr. Morrison in China, speaking of the Catholic missionaries, has eulogised the mode of learning, preaching, and converting the Chinese. They translated the greater part of the New Testament into Chinese, and promoted a knowledge of science and the arts. The Catholic missionaries in China at the present day are far inferior to their predecessors.
In the seventeenth century the Jesuits sent many missionaries to the East Indies, to Tonquin, Bengal, Madura, the coast of Coromandel, and to Surat. In the course of fifteen or sixteen years above eighty missionaries were sent to those countries, of whom some were shipwrecked and perished, and in consequence there were many losses of hardships and difference of climate. The East India mission had many attractions for the ardent missionary, and it was represented that one individual might calculate upon converting a hundred and twenty thousand souls a year.

In the Madura mission it was stated that each missionary baptised every year at least a thousand converts. The manner in which the missionaries of this period endeavoured to add to the number of converts has been often censured. They pretended that and Portuguese commanders was said to be in some instances exchanged for more subtle though still unscrupulous and unjustifiable means. The missionaries were accused of corrupting the power of the Brahmins; the Brahmins of Europe were more antient than those of India, and that the Jesuits of Rome were linedly descended from the good Bolland of the same state; it has been said that they had which doubtless somewhat exaggerated. (Juvenille, Histoire des Jesuites; and Verborf, Mém. Hist. sur les Missions des Malab. Also The Missionaries' Arts discovered, London, 1687; and on the other side, Défense des Missionnaires de la Chine, &c, Paris, 1686.)

It is somewhat difficult to form a just estimate of the labours of the Jesuits in America. Some writers are favourable and others unfavourable to them. It may perhaps be said with truth that the Jesuit missions to America did little to develop the energy and good qualities of the natives, although in Paraguay, and in Upper and Lower California, the missionaries were in possession of all the resources of the country, and enjoyed the extraordinary power which these circumstances conferred. In California the country was left almost entirely in their hands, and they soon acquired a dominion as complete as in Paraguay; but whether from ignorance of human nature or the unfitness of ecclesiastics to superintend the whole social economy of a province the natives of both North and South America dwindled under their care into the most helpless and ignorant of beings. The object of the experiment was to bring a wild race to domesticated habits, and the Indians were gathered into communities where they worked for a consideration, which amounted to slavery, and where their freedom was destroyed, and nothing better arose in its place. Of the one hundred thousand inhabitants living in thirty towns under the control of the Jesuits when that order was expelled from South America in 1677, there were not a thousand remaining in those east of the Parana in 1825. The towns beyond the Parana have fared little better under Dr. Francis. (Sir Woodbine Parish's Buenos Aires and Provinces of La Plata.) The Jesuits, in the course of a century and a half, confirmed the mission of the Peninsula on the coast of South America. In Dr. Forbes’s ‘California,’ compiled from original sources, the process of conversion is described as consisting of the offer of a mess of potage and holy water; the acceptance of the latter being the condition of the former grant, and its reception a proof of faith. Attendance to prayers and meals were the exterior evidence of conversion. Sir Woodbine Parish states that the families of their civil governors, and the little respect inspired by the friars who were sent in peace to the chiefs, and by the Jesuits to the missions and native suit communities in little more than a quarter of a century. When they were displaced, and the people of the mission of St. Louis sent a memorial praying that the fathers might be allowed to remain, which Bucairelli, the governor, was not disposed to support, the Indians, and the simple people were found not in arms but in tears.

In 1790 the three orders of Capuchins, Jesuits, and Carmelites, were the most active missionaries. The Capuchins had twenty-five missions in Turkey, and missionary stations were established in Persia, Georgia, and Africa. The Jesuits had ten missions in Turkey, and the Carmelites three. Many of these missionaries had acquired a knowledge of the languages of the countries where they were, and it was familiar to physicans. In 1717 the Jesuits supported missions in the early half of the continent of America, in Greece, Asia Minor, and the Archipelago, and in Egypt, Syria, and Persia, besides those in India. Louis XIV. made grants of land to the missionaries in Canada, and they are said to have received for some of the earliest descriptions of North America.

In 1822 the cause of missions was revived in France by the 'Institution for the Propagation of the Faith,' which has committees at Paris and Lyon. Several popes have been instrumental in the success of the benefaction, which has been made as a mark of gratitude and approbation, the pope presented the institution with the body of St. Exupéry, which has been recently discovered in the catacombs at Rome. The remains of the provincial centre of the Institution of his Holiness, are enshrined in one of the churches of Lyon. Seventy-six Roman Catholic bishops in various countries have publicly expressed their approbation of the institution. Its income in 1838 amounted to 62,800l. of which 41,578l. was collected in France, 2984l. in Belgium, 2776l. in the Scandinavian, 3410l. in the United Kingdom (765l. from England), 824l. from the States of the Church, 500l. from Prussia, and from other countries smaller sums were received. The receipts for France were 16,600£ more than in 1837. The 'Annals of the Propagation of the Faith' were commenced in 1825, and numbers are published every two months; 48,000 copies are printed in French, 9500 in Italian, 6500 in German, 2000 in English, and 1000 in Flemish. The funds are placed at the disposal of the Committee of Missions for the benefit of the Lazarite Missions and the Jesuit Missions. There is no part of the world in which Catholic missionaries are not supported. (Geography of Missions.)

The first Protestant mission of which we have any account was founded by the churches of Geneva, which sent missionaries to America in 1556; but it is believed to have existed only a short time. Early in the seventeenth century the Dutch, who had taken Ceylon from the Portuguese, admitted the natives to employments under their government only on condition of subscribing to the Dutch Reformed Confession, and becoming members of the Reformed church. The higher rank of natives professed, to abandon their former religion, and those whom the Portuguese had converted deserted their creed, or were baptised after learning the Lord's Prayer, the Commandments, and grace before and after meals. In 1663 the number of converts in one district was 63,000; and in 1668, in a district containing 278,000 inhabitants, 180,000 had made a profession of Christianity, and the Dutch made attempts to gain converts. A church at Java was opened in 1621, and a century afterwards there were 100,000 Christians in the island. Translations from the Scriptures were made in the Singhalese and Malay languages. In 1690 it was recorded that there were 1400 congregations and elements in North America before attention was directed to the religious condition of the natives. In 1644 a petition was presented to parliament from a minister of the Church of England, supported by many English and Scotch divines, which urged the duty of attempting to convert the natives of America to Christianity. Soon afterwards an ordinance of the Lords and Commons appointed the earl of Warwick governor of the islands and plantations of North America, with a complete charge of both religious and civil matters, but chiefly for the advancement of the true Protestant religion, and for the spreading of the gospel of Christ among those that yet remain there in great and miserable blindness and ignorance.

In 1646 the General Court of Massachusetts passed the first act ' for encouraging the propagation of the gospel amongst the Indians.' In 1649 an incorporated body was established with the authority of parliament, under the title of ' The Propagation of the Gospel in New England.' In 1661 Charles II. renewed the Society's charter, on the ground that it was now fit to lay a foundation for ' educating, clothing, civilizing, and instructing the poor natives.' The design of the Society was to supply the Preachers, to instruct the natives in the English language, and to teach them useful trades. Eliot, called ' the apostle of the Indians,' and Mayhew, had already laboured for several years.
in the conversion of the native tribes of New England. In a narrative of their exertions, published in 1653, and dedicated to Cromwell, an account is given of the conversion of several chiefs. In "A Letter and Further Account," published in 1655, Eliot makes it clear that he had arisen amongst the Indians; but never was there a mission so conscientiously scrupulous as to trusting to professions of this kind. He told the Indians "how necessary it was for them to assist in the conversion of their scattered and wild course of life;" and he began the formation of a village, in which they might learn the advantages of living in a community. The Indians were taught various useful arts, and after several years were admitted as citizens, compelled to read aloud to give an account of their conversion and faith at a public examination.

In "A Further Account," published in 1659, there are remarkable accounts of several converted Indians. Five Indian youths were receiving an education at the Cambridge grammar-school in Massachusetts, two of whom had been examined in Latin before the magistrates and elders of the place. In 1670 several "praying towns" as the villages of the converted Indians were called, had been erected under Eliot's auspices. In 1674 there were four "praying-towns" in Massachusetts. Eliot died in 1690, at the age of eighty-six. Mather, Bourne, Sergeant, and Brainerd succeeded each other in the work of bringing the 1

The Church, and converted the natives. Brainerd laboured so successfully as Eliot. Brainerd was an ardent and enthusiastic labourer, and exhausted himself by his extraordinary exertions. He was sent to America in 1742, by the Foreign Society of Propagation of the Gospel, to examine "the objects of the conversion of the heathen; that of the heathen and that of the Christian." He received the charter, and was elected a member of the Board of Trade and Plantations, and sent for to give an account of his mission. On the 31st of July, 1742, two Indians were sent amongst the Indians, "to instruct the French missionaries, to whom they are infinitely obliged," we should lose their allegiance.

About the year 1680 the condition of the negro slaves in our settlements began to excite attention. In 1689 Morgan Godwyn, "some time student of Christ Church, Oxon," wrote a "Persuasive to the Instructing and Baptising of the Negroes and Indians in our Plantations. Towards the close of his life, Eliot had begun to instruct the negroes in New York; and in 1704 the Society for the Propagation of the Gospel established catechising schools in New York for the negroes, the number of negroes and Indians in the city being then 1500. In 1727, Gibson, bishop of London, addressed the missionaries in the English plantations, exhorting them to assist in instructing the negroes. In a sermon preached by Beilby, bishop of Chester, in 1783, before the above Society, the civilization and conversion of the negroes were announced as one of the great objects of the Society.

The Danish and Moravian missions were the first two in which the chief object was the conversion of the heathen; and the Society for the Propagation of the Gospel were for some time limited in its operations, as regarded in the early part of its existence rather as a "Pastoral Aid" Society. The Danish missions owed their existence to Frederick IV., who, about 1755, became anxious that the gospel should be preached to the inhabitants of the East Indies. Ziegenbalgh and Plutcho, who had been educated at Berlin, were the first missionaries sent out; they proceeded to Tranquebar, on the Coromandel coast. A correspondence on the subject of missions and the state of the heathen was commenced with persons regarded in the early part of its existence rather as a "Pastoral Aid" Society. The Danish missions owed their existence to Frederick IV., who, about 1755, became anxious that the gospel should be preached to the inhabitants of the East Indies. Ziegenbalgh and Plutcho, who had been educated at Berlin, were the first missionaries sent out; they proceeded to Tranquebar, on the Coromandel coast. A correspondence on the subject of missions and the state of the heathen was commenced with persons regarded in the early part of its existence rather as a "Pastoral Aid" Society. The Danish missions owed their existence to Frederick IV., who, about 1755, became anxious that the gospel should be preached to the inhabitants of the East Indies. Ziegenbalgh and Plutcho, who had been educated at Berlin, were the first missionaries sent out; they proceeded to Tranquebar, on the Coromandel coast. A correspondence on the subject of missions and the state of the heathen was commenced with persons regarded in the early part of its existence rather as a "Pastoral Aid" Society. The Danish missions owed their existence to Frederick IV., who, about 1755, became anxious that the gospel should be preached to the inhabitants of the East Indies. Ziegenbalgh and Plutcho, who had been educated at Berlin, were the first missionaries sent out; they proceeded to Tranquebar, on the Coromandel coast. A correspondence on the subject of missions and the state of the heathen was commenced with persons regarded in the early part of its existence rather as a "Pastoral Aid" Society. The Danish missions owed their existence to Frederick IV., who, about 1755, became anxious that the gospel should be preached to the inhabitants of the East Indies. Ziegenbalgh and Plutcho, who had been educated at Berlin, were the first missionaries sent out; they proceeded to Tranquebar, on the Coromandel coast. A correspondence on the subject of missions and the state of the heathen was commenced with persons regarded in the early part of its existence rather as a "Pastoral Aid" Society. The Danish missions owed their existence to Frederick IV., who, about 1755, became anxious that the gospel should be preached to the inhabitants of the East Indies. Ziegenbalgh and Plutcho, who had been educated at Berlin, were the first missionaries sent out; they proceeded to Tranquebar, on the Coromandel coast. A correspondence on the subject of missions and the state of the heathen was commenced with persons regarded in the early part of its existence rather as a "Pastoral Aid" Society. The Danish missions owed their existence to Frederick IV., who, about 1755, became anxious that the gospel should be preached to the inhabitants of the East Indies. Ziegenbalgh and Plutcho, who had been educated at Berlin, were the first missionaries sent out; they proceeded to Tranquebar, on the Coromandel coast. A corresponde
them, while attending the coronation of Christian VI. at Copenhagen, saw two natives of Greenland who had been baptised by Egede, and he heard with regret that the government was on the point of abandoning the mission in that country. At the same time he learned from them that an emigrant, who had become acquainted with his servants, and had a sister in one of the Danish West Indian islands, that the latter was earnestly desirous of receiving religious instruction. The congregation of the United Brethren at Hernhut, consisting of only six families, was so poor and despised, were warmly affected by the statements which Count Zinzendorf made on this subject, and some even expressed themselves willing to sell themselves as slaves to have the opportunity of instructing the negroes. In the year 1733, a subscription was sent to several missionaries, Greenland, the islands of St. Thomas and St. Croix, Surinam, Berbice, Lapland, Tartary, Algiers, Guinea, the Cape of Good Hope, and Ceylon, had become the scene of their labours. The Greenland mission was commenced in 1733, and was supported in spite of extraordinary hardships and difficulties. The missionaries were often compelled to put to sea in crazy boats to obtain a supply of fish, and shell-fish and sea-wool were not unfrequently their only food. For five years they persevered in bearing up against these hardships, though as yet the mission had not been productive of the slightest advantage to the natives. Their endeavours were however at length successful, and a community of Christians was established on the island. In twenty-two years about 700 Greenlanders had been baptised; and in 1767 the settlement contained 830 individuals, and had become a pleasant village in the midst of a desolate region. Sheep, goats, and vegetables had been introduced. Indians had learnt to read and write, and were taught church music. In 1758 a second settlement was formed, called Lichtenfels; and in 1774 a third, called Lichtenau. The mission in the island of St. Thomas was commenced in 1732; and in 1758 about 800 negroes were under religious instruction, and some time afterwards the number of baptisms averaged 100 a year. From 1732 to 1786 sixty-six brethren and sisters who had gone out as missionaries died in the three Danish West India islands. In 1754 the Reverend Mr. Marryat, of St. Andrew's, Jamaica, at the request of several gentlemen of the island, owners of estates, who built a house for their residence, and encouraged them in instructing the negroes. Scarcely any opposition was made to the missionaries, but after a time the work languished. In 1784 a party of the brethren settled in Georgia, in North America, with the intention of introducing Christianity amongst the neighbouring tribes of Indians; but the European settlers in the colony, by their constant persecution, at length drove the brethren into Pennsylvania. The colony, which had represented that the brethren were in league with the French Canadians; and for the sake of annoying them, used every means in their power to demoralise the Indians. In the back settlements of Pennsylvania, to which they were compelled to remove, they built a village for the baptised Indians, called Gradenhutten, which was broken up by an Indian war. In 1757 the village of Nain was built, and after a few years was in like manner destroyed. They then built a town called Friedenshutten. The settlement of Bethlehem was so obnoxious to the colonists in the two Jerseys, that proclamation for its destruction was made by beat of drum, and every means were taken to exasperate the lower classes of the people against the brethren. They were threatened with murder, and guarded night and day, and at length were removed for safety to Philadelphia, where they and the Indians remained in the barracks for sixteen months, during which numbers died of fever and small-pox.

In 1735 an attempt was sent to a missionary to the Calmuc Tartars failed; but about 1747 the brethren formed a settlement in Asiatic Russia, where they had become acquainted with the Calmuc, but made no converts, with the exception of one person who became a Christian, and a thing that had been left to die. In 1739 it was determined to send a missionary to Abyssinia to form a correspondence with the Christian church there; but this design was not executed until 1752. In 1759 and 1766, settlements were formed in Georgia in the midst of the Cherokee, and a chapel was opened at Labrador, which had been attempted without success a few years before, was established on that coast in 1758, with the encouragement of the English Board of Trade and Plantations, and the Lords of the Admiralty. Some of the missionaries paid their own expenses, with the exception of buildings and journeys of the missionaries. The brethren introduced amongst their converts a discipline similar to that of their own society, and was only administered for those whose life gave evidence of a change of heart. In 1742 the Moravian brethren residing in London formed themselves into a 'Society for the furtherance of the Gospel. They received and entertained missionaries who came from the society, and the society was only administered for those. This society was revived in 1818.

Till within the ten years preceding the close of the last century, England had taken a very small share in missionary enterprise, and the society was only administered for those who had given evidence of a change of heart. At present Great Britain is the most active of all Christian countries in the work of converting the heathen.

The 'Society of Particular Baptists' formed the second association in England for the conversion of the heathen. Before the year 1786, Carey, a minister of this persuasion, and afterwards eminent as a linguist and missionary, had directed his attention to this subject, to which he was in some degree led by a great love of geographical knowledge; and some time after the above date he published 'An Enquiry into the Obligation of Christians to use means for the Conversion of the Heathen.' He brought the subject under the notice of the General Assembly of the Baptist denomination, and the committee proposed to send a missionary to the Dutch East India islands. In October the society was formed: at a second meeting, at the end of the month, several subscriptions were announced; and 70l. was sent from Birmingham by the Baptist congregation there, who had formed themselves into a 'Particular Baptist Society for Missions to the Heathen.' The society proceeded to the island of Java, and in 1793, Mr. Thomas, who for nearly ten years had been exerting himself in India to promote Christianity, was chosen as the first missionary. He proceeded to the island of Bombay, and they shortly afterwards embarked for the East Indies. Having set up a factory, in the hope of making the mission pay its own expenses, the propriety of missionaries engaging in secular employments was warmly contested by the Society at home, and a letter of 20th January, 1794, addressed to the missionaries at a meeting held in April, 1795. At this meeting a resolution was adopted for establishing a mission at Sierra Leone, but of the two missions sent out, one embodied himself with the authorities in the country, and the other, who was a native, died in a few years. In 1796 a third missionary was sent to India. The following form of agreement was entered into by the Baptist missionaries in Bengal, in 1805:—"It is necessary, in immediate necessities, the members of this society are able, from those things which would increase their prejudices against the Gospel. Nor is it advisable at once to attack their prejudices by exhibiting withsermon the sins of their gods; neither should we, upon any account, ex-pose to violence their image, or interrupt their worship; the real conquests of the Gospel are those of love. In the spirit the Baptist missions have effected considerable good in India, by the establishment of native schools, and translations of the Scriptures, as well as by preaching. At an earlier period there were six fellowships in London, one at Serampore, and in 1806 proposals were made for the translation of the Scriptures into fifteen Eastern languages. A total expenditure of 15,000l. was incurred in the Serampore mission in the course of five years, of which only 5,578l. was received from England, the remainder being made up by the labours of the missionaries, and the contributions arising from the professorship which Dr. Carey held in the college of Fort William. In 1807 the tracts issued by the missionaries amounted to 4,000,000 copies. A society for the advancement of studies was formed in 1810, and a book society in 1812. A subscription was opened at Ludlow, and a society was formed at Exeter. A subscription was opened at Exeter. A subscription was opened at Exeter. In 1813, the printing-office at Serampore was burnt, and the house of the missionaries destroyed, and sheets of translated works in progress. On the disaster being known in England, the sum of 18,611l. was raised in less than two months to replace the loss, be-
in the Bible 1817. Society and Tongataboo. Europe Pastoral

The 'London Missionary Society' was formed in September, 1795, and the first missionary was appointed. In 1827 the Society commenced their labours in the Russioo country. The Episcopalian Church in the United States also have independent missions in foreign countries.

The Wesleyan Methodists were for many years engaged in missionary labours before they formed the 'Wesleyan Missions Society' in 1742. Wesley himself visited America for the purpose of affording religious instruction to the slaves in Georgia. In 1756, Dr. Coke, accompanied by three other individuals, proceeded to Nova Scotia, and before their return they visited some of the West India islands, which were considered as the part of the planters. The peculiar difficulties which the Methodists encountered in their attempts to instruct the negroes are detailed in Dr. Coke's 'Rise, Progress, and Present State of the Methodist Missions,' published in 1804. The attempts made by the Jamaica House of Assembly to put a stop to the preaching of the missionaries, engaged in a contest with the government at home, which was, after singular duplicity, and attempts, on the part of the assembly, to evade the authority of the English parliament. The Methodist Episcopal Church in the United States sends out foreign missionaries.

In 1796 the 'Edinburgh Missionary Society' was established by some ministers and members of the Established Church of Scotland. They gave the name of London Societies, it sent out missionaries to the western coast of Africa, but death and disease prevented the success of the mission. In 1802 a mission was established by this Society in Ceylon. The emperor of Russia granted them land on favourable terms, and in 1810 the settlement of the missionaries consisted of thirty-nine persons. A printing-press was set up, tracts were distributed, and slaves ransomed with a view of being instructed in the true faith.

In addition to the above societies, there has been lately formed in England the 'Colonial Missionary Society.' The 'Society for propagating Christianity amongst the Jews,' which expends above 17,000/. a year in this object, may in some respects be regarded as a missionary institution; and there are several similar societies, but as they are not designed for the conversion of heathen peoples, they do not come within the limits of the present notice. The 'Home Missionary Society' belongs to this class. It has stations in districts where there is a deficiency of places of worship. The annual income of the Society is about 700/. The Baptists have established a Home Society, which has an annual income of upwards of 2500/. a year. The 'Pastoral Society' for the benefit of误会 institutions has a fixed annual income of 1000/.

There are many missionary institutions in Europe and the United States. The 'American Board of Commissioners for Foreign Missions' is the principal institution of the kind in the United States; and each of the principal nations in that country, as in the case of the American Baptist, has its own institutions for sending out missionaries, each of which has numerous auxiliary societies in union with the central society. In continental Europe the principal missionary societies are the English Missionary Society, Netherlands Society, Paris Society, Rhenish Society, and the Society of the Moravian Brethren.

Present State of Societies.—The expenditure of five of the principal British missionary societies, to the end of last year, was above 350,000/., according to their last annual Reports; and the material support which is afforded them by other religious institutions would considerably swell this amount, there are also several institutions whose operations are on a small scale.
India, the Cape of Good Hope, and Ceylon, but made of school-houses 3,949/.
portion of the Society's expenditure, were 15,779/.
Incorporated Societies, and other evangelizing
missions, and schools, 1821; Cape of Good Hope, 2 missionaries and outift, 393/; West Indies, payments for the erection and enlargement of
churches, school-houses, 13,996/; towards the support of clergymen and undetached teachers in the religious instruction of the negroes, 716/9.
 Urged by the recent social changes in the West Indies and the spiritual destitution of the penal settlements in Australia, the Society has recently made ample provision in two quarters. In one, the Society had the management of a grant annually voted by parliament for the support of clergymen in the North American Colonies. Notice was given in 1832 that this grant would be discontinued in future; but on the remonstrance of the Society, the government agreed to continue the allowance for three years longer on a reduced scale. In 1832 the sum of 12,000/ was voted; 9000/ in 1833; and 4000/ in 1834. The Society has been compelled to reduce the salaries of its missionaries in that quarter, and in 1837 was compelled to sell 10,000/ of its funded property to meet deficiencies. Previous to 1823, the Society for promoting Christian Knowledge expended a portion of its revenue in South America, but in that year this department was placed under the Gospel Society. The number of missionaries now employed is 331, of whom 160 are employed in British North America.

The cost of maintaining missionary stations in the following countries, in 1837, was—Continental India, 4237/; Ceylon, 396/; Java, 346/; Sumatra, 101/; Jamaica, 7432/; and 256/ for chapels in the same island; Brazil, 42/; British Guiana, 45/; these and the various sub-stations in connection with them, 59 missions, 44 native preachers, and 59 schoolmasters were maintained. In 1833 the Society received a legacy of 579/.

Disbursements in 1837-8 on account of the following missions:—South Seas, 10,327/; Malacca, 195/; Singapore, 206/; Penang, 971/; Java, 637/; Northern India, 693/; Southern India, 16,104/; Russian Empire, 55/; Corfu, 107/; South Africa, 884/; Mauritius, 426/; Demerara, 381/; Berbice, 531/; Jamaica, 749/7.
Of the amount raised by the yearly contributions, 15,776/ were specially subscribed for seventeen different objects, of which 4000/ was for a South-Sea mission in their 800/ for exploratory voyages; 145/1 for female education. The sum of 4500/ was received from government in aid of school houses in the West Indies. The Society, at 455 stations, maintained 60 missionaries and assistants, of whom 135 are missionaries, and 32 European and 473 native assistants. The number of churches under the care of this is 93, with 734 communicants; and 568 schools contain 36,574 scholars. The Society possesses 17 printing establishments.

3. Church Missionary Society, 1837. Receipts, 72,031/; expenditure, 91,434/.
The West African mission was maintained at a cost of 4014/; South African, 1701/; the Mission in the Indian Islands, 16,082/; legacies, 474/; dividends and rents, 574/7; special fund raised for the education and religious instruction of the negroes in the British West Indies, 9039/; portion of the contributions of the subscribers in the West Indies, 13,000/.
The chief expenses were under the following heads:—North America (dioceses of Quebec and Nova Scotia), 12,254/; India, missionaries and teachers, 6933/; expenses of Bishop's College, 13,000/; religious and general expenses of missions and schools, 1821; Cape of Good Hope, 2 missionaries and outfit, 393/; West Indies, payments for the erection and enlargement of churches, school-houses, 13,996/; towards the support of clergymen and undetached teachers in the religious instruction of the negroes, 716/9.
Urged by the recent social changes in the West Indies and the spiritual destitution of the penal settlements in Australia, the Society has recently made ample provision in two quarters. In one, the Society had the management of a grant annually voted by parliament for the support of clergymen in the North American Colonies. Notice was given in 1832 that this grant would be discontinued in future; but on the remonstrance of the Society, the government agreed to continue the allowance for three years longer on a reduced scale. In 1832 the sum of 12,000/ was voted; 9000/ in 1833; and 4000/ in 1834. The Society has been compelled to reduce the salaries of its missionaries in that quarter, and in 1837 was compelled to sell 10,000/ of its funded property to meet deficiencies. Previous to 1823, the Society for promoting Christian Knowledge expended a portion of its revenue in South America, but in that year this department was placed under the Gospel Society. The number of missionaries now employed is 331, of whom 160 are employed in British North America.

5. Missions of the Church of Scotland, 1837. The mission under the direction of a committee of the General Assembly is at present confined to the department of general, scientific, and religious instruction, and has seminaries at Calcutta, and branches at Madras, which is the capital of a native province in Madras. The payments of the Society placed at the disposal of the General Assembly are 894/; and the annual contributions of its members are 6951/.

6. Missions of the United Brethren, 1837. These missions have long been held in high estimation in England, and about 4300/ are annually contributed here for their support. The number of missionaries employed is 252, and the sum of 19,744/ is raised by a good number of persons of other denominations. About 60,000 souls attend under the care of the Brethren, namely, 44,000 negroes in the West Indies, 3600 Hottentots and Caffres, and 3000 natives of Labrador, Greenland, and North America.
Most of the societies publish periodical accounts of the state of their respective missions. The last Annual Report of the Church Missionary Society shows that about 2500/ was expended in preparing and publishing these works, viz. for 12,266 copies of Annual Report, 20,000 abstracts of the 140,000 of Missionary Register, 691,379 of 'Quarterly Paper,' and 3050 copies of the 'Missionary Register.' The London Society's expenditure under the same head was 1744., and others in proportion; but it is by this extensive dissemination of missionary intelligence that the public have been brought to entertain so strong an interest in missions.

The exertions of other missionary societies are noticed in the following sections.

**Geography and Missions.**—In the Thirty-Eighth Report of the Church Missionary Society it is observed that each mission is marked by various degrees of ignorance and knowledge. "There is a kind of graduated scale, measuring the state of the inhabitants from the lowest point, where even the sovereign is only learning to spell, and is carried further, to the New Zealanders, who are just beginning to catch the most elementary ideas of the Scriptures; thence further, tracing the plain but useful studies of the negro on the coast of Africa; thence to the progress of mental culture and religious instruction in the Mediterranean; thence, rising higher still, to the varied

laymen and 3 female Europeans, besides 5 native clergymen and 532 laymen, and 16 female teachers, making 541 individuals. Number of schools 441, attended by 25,591 scholars.
requirements of India; and, highest of all, to the culti-
vation of the soil. The province of Calcutta and other
parts of Bengal. Under forties, here we give a view of
the mission of all the principal societies.
1. Western AfricA.—Stations at Sierra Leone, Bathurst,
Cape Coast, Cape Palmas, Freetown, Kissely, &c. Stations
of European and African origin, along the coast, is
the province of Calcutta and other
parts of Bengal. Under forties, here we give a view of
the mission of all the principal societies.
1. Western Africa.—Stations at Sierra Leone, Bathurst,
Cape Coast, Cape Palmas, Freetown, Kissely, &c. Stations
of European and African origin, along the coast, is

2. South Africa.—The United Brethren employ 45 mis-
Sionaries amongst the Hottentots, Caffres, and Tamboos.
At the settlement of Genadendal the natives are employed
as smiths, wagon-makers, carpenters, tailors, and
masons. In the schools reading, writing, and arithmetic
are taught, and also dressmaking and sewing is taught in
the female schools. Infant schools have been established.
Amongst the Tamboos many of the women have begun
to wear gowns; some of the men have planted wheat, and
manufactured their land. The London Missionary Society
had 53 missionaries, 67 men, and 12 women, 75 assistants;
18 churches, 1382 communicants, and 4721 scholara.
This statement includes the stations amongst the
Caffres, Griquas, and Namaquas, and others beyond
the colony. The state of the schools among the Hottentots is
en-
couraging; the people are rapidly improving in a knowledge
of agriculture, and many of them lead a moral life.
The Hottentots are said to be most anxious in their desire after
knowledge. Wesleyan missions: 21 missionaries, and 24
schoolmasters; 173 gratuitous teachers, are employed in the
Cape Colony, and there are 5050 children educated. The number
of members in society is 1261, and 1594 children attend
the schools. The missionaries use the Hottentot language,
and several elementary books are printed at the Cape, and a
very large number of copies of books of the Bible are sent.
The Society of Protestant missions has four principal stations
in South Africa, north of the Orange river. The French mis-
ionaries state that among the Hottentots the progress of
conversion has been very slow, and that the chiefs impede
this work as much as possible; but their hopes are in the
rising generation. Among the Bassuto-Buchanans many adults
have learned to read, and both men and women have clothed themselves in the European manner. The
Rhenish mission employs missionaries, who are chiefly
employed in education and the formation of schools.
Hopes, as well as in organising schools. The American
American Board has four stations in the neighbourhood of Port Natal,
and the missionaries have set up a press for printing tracts
in the Zulu language. The Church Missionary Society
manned by twenty-two ministers, and one hundred missionaries
in South Africa.
3. African Islands.—Madagascar. In 1833 the work of
missions was making considerable progress, when an edict
was issued by the King, prohibiting the work of the
missionaries. A few weeks afterwards met in seclusion on a
mountain, for the purpose of reading the Scriptures and
other religious exercises; but the practice becoming known
the authorities, sixteen were apprehended, one of whom,
woman of superior mind named Rasavary, was put to
After having been plagued with great severity, in the
hope that she would make a confession of the names of her
companions. She met her death with firmness and com-
Hope.

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to by the people from all quarters. The American Episcopal Society is on the point of sending a missionary to North America. In India and Palestine, the American Board has stations at Beirut and Jerusalem, and service is performed in the Arabic language. Twelve pupils belonging to the Maronite, Greek, Greek-Catholic, and Armenian churches, with two Protestants and a youth of Jewish descent, have been introduced into the Mission, and are thus associated with a view to future usefulness in the missionary cause. The female school is attended by 25 pupils. The missionaries state that a female boarding-school might be advantageously opened at Beirut. At the press 16,200 copies of seven different works were printed in 1837 for distribution. At Jerusalem a small native congregation has been formed. Male and female schools have been opened. The demand for books is said to be increasing in Syria and Palestine.

**Asian Russia.**—The stations of the German Missionary Society were abolished by an ukase of the emperor in 1837. Siberia:—conversions have been rare in this quarter. The London Missionary Society has a station 160 miles south-east of Irkutsk, and another at Khoton, where a press has been established, at which a translation of the Bible is now printing; and there is a third station at Ona.

Mohammedan Missions. A visit to Persia has induced Mr. Merrick, of the American Board, to form an opinion that missions to Mohammedan countries are at present premature. Preliminary inquiries have been made, and it is said that the character of the Oriental churches, whose condition degrades Christianity in the eyes of the followers of Mohammed.

**China and India beyond the Ganges.**—In China the difficulties in the way of missionaries obtaining access to the country have been latterly rather increasing than diminishing; the frontier stations are therefore regarded with great interest by the friends of missions. Most of the principal missionary societies throughout the world have stations in India beyond the Ganges. Five Chinese, and one European missionaries who preach Christianity in the interior parts of the Chinese empire. The London Missionary Society has not yet been able to fill the vacant station at Canton. At Singapore the Society has two labourers and two at Malacca; and at the latter place service is performed every Sunday to a crowded congregation of Chinese. In 1837 the number of Chinese baptised was 29; and there were 205 boys and 115 girls in the Chinese, and 70 boys and 40 girls in the Malay schools. The Chinese girls' school was closed by the Bishop on account of useful essays and fancy articles sent from England. The number of students in the Anglo-Chinese college is six, besides Chinese youths. Above 30,000 copies of the Scriptures, or portions thereof, are printed and distributed annually. At Penang there are two missionary stations; the latter is controlled by the American Board. Five Mission schools contain 111 scholars, and 11 Chinese children are under instruction. The issues from the press at Penang, in 1837, were 12,500 publications in Malay; and the circulation 19,000. About 2,000 in the Malay, Chinese, and English languages. The Malay publications were sheet-tracts, and were issued in consequence of some atrocious murders. A Society has been formed at Penang for the Diffusion of Christian Knowledge amongst the Chuliks and Bengalees inhabiting the island; and a school for girls has been established under its auspices. The American Baptists have missions in Siam, and at Bankok, a city supposed to contain about 500,000 inhabitants, four-fifths of whom are Chinese, they have established printing and lithographic establishments. About two million octavo tracts in the Chinese and Siamese languages were printed. These publications are distributed as fast as they can be worked off. Four of the missionaries devote themselves to the Siamese, and five to the Chinese. In a recent excursion about 60 miles south of Bankok, a tract reached by Protestant missionaries, 900 Siamese and 3000 Chinese tracts were distributed to eager inquirers. Evidence is adduced in the 'Report' showing that these tracts are extensively read. In a letter from the Roman Catholic Archdiocese of Siam, it is stated that 'books are received, because they cost nothing; are laughed at, but no one is converted.' The American missionaries, it is stated, make handsome presents to the authorities, and have built 1500 miles. Boys, where they spend them, Papal and Protestant missions, on the other hand, regard the mortification and hardships of their labours as calculated to promote the objects of their mission. (Annals of the Propag. of the Gospel, 1838, p. 9.)

**India within the Ganges.**—This quarter is by far the most important field of missionary exertion, and the moral obligation to convey religious instruction to nearly 150,000,000 of people under our dominion has been deeply felt in Great Britain. Missions have been established for the American and many of the European societies. It is difficult to separate the exertions of such institutions as the Bible Society from those societies whose exclusive object is the conversion of the heathen. The British and Foreign Bible Society has expended £112,000, in India, on the distribution of books and leaflets, and has supplied the materials for printing offices and printing-offices. The Prayer Book and Homily Society has sent out its translated work. The Religious Tract Society distributes annually an immense number of tracts. In 1836, about two million octavo tracts in English, and about one million in the Indian and Malay languages were distributed. Here there are also several important institutions which are engaged in promoting education, and are conducting more or less in a spirit of missionary co-operation. The Society for the Propagation of the Gospel founded in 1804, and the American Board, each in its way, have established missions in connection with the college in the neighbourhood of Calcutta and Cawnpore. The Society has a seminary at Vepery and a grammar-school. A number of native teachers is expected from these institutions. In the dioceses of Calcutta and Madras 22,000 miles are to be travelled and 27,000 square miles are to be traversed. In the last year of the Church Missionary Society it is stated that as respects the extension of Christianity in India the great obstacle is the difficulty of finding willing recruits to take the time, money, and labor devoted to the service. Baptist Missions:—At Calcutta, six stations are established with sub-stations, and the missionaries devote
their time to translating and publishing the Scriptures, and improved versions are in progress; and in forming and
superintending schools, from many of which native teachers and preachers proceed to aid in the work. A few individ-
uals are annually baptising converts, and Missionary societies:—
In Northern India, extending from Calcutta to Agra, and
including Benares, there are 12 stations, at which fourteen
missionaries are employed, two native missionaries, two cate-
chists, forty-one native and Eurasian teachers. Communi-
cants at Calcutta and Benares are 3, and attendants at public
worship 111; schools 63, scholars 3844, chiefly boys.
The bishop of Calcutta states that the education of youth on
Christian principles has ‘loosened the chains of Hindooism.’
The Western Indian Mission has its principal stations at Mon-
baye and Nassuck. Western opportunities of missionising
are under instruction; and, as at Calcutta and Madras, there
is an institution for the purpose of giving a superior education
to young natives who give promise of becoming useful
missionary labourers. At Nassuck there are schools for
boys, and 980, are all missionnaires endeavour to
promote their object by discussions, conversation, and
preaching. The South Indian mission includes Cochin, on
the Malabar coast, and Madras, with the stations in the
Tinnevelly mission:—missionaries employed 1, catechists 4,
and scholars 314, schools 149, scholars 4634. Of the Palamcottah station
it is stated that the congregations are increasing, ‘but the
new comers are evidently influenced by worldly motives,’
and should they be disappointed, they will relapse into hea-
thanism. It is not from seeing one or two persons respect
from that of the heathen, except in the outward
mode of worship.’ The German Missionary Society had
recently a missionary in the Tinnevelly district. London Missionary Society:—Principal stations at Calcutta, Chin-
sastra, Bangalore, Salem, Coimbatore, Travandrum, Nagerco-
ler, Neyyor, Cumbanoom, Chittore, Madras, Cuddapah, and
Vizagapatam. Number of stations and out-stations 310,
missionaries 1, and European schoolmasters under the power
of the American Board—51,450. These numbers refer to the territories of the East
India Company and those of the protected states. It is
stated that the natives who become acquainted with English are
much more favourably disposed towards those who remain
ignorant. Large fairs held at the different places, in which
established schools under native masters. The mission
presses are actively at work, and great numbers of
tracts are printed, which are inquire for by people from all
parts. In the Coimbatore district, at the commencement of
the last year, 6000 boys were instructed, and 1000
them to teach Christian boooks: now there are 12 boys’ schools on
Christian principles. The prejudices against female edu-
cation are rapidly giving way. In the Travancore district,
in an area of 450 square miles, about 6000 persons, including
China and many baptized Catholics, are taught to read,
and for training native missionaries, four of the youths read the
Greek Testament with facility. The effects of missions in the
district of Chittore are favourably displayed in the habits
and conduct of the natives, many of whom, in place of re-
enon, and in other social matters, are all missionnaires endeav-
ouring to promote the welfare of the native people.
At Madras the native con-
gregation consists of 80 persons, of whom 35 are communi-
cants. General Baptist Missions:—stations at Cuttack and
five other places within 350 miles of Calcutta, 33 commu-
nicants, and 2463 scholars, with 35 missionaries. Wesleyan Missionary Society:—
principal stations at Bangalore, Coimbatore, Tanjore, and Mysore.
At Madras, there are 13, and Madras, each of
which embraces an extensive district; missionaries 12, assist-
ant-missionaries 7, Babiary teachers 24, members 346, scholars,
chieflly Hindus, 1375. The gospel is preached in English,
Tamil, Canarese, and native languages, and educated
Babuaries employ their native for the translation of Christian books. Wesleyan
missionaries at Mongalore, and three at Dharwar, and five were
sent out last year to establish a mission at Hubli. In 1857 a seminary was begun for training native catechists
and schoolmasters, and was soon attended by 22 young Ca-
darese. American Board of Missions:—In the Malabar
missions 6 missionaries, 2 assistants, and 1 printer are em-
ployed. The seminary at Ahmednuggur, supported at
an annual cost of 1000 dollars, has about 60 pupils from 5 to
16 years of age, and the course of study embraces several
years, and includes the acquisition of English. The English
residents are liberal supporters of this institution. At the
mission-press, which has been also employed by other so-
cieties, 51,450 copies, containing 3,127,500 pages, were
printed in 1859 in the Malayar language. The Tamil
mission at Madura has stations at Madura and established
all, to which 11 missionaries, 1 medical missionary, 1 physician,
and 16 native assistants are engaged. At Madura daily
preaching is usually maintained amongst the people at the
schools and in the vestibules of the idol temples. The
opposition to the natives is so strong, that the mission-press
is on a journey. When the missionary stops at a school
the people assemble out of curiosity, and while seated on his
horse he may profitably hold a discourse from two to ten
minutes. In Madura and its vicinity there are 43 schools,
containing 1790 scholars, with 1232 masters, and 554 scholars. A small proportion of the people can
read, but the population being immense, the number of
readers is great. Applications for books are received from
the most remote villages. In the district comprehending
Madura, and Guthrie, with 773 schools and 82,000
attendence on preaching varies from 340 to 400. The Amer-
ican Board has recently purchased the extensive printing
establishment of the Church Missionary Society at Madras.
It contains eight printing-presses, a lithographic press,
fifteen fountains at Calcutta, and at Madras, Trichinopoly,
and Telagoo, also an hydraulic press, and all the means for cast-
ing type and binding books. The Bible has not been com-
pleted in Telagoo. In a few years it is expected that the
missionaries will have in cultivation of this the reading population amongst the Tamul people with portions of the
Bible, to be supplied from the press at Madras, and in
Trichinopoly, Cuddapah, and Coimbatore stations. The
scriptures in the language of the country have been printed
from every part of Asia except China, amongst whom tracts
can be usefully distributed. Persian books and tracts are
in demand. Allahabad, the remaining station, is resorted
to by immense multitudes of pilgrims from distant parts.
Mission work has been conducted in the Tamul and Singhalese language 17, containing
above 100 youths have been educated at the mission semi-
ary. The increasing knowledge, experience, and stability
of the native agents is regarded as the most promising
feature of the mission. Wesleyan Missions:—The Ceylon
mission is conducted in two divisions, the Singhalese and
the Tamul, the northern part of the island being inhabited
by a distinct race professing Buddhism, and the south by
Hindu idolaters and Mohammedans. Stations in the Sin-
ghalese province 5, missionaries 16, communicants
80, and 372 other assistants, 99, members in society 656: scholars,
adults, and children, 4471. In the Tamul division there
are 4 stations, 8 missionaries and assistants, 37 salaried
teachers, 139 members, and 2136 scholars. The missionaries
are almost entirely supported by the native people, but the
annual revenue of the mission is very small, amounting
to about 10 rupees from each station. In the Singhalese
mission the expense has been borne by a number of
private individuals who have been visited by the missionaries.
The Ceylonese are a race of great energy and enterprise.
American Board of Missions:—stations and out-stations 13, missionaries 6, native preachers 4, native
assistants 71, physician 1, printer 1, female assistant-mis-
sonaries, being the wives of missionaries and the physicians.
7. In sixteen places of worship, average attendance 470.
persons, communicants 330. In 187 free-schools there are
4732 male and 1044 female scholars, besides 151 in the
male and 98 in the female boarding-schools. The press
gives employment to fifty natives. A few years ago the
only women distributors were written on the oil, and a single
writer could only make four or five copies a day. In 1837
the number of pages printed, of tracts, of the Scriptures,
and other works, was 12,436,000. This mission being in some
difficulties in 1837, the governor, in his official capacity, sent
a demand for the stoppage of this part of the revenue
earned by the printing-office; and the mission has since
enlarged the amount of its press. There is one station in
Australasia.

8 Indian Archipelago.—In August, 1837, a regulation in
reference to foreign missions in these seas was issued by
the Netherlands (local) government. It ordains that no missionary
from any foreign mission shall be permitted to
himself anywhere in Netherlands India, excepting on the
island of Borneo, this permission to be granted only to
Netherlands missionaries, under restrictions hereafter to be
more fully reported. In this mission there are 17,781 inquirers,
2447 day-scholars, 992 evening-scholars, 7464 Sunday-scholars,
2120 baptisms, and 382 new communicants in the year.
Borneo, 4 missionaries, 13 assistants. Inhabitants in
stations, 360 members and 50 inquirers, 200 day-scholars, 456
evening-scholars. Wesleyan Missionary Society in Borneo;
stations 27, missionaries 12, catechists and
teachers 23, country-born teachers 18, attendants on public
worship 2005, communicants 88, schools 54, scholars 3712.
Wesleyan Missionary Society:—Borneo has many in the
most neglected parts. Wesleyan Missionary Society
missionaries are assisted by 1159 salaried and 1582 gratuitous
teachers; the members in society are 40,234, and the
number of scholars is 16,027. In 1838 assistance was
obtained from the Free Church of Scotland for the
Christianisation of more than 10,000 houses. United Brethren's
missions:—At 29 stations there are 125 male and female labourers, who have 43,892
persons under instruction, of whom 13,952 are communicants.
In 1838 the Brethren received assistance from government
and residence of 19 schools. The American Board of
Missions has 5 missionaries employed. The means of
education will soon be more generally extended amongst
the aborigines in the West Indies than in the United Kingdom.
The Brethren's Missionary Society has established 129
stations, has admitted 11245 inquirers, and now supports
24 schools. Among the missions under the Brethren's Society,
the Mico Charity, there are three model-schools, for boys,
girls, and infants. The greatest difficulty exists in supplying
competent teachers. The Gospel Society makes large
grants towards the erection of schools and churches; and
42 clerics derive a part of their support from its funds.

9. Austral and New Zealand Churches:—The Church of
England has a station at Wellington Valley, 240 miles north-west of
Sydney, where, at different times, more than a hundred of
the aborigines have been under instruction. Several
have learned to read. The native vocabulary has been revived
and enlarged, and missionaries of St. John's College,
Newcastle, are at work throughout the whole of the morning and evening services of the Church
language every Sunday. In the seed-time natives attended at the
plough daily for upwards of a month, and in the harvest time for
weeks, and are employed in reaping the corn. The children,
in general, improve as much as those of European parents
in all ordinary branches of education—reading, writing,
sewing, and religious knowledge. At Port Phillip, in South
Australia, the Wesleyan Missionary Society has stationed
two missionaries who are to instruct the aborigines. The
local government has undertaken to defray half the
preliminary and half of the annual expenses. In 1838 several
German missionaries were conveyed out at the cost of
the government, with a view of instituting a German
mission among the aborigines. They have been stationed at Moreton
Bay, and at present act under the Scottish synod of New
South Wales. The Gospel Society has engaged to contribute
towards the outfit and support of 32 additional clergymen,
and the Wesleyan Society of London and Wales. The
Catholics are extending their activity to the same quarter,
and Sydney has become the central station of an important
mission, embracing Polynesia. New Zealand.—The Church
Missionary Society commenced its labours in these islands in
1811, when a station was opened at Nandina. At present 91 persons are employed. Attendents on public worship
2176, communicants 178, schools 51, scholars 1431. In
the printing-office 5000 copies of the New Testament have
been printed; and to New Zealand, governor, in English,
and translation of 'Pilgrim's Progress,' are preparing,
Dr. Lang, in his 'New Zealand in 1839,' has severely
attacked the members of the Church Missionary Society
on account of their having become land-jobbers. Mr.
Polack, who resided in New Zealand six years, says that
but for the missionaries the island would have been wholly
unsafe as a residence for commercial men. The mission-
aries, in the absence of a regular government, are often
required to exercise political and magisterial power. (Report of Commons' Committee on Aborigines.) The Wesleyan
Missionary Society is the only other English institution which
sends missionaries to New Zealand. Members 603; 26 are
under school instruction; a printing-press is in full
operation, and employed in preparing elementary books for
the schools. New Zealand has just been visited by Catholic
missionaries, who say, The natives are enchanted with the
bounty of the Catholic missionaries. The natives are
head-hunters, and the church is the only place of peace for
them. (Report of the Wesleyan Missionary Society.)

10. Polynesia.—Wesleyan Mission.—Stations in the
Friendly Islands and in the Fiji Islands. In the Habu
and Vavou Islands the people have 'generally embraced
Christianity, and the station has been so truly converted,
and living in the enjoyment of 'great spiritual
blessings,' that the London Missionary Society:—The missionaries of this
Society occupy stations in the Navigators' Islands, Georgian
Islands, Society Islands, and Harvey Islands. The American
Missionary Society has schools at twenty stations
throughout these islands. The whole number of
missionaries is 124; 32 are in Borneo, 35 in the
South Seas, 21 in the Sandwich Islands. The
Missionary Society has stations in the Sandwich Islands, 7464 Sunday-scholars,
2120 baptisms, and 382 new communicants in the year.
Borneo, 4 missionaries, 13 assistants. Inhabitants in
stations, 360 members and 50 inquirers, 200 day-scholars, 456
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girls, and infants. The greatest difficulty exists in supplying
competent teachers. The Gospel Society makes large
grants towards the erection of schools and churches; and
42 clerics derive a part of their support from its funds.

12. North American Indians.—American Board of
Missions:—27 stations, 23 missionaries, 3 medical missionaries,
3 physicians, 11 teachers, 6 farmers and mechanics, 3 native
prachers, 1 native assistant, and 35 native assistants.
and residence of 19 schools. The American Board of
Missions:—27 stations, 23 missionaries, 3 medical missionaries,
3 physicians, 11 teachers, 6 farmers and mechanics, 3 native
prachers, 1 native assistant, and 35 native assistants.
and residence of 19 schools. The American Board of
Missions has 5 missionaries employed. The means of
education will soon be more generally extended amongst
the negroes in the West Indies than in the United Kingdom.
The Brethren's Missionary Society has established 129
stations, has admitted 11245 inquirers, and now supports
24 schools. Among the missions under the Brethren's Society,
the Mico Charity, there are three model-schools, for boys,
girls, and infants. The greatest difficulty exists in supplying
competent teachers. The Gospel Society makes large
grants towards the erection of schools and churches; and
42 clerics derive a part of their support from its funds.
13. Labrador.—Fifteen of the United Brethren have 973 Esquimaux under their care, among whom there are 360 communicants.

14. Greenland. At 5 settlements, 15 of the United Brethren have 1785 natives under their care, including 80 communicants.

For a 'General View of the Results of Missionary Effort,' the reader may refer to the Rev. Howard Malcolm's "Brethren in India." Brussels, 1837. From this they are as follows:—1. Numerous and formidable impediments have been removed. An entrance and location among strange nations have been effected. Missionaries everywhere find brethren to welcome them. 2. One thousand ordained missionaries, interpreters, schoolmasters, schoolmistresses, bookbinders, artisans, and assistants; and above one thousand native preachers and catechists are in actual service. 3. The Scriptures, in whole or in part, have been translated by modern missionaries into nearly a hundred languages. 4. A considerable number of "Newspapers of the World," Rev. Wylly's "Map of Missions; Missionary Register for January, February, March, and April, 1839; The Missionary Vine; Missionary Gazetteer," by the Rev. C. Williams; &c. &c.

MISSISSIPPI (or the 'Great Water,' as the term signified when it was first given to the large river in the west; the white upper part of the river, which rises about 450 feet above its level. The lake is about 21 miles long from east-south-east to west-north-west, and its breadth varies between one and three miles. The country at the back of the bluff is rather undulating, and assumes the character of a prairie land, though only a small portion of it. Below Lake Pepin the valley of the Mississippi varies from 3 to 10 or 12 miles in width, except at Rock Island and Des Moines Rapids, where it is only wide enough to receive the volume of the river. At the Rock Island rapids, which is a short distance above the mouth of Rock river, the bed of the Mississippi is contracted to 800 or 1000 yards; and at the Des Moines rapids, which are near the mouth of the Des Moines river, it is only 1000 yards wide. At Rock Island Rapids the river descends 44 feet in a distance of 15 miles; and at Des Moines Rapids 30 feet in 11 miles. In many places the river occupies half the valley, spreading out to the width of five or six miles, and appearing to lose itself among numberless islands, between which the river runs in narrow channels. Several important islands occur. Below Lake Pepin the bluffs or wall-like high grounds, which generally run parallel to the course of the river, and at some distance from it. Lake Pepin, in most parts, nearly fills the whole of the river. On its banks are numerous small farms; its channel is also impeded by sand-bars, and the current is rapid. From the Falls to Lake Pepin the river winds through a country of prairies, whose surface is rather undulating than hilly, the elevations being of small extent, and seldom attaining 200 feet above the level of the water. The valley through which the river runs is now more regular and uniform in width; but the river itself is winding, and its course is often interrupted with falls, rapids, and sand-bars. Its channel is also impeded by sand-bars, and the current is rapid. From the Falls to Lake Pepin the river winds through a country of prairies, whose surface is rather undulating than hilly, the elevations being of small extent, and seldom attaining 200 feet above the level of the water. The valley through which the river runs is now more regular and uniform in width; but the river itself is winding, and its course is often interrupted with falls, rapids, and sand-bars. Its channel is also impeded by sand-bars, and the current is rapid.

The sources of this river are two small lakes, situated in 47° 10' N. lat., and between 90° 30' and 90° 60' W. long. The western, called Lake Itasca, is about eight miles long; the eastern, Lake Kabetogama, 11 miles long. Both are situated in the north-western part of the state of Minnesota. These two lakes are estimated to be about 1500 feet above the level of the sea. From each of these lakes a small stream issues in a northerly direction, which unite, after a circuitous course of 50 or 60 miles, in 47° 30' N. lat. The united stream falls into Lake Traverse, which is about 12 miles long from north to south, and six or seven broad, and is the most northern point attained by the river. Issuing from the eastern side of this lake, the river flows south-eastward to Cass Lake. From Cass Lake it still flows a little south-east and west-north-west, to Little Winnie Lake, from which its south-eastern course begins. Up to this point its course lies through a country studded with lakes, and united with each other by channels full of rapids and small cataracts. The surrounding country consists of an alternation of small eminences and swampy ground. The elevations or ridges are composed of alluvial sand, and large granite boulders are scattered, and are overgrown with pinetrees. The prairies are intersected by numerous creeks, and other trees grow, especially hemlock, elm, and ash, which are covered with moss. In some parts small prairies occur.

Issuing from Lake Winnipeg in a southern direction, the Mississippi continues to traverse the region of lakes. The three largest are Winniabago, St. Peter's, and St. Anthony's. The first of these is about 100 miles wide, and covered with trees. The fall on the eastern side is 230 and the distance from the mouth of the river to the falls above, 16 feet. There is a considerable rapid both above and below the falls, and goods must be carried over a long portage. The difference of level between the places of disembarking and reloading is fifty-eight feet. For several miles further the river descends, and then begins to rise again to the state of the Mississippi.
cinity of Lake Pepin, isolated knobs and hills of considerable magnitude, based upon horizontal strata of rocks, and rising to various heights, frequently occur. These hills appear to be the remnants of forereign elevated tracts through which the river has scooped out a broad and deep vale. This vale is covered with an alternation of prairies and forests. The prairies are generally elevated a little above the floods, and richly carpeted with herbage and flowers: the woodlands are generally low, except where the surface is broken by the growth of trees. Between the Falls of St. Anthony and the mouth of the Mississippi river the Mississippi receives no considerable affluent from the west, except the St. Peter's river; from the east it is joined by St. Croix, Wisconsin, River, which is, in its general course, wide and shallow, and subject to great fluctuations of level. At the mouth of the Mississippi the middle course of the Mississippi terminates.

Below the mouth of the Missouri, the river and the vale through which it flows present different features. The river, though less than 200 feet above the level of the sea, with a comparatively gentle course, in one sheet of water, rarely interrupted by islands. The only serious obstruction to navigation occurs about 30 miles above the mouth of the Ohio, where two bars of limestone, called the Big and the Little Islands respectively, extend into the river. The bar on the north of the river is partly composed of loose earth, and as it widens more and more as it proceeds southward, it consists of an accumulation of such materials with an accumulation of low bottoms partly covered with swamps. Both are of great extent, and are generally opposite to one another, so that when the high ground approaches the banks of the river on one side, extensive bottoms skirt them on the other side.

The most northern of these bottoms, called the American Bottom, begins four miles above the mouth of the Missouri, on the eastern bank at the Piasa Hills, and extends to the mouth of the Kaskaskia river, a distance of seventy miles in a southwesterly direction. It is several miles wide, and has a very astonishing fertility, consisting of comparatively recent deposits from the river. Its surface however slopes, as is common the case with bottom-land, from the river to the high lands which skirt the bottom on the east, and along the foot of which there are pools of stagnant water, which render this fine bottom unhealthy. Opposite this bottom, on the west side of the Mississippi, the high lands approach the river, presenting abrupt declivities, prominent points, and in many places perpendicular precipices from the foot to two, three, or four hundred feet high. The country at the back is partly wooded and partly prairie. These high lands continue along the right bank of the Mississippi somewhat farther than Cape Girardeau, north of which place they attain their greatest elevations. Between the mouth of the Kaskaskia river and that of the Ohio are also high lands of inferior elevation, but about thirty miles above the mouth of the last-mentioned river the banks begin to be low, and continue so to its very mouth. Its soil consists of recent alluvial deposits covered with dense forests: the width is about 10 miles.

This low alluvial tract continues south of the mouth of the Ohio for about seventeen miles, where the river runs at the base of the Iron Banks, which rise nearly perpendicularly about 130 feet above the level of the river, and are generally annually wearing away by the action of the water, which sets strongly against them. From the Iron Banks southward, bluffs less than 200 feet high skirt the banks of the river as far south as 35° N. lat., with the exception of a bottom-ground about 30 miles long and five miles wide, which lies between 36° 30' and 36° N. lat.; it is a swamp covered with high trees, and hence called Wood Swamp. South of it some bluffs attain an elevation of 200 or 300 feet, and the prairies and hills called bluffs. The country opposite to this high bank, on the west side of the river, is low. It begins on the north, about ten miles below Cape Girardeau, with the Tywappa Bottom, a fine tract of wooded country, and extends to the mouth of the St. Frank river, a distance of more than 15 miles on the straight line. Its width is more than fifty miles, and its western side is skirted by bluffs of moderate elevation, which, for a considerable distance, run along the western banks of the Black and White rivers, nearly parallel to the Mississippi. This alluvial tract is traversed in all its length by the St. Francis river, which is joined not far from its source by an offset of the Mississippi, by which, during the time of the freshets, a great volume of water is poured towards the middle of the plain, so that the greatest part of it is inundated, and a considerable extent is a swamp all the year round. This swampy tract extends on both sides of the St. Francis river, is called the Great Swamp. The country is unhealthy, and covered with a continuous forest.

On the south, this low region borders on another, which is not much more elevated, but is less subject to inundations. Between the Mississippi river and its tributary, the Yalooz river, is a vast swamp, called the Black Swamp, which borders on a region of prairies richly carpeted with herbage, and covering a considerable surface. This is a vast expanse of prairie, which is called the Great Plains of the Mississippi. It is covered with a recent alluvium, and meadow-land. It lies opposite the border of a region on the north, which is a small swamp, called the Great Black Swamp, which borders on a large, low prairie, called the Great prairies of the Mississippi. This covered with a recent alluvium and meadow-land, and lies opposite the south of the St. Francis river to that of the Yalooz river, a distance of about 150 miles, with a width of about fifty miles in the middle, where it is widest, and an average breadth of about thirty miles. It seems to owe its origin to an old channel of the Mississippi, which branches off about 20 miles above the mouth of the St. Francis river, and runs through the low country in a southern direction. This branch is called, at least in its lower course, False Yalooz river, and falls into the Yalooz river about 20 miles from its mouth, which is more or less level, and much more passable, and it is only along the watercourses which flow through it that the banks are dry for several months in the year. On the east it is bordered by a much more elevated tract, which is generally wooded on its margin, but farther back is a prairie as wide and open as the others.

South of the mouth of the Yalooz river, the bluffs on the eastern bank of the Mississippi re-appear, and extend east to Baton Rouge (about 30° 30' N. lat.). In some places very narrow tracts of low inundated ground separate the bluffs. This is the southern part of the Mississippi, which branches off by its waters. As in the other bluff region, the surface of this tract is intersected by numerous watercourses, which give to it the aspect of a hilly country; but at the distance of about 10 miles from the river it extends in an undulating plain. The bluffs themselves rise rather steeply from 100 to 200 feet above the bed of the river. Opposite to this bluf region is another low and generally swampy tract, which is traversed by the Tensas river, another outlet for the southern Mississippi, which branches it from 20 to 30 miles wide, between 35° and 35° 30' N. lat., and extending southward to the mouth of the Red river and the efflux of the Atchafalaya branch of the Mississip prong, which is connected with the extensive low regions of the delta of the Mississippi. This constitutes the most southern portion of the vale of the Mississippi, and is more particularly described under Louisiana.

The Mississippi falls into the Gulf of Mexico by six mouths, after a course of more than 3200 miles; but if we allow the channel of the Missouri as the principal river, the whole course is at least 4400 miles.

Countries constituting the Borders of its Basin.—The basin of the Mississippi, like that of most other rivers, is narrow near its mouth. As far north as the beginning of the bluff region, near Baton Rouge, it is confined to the inundated region of the delta. On the west of the delta are the extensive and elevated prairies of the Attacapas and Opelousas, from which the low country is separated by a fertile and sloping tract. But towards 31° N. lat. the country is marked by the abrupt change of four hundred miles, and is covered with pine-forests. North of the road leading from Nacogdoches in Texas to Nachitoches in Louisiana the change is still greater, the surface of those parts being much more broken, and intersected by streams of considerable size. Here the basin of this hilly region the basin of the Mississippi widens greatly towards the west, running along the parallel of 33° N. lat. to the sources of the Sabine river, and from 9° 30' W. long. to the sources of the Red river in the Rocky Mountains, at 105° W. long. The country is subdivided into two regions, one from the numerous rivers which descend into the Gulf of Mexico through the province of Texas, is only hilly and wooded about the sources of the Sabine river; farther west it has the form of an east-wall several miles wide, having little or no level on its surface, without trees, and sloping with rather a gentle declivity towards the Red River. Its elevation...
above the sea is not known: towards the western extremity, about the upper branches of the Red River, it joins the wooded hills of St. Baha, a branch of the Rocky Mountains. From the source of the Red River, the long and continuous chain of the Rocky Mountains forms the western border of the basin of the Mississippi in all its extent, from 33° to 48° lat. It is likely that, though the river runs in a north-west direction, the western part of the basin of the Mississippi continually widens as it extends northward. Near the parallel of 33° N. lat. the river is only about 550 miles from the western border of its basin, but near 44° N. lat. it is likely that many rivers which flow into it. Further north the distance is somewhat less, as the river in these parts flows in a general south-eastern direction.

The northern border of the basin of the Mississippi begins on the west at the base of the Rocky Mountains, and in the middle northern branch of the river Saskatchewan about 45° N. lat. It does not run directly east, but in a north-eastern direction until it attains 50° N. lat., when it extends nearly along that parallel eastward to the banks of Assiniboia, a distance of 400 miles. In 101° W. long., it turns, nearly along that parallel, to the banks of the Rivers Assiniboine, and runs in that direction to the sources of the Red River of Lake Winnipeg (about 45° 30' N. lat.) in Lake Travers. Hence it turns to the north-east on the eastern side of the Red River to Lake Itasca, the source of the Mississippi. The course of the Lake Traverses, and continues in that direction to 48° N. lat., when it extends to the banks of Lake Superior. Lakes Superior and Michigan may be considered as lying on the margin of the basin, as the rivers which empty themselves into these lakes have their waters only very little diminished. In the upper courses of Lake Michigan the margin of the basin runs east to the most southern extremity of Lake Erie, whence it continues at a short distance from the southern shores of that lake nearly to its eastern extremity. From this lake it turns east, and terminates at the base of the Alleghanies and Genesee, near 42° N. lat. This northern border extends from 110° to 78° W. long., a distance of nearly 1400 miles in a straight line. It is remarkable that no part of such an extent is in a greater or less danger of lake rise from 300 to 4000 feet, and in some places to 600 or even 1000 feet. Further inland they also rise somewhat, but are followed by an extensive table-land of a very broken and diversified surface, interrupted by numerous large lakes, as the Tomahawk lake and others. Than broken region, to which the Northern Wisconsin Hills is given, is probably more than 1200 feet above the sea-level. The rivers which rise on it, and run off towards all points of the compass, are separated from one another by short portages, but are navigable to very little above 600 miles, and are wooded in many places, the tracts consisting of bare rock are very extensive. This region terminates on the south-west with the Ocoos Mountains, which occupy the tract between the Mississippi and Wisconsin rivers; but towards the shores of Lake Michigan it descends gradually, or perhaps in terraces, as the small lakes seem to indicate, which occur at certain distances from Lake Michigan. On the south side of this more elevated region, and probably along its base, a deep depression runs across the country lying between the eastern banks of the Mississippi and Lake Michigan, in a south-west and north-eastern direction. In this depression run two rivers, the Wisconsin, falling into the Mississippi, and Fox river, which empties into Lake Michigan at its southerly extremity. These two rivers are separated from one another by a portage of about one mile and a half across a flat meadow, which is occasionally subject to inundations, at which time it offers a water-communication between the two rivers.

The southern border of the Mississippi basin is in no place more than 30 miles from the shores of Lake Michigan. As far as it is known, it consists of prairie land, mostly with a level surface and a shallow soil, which in some places consists of a few small woods. In some places it is separated from the lake by a margin of low, flat, and swampy ground, thickly covered with high grass; but the lake is generally skirted at a distance of a few hundred yards from its shores by a range of steep low sand-hills. The sand is loose and unconnected, and the flat surface have been produced by the constant accumulation of sand blown from the beach by the strong northerly winds. The line which constitutes the border of the basin of the Mississippi between Lake Michigan and Lake Erie is some-
what curved to the south. Along the western part of this line is a fine level plain covered only with thick grass: it is followed by a deep depression, the surface of which is swampy, and through which two small streams run, which establish a watercommunication between the Kaskaskia river, an affluent of the Illinois, and the St. Joseph's river, which falls into Lake Michigan. Further east the country spreads out in extensive prairies, almost destitute of timber, except on the bottoms of the watercourses (Elkhart river) and on the northwestern borders of the small lakes between these prairies are intersected. These prairies contain a great number of sink-holes or conical depressions of the surface, from 8 to 10 feet deep, and from 20 to 30 feet in diameter. But where there are prairies and prairie-trenches, and low Maumee river stretches a country 30 miles wide, consisting of low flat ridges, the summits of which present extensive levels, intersected with many small lakes and lagoons. They rise abruptly and with a steep declivity from the lower country to an elevation of 20 or 30 feet, and are uniform in height, but of unequal breadth. They are divided from each other by narrow strips of prairie land. The soil of the ridges is poor and gravelly, and covered with a thin growth of scrubby oak: it consists of an ancient diluvial formation, whih has been succeeded by elevation of ranges and valleys. On these lower grounds are filled with alluvium. The remainder of the border, which skirts the southern banks of the Maumee river, is generally a swampy plain.

The swampy country ceases at Sandusky Bay. The southern part of Lake Erie, the surface of which is elevated above its level, and are not swampy. Behind them the country rises gently, and with a rather level than undulating surface, and attains at the watershed between the rivers which fall into Lake Erie, and which join the St. Lawrence at 1,700 feet above the sea, and about 350 feet above the surface of the lake. The high grounds extend in alternate prairies and woodland, and the bottoms along the watercourses, which are considerably depressed below the plains and prairies, extend westward. Swampy tracts of rare occurrence on the plains. This country continues eastward to the boundary-line between the states of Ohio and Pennsylvania. The remainder of the northern border of the Mississippi basin, which surrounds the numerous up-branches of the Allegheny river, runs close to the shores of Lake Erie to 42° 30' N. lat., and then turns south-east, terminating where the parallel of 42° traverses the Allegheny Mountains, at the head of Genessee river. The country adjacent to this border is very hilly, consisting mainly of a succession of elevated ridges and valleys. The whole tract is considerably elevated above the level of the sea, as Pittsburgh, which lies near its southern extremity, at the confluence of the Monogahela and Allegheny rivers, is 265 feet above the level of Lake Erie. All the country which constitutes the watershed in this part probably rises 300 or 400 feet higher. This tract is almost entirely covered with forests.

The eastern border of the basin of the Mississippi, between 44° and 45°, is formed by the Appalachian Mountains, which as they extend from north-east to south-west, continually approach nearer to the bed of the river. Hence the outer border of its basin, between 44° and 42° N. lat., is about 300 miles from its bed, but at the parallel of 35° N. lat. that distance is reduced to about 230 miles. [For the natural features of this region see APPALACHIAN MOUNTAINS.] Though the Appalachian Mountains cease to constitute a mountain-chain in the north-eastern part of the state of Alabama, a tract of elevated and hilly country branches off from the main range extending towards the west and west, and terminates on the banks of the Mississippi, north of the Choctaw Swamp, in the hill called the Fourth Chickasaw Bluff. This hilly tract is mostly covered with pine forests, and resembles the country which extends from the base of the Gulf of Mexico, to about 50 miles from the river this hilly range is traversed at right angles by another tract of elevated ground, which extends from about thirty miles south of the mouth of the Mississippi river, south-east through the middle of the state of Mississippi, and terminates in a long slope near the northern shores of the lakes Pontchartrain and Borgue, which belong to the delta of the Mississippi. This elevated ground is broken and rocky between the Tennessee and the Mississippi, and consists of wide plains, which towards the north exhibit extensive prairies and towards the south are covered with pine forests. In this part the outer-border of the basin of the Mississippi is less than a hundred miles from the bed of the river.

The countries included within the Basin of the Mississippi—The countries comprised within this basin may be divided into the hilly country, the prairie country, and the desert. The hilly country borders on the east on the Appalachian Mountains, from the base of which it extends westward to the meridian of 96°, being crossed nearly in the middle by the Mississippi river. In the southern part of this tract the river is small, but in the northern it is large, and in the south this region extends to the very borders of the basin, namely, east of the river to 33° N. lat., and west of it to between 33° and 34° N. lat. Its northern boundary, east of the river, is determined by the Missouri, by the Osage river, by the backwaters of the Kansas, and by the Missouri, as far as its confluence with the Kansas river, when the latter river forms its boundary nearly to the place where its two great forks unite. The prairie region occupies the whole of the basin north of the Ohio, and also the country between these prairies and the Missouri. The desert occupies the western portion of the basin, extending from the meridian of 96° and from the banks of the Missouri, where this river flows in a southern direction, to the base of the Rocky Mountains. We shall notice these regions in their order.

The eastern portion of the hilly region, or that which lies between the Appalachian Mountains and the vale of the Mississippi, varies in its natural features and in fertility. The eastern districts, extending as far west as 86° W. long., are a continuation of the flat and swampy country bordering the Ohio river, in the course of 60 miles it extends to a considerable depth. The rivers run in deep trenches, and have seldom a bottom of any extent. They flow from 100 to 300 feet below the adjacent country. The landscape is varied with occasional succesions of ascents and descents, but the activities of nature which have occupied the basin is covered with a good soil, loaded with timber in its natural state, and yielding rich crops when cultivated. To the west of 86° W. long. the country sinks considerabiy from 500 to 1000 feet below the Ohio basin, and wide open valleys separated from one another by regular series of low hills; but the soil of this portion is inferior, and there are several tracts, though none of comparatively great extent, which are without trees, and partake in some measure of the character of the desert. Towards the backwaters of the Mississippi the hills decrease in height and expand in width, but to the very edge of the water the country has a broken aspect. The fertility of this portion is still less, and several tracts are covered with sand, and a few are swampy.

On the west of the Mississippi, the hilly region commences near the banks of the river in the districts which extend from the confluence of the Mississippi and Missouri rivers downwards to Cape Girardeau, but farther south it returns an average distance of 60 or 70 miles from the river. Probably this portion is comprised of this region is the Illinois and the Ozarks with their excellent watercourses occupy a space of about 100 miles in width and 490 miles in length, beginning on the south on the banks of the Mississippi river between 94° and 97° W. long., and stretching in a north-westerly direction to the borders of the Mississippi and Missouri rivers, where they terminate between 90° and 92° W. long. Their general direction is parallel to the Atlantic coast and the Appalachian chain. The highest part of this region lies towards the southern extremity, where, between the Red head Arkansas rivers, they constitute a continuous mountain-ridge rising about 2000 feet above their bases. This ridge is called the Musserene Mountains. The hills which occupy the remaining part of the region, and which is the most elevated along its western border, where they likewise form a range which terminates on the banks of the Missouri, between the Gasconade and Osage rivers, in hills hardly 200 or 300 feet above the bed of the river. The whole surface of this tract is level, and the general slope of the ridge is diversified by hills and mountains, rising from 500 to 1500 feet above their base, consisting of numerous knobs and peaks, with rounded summits and perpendicular cliffs and abrupt precipices. The soil is poor and only bears pine-trees, cedar, scrub-oaks, and hickory. This is a desert soil, but are occasionally subject to excessive floods brought down from the hills and mountains. These floods are so sudden and great, that sometimes the water has risen in one night, more than 20 feet, and inundated the whole valley to the depth of 10 or 12 feet. The southern and northern districts of...
those adjacent to the Red River and the northern banks of the Arkansas, and those which extend from Cape Girardeau along the Mississippi and Missouri to the mouth of the Gaseo-
grade river, as well as a tract west of the mouth of the Osehe
river, an affluent of the Missouri, are not hilly, but the sur-
face exhibits broad and elevated swells of land separated from
each other by wide and deep valleys. These districts are
diversified with woodlands and prairies. The soil, though
don't is the first quality, is generally good. The country west
of the fork of the Missouri is generally low, and the divide
between the Missouri and its branches is generally undu-
lates these districts in its surface, but the soil is much in-
ferior; the proportion of forest is very inconsiderable, and the
timber of a scrubby character. At least nineteen-twentieths of
the surface is prairie.

We pass to the prairie-region. Though prairie land gen-
ernally prevails in that portion of this region which lies east
of the Mississippi, there are extensive tracts without any
prairies. Of this description is the country which extends
along the northern banks of the Ohio river, and in some places
60 or 70 miles from it. It may be considered as divided from
the prairies bordering on the north of this tract by a line be-
ginning on the Mississippi river at Cape Girardeau and run-
ing in a north-easterly direction to the Miami river, and the
then south to the Miami and other prairie valleys, especially along
the city of the course north-east to the sources of Big
Beaver river and to Lake Erie. The tract of country included
by this line and the vale of the Ohio is exceedingly diversi-
field. The soil is in general either and a tract one and a half 
and a half the hills rise with a steep
from sea-level to an elevation varying between 300 and 500 feet.
In attaining this elevation the country appears uneven and
rough, but the hills are comparatively small, though very
skillful farms are more frequently found. The soil is
generally either lime-stone or sandstone. The general
as the banks of the Mississippi, the beaches of the
surface are the hill-country of south-eastern Indiana, and the
surface of the Ohio valley. The valleys of the rivers in this prairie-region
are generally broader than among the hills farther south, and more regularly
defined, being separated from the high
lands by parallel ranges of cliffs or mural bands.
The prairies extend between Lake Michigan and the vale
of the Mississippi northward to the lower course of the
White river, through which many prairie streams are
and the prairies are much flatter than the
hills farther south, and more regularly
defined. The soil is generally either lime-stone or sandstone. The
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defined, being separated from the high
lands by parallel ranges of cliffs or mural bands.
which is cultivable to a great extent. The most northern on this side is the St. Croix river, which joins the Mississippibelow the mouth of the St. Peter's river and Lake Pepin. It rises in Upper St. Croix lake, near the head-waters of Bois-Brulé river, which falls into Lake Superior, and there is a portage of 40 miles between the streams. It flows in a general southern direction, receives numerous tributaries, and about forty miles from its source enters the Lower Lake St. Croix, which is thirty miles long, but of inconsiderable breadth. The river is navigable for about twenty miles above the lake, where it is obstructed by a rapid, but above the rapid it is sufficiently deep for loaded canoes and vessels of twelve tons burden.

The Wisconsin or Ouisconsin river rises in the centre of the mountain-region called the Wisconsin Hills, through which its course is in a general south direction for about 180 miles. Where it approaches the sources of the Fox river of Green Bay, it turns gradually to the east, and its course in this direction is also estimated at 180 miles. When swollen it is navigable in the lower part of its course for boats of considerable burden, but at the time of low water its navigation is obstructed by the shoals and rapids of Shell and Menawakee river, which falls into Lake Michigan.

The Illinois is formed by two branches, one of which, the Kankakee, drains the country immediately adjacent to the southern extremity of Lake Michigan, and runs westward; the other, the Kaskaskia, runs through the prairies of western and western direction about 300 miles, falling into the Mississipi near 41° 30' N. lat. It is only navigable for small boats. Not far from its head a natural water-communication is said to exist between it and Manawakee river, which falls into Lake Michigan.

The Ohio is formed by two branches, one of which, the Scioto, rises in the Alleghany Mountains, passes through the Alleghany and Monongahela, and runs between the forks of the Alleghany and Monongahela. The Scioto rises in several branches south of the eastern extremity of Lake Erie, and the source or one of these branches is only five miles from the lake. The general direction of its course is first south-west and then south, and after a course of about 200 miles it unites with the Monongahela, the sources of which are nearly 300 miles south of those of the Alleghany and Monongahela. Above Laurel ridge of the Appalachian Mountains, and runs northwards: its course may be about 300 miles. These two rivers, uniting at Pittsburgh, form the Ohio, whose course from that place to its mouth is in a direct line, is 848 miles, but in its circuit about 1700, its winding 948 miles. At Pittsburgh its mean level is 550 feet above the tides of the Atlantic Ocean, and at its junction with the Mississippi about 310 feet. Except in high floods the current of the Ohio is gentle and nearly uniform. About 300 miles from its mouth, near the town of Louisville in Kentucky, are some rapids, where the river falls 22 feet in less than two miles. Its current, not unusual in other parts of the river, is all that is perceived in passing down these rapids; but at other times the water is dashed and broken upon the rocky bed of the channel, called the Indian chute, through which a great part of the water passes. To avoid these rapids a canal has been made on the south side, called the Louisville and Portland canal. About 15 miles from the mouth of the Ohio a limestone bar extends across the river, called the Grand Bar. Its northern branch, which is impassable and will in all probability be the longest, is the most prominent part of the bar. The Ohio has a current in the direction of the bar, which is about 200 miles in length, and which, from the nature of the bar, occasions a considerable burden in the lowest state of the water. With the exception of these two places, the Ohio has sufficient water during a part of the year to float vessels of 300 tons burden as far as Cincinnati, and boats may ascend it to Pittsburgh, and also of its upper branches for a considerable distance above their confluence. The Ohio runs in a valley, enclosed on both sides by ranges of hills, called River Mountains: these hills vary considerably in height, but are generally between 300 and 500 feet; their ascent is somewhat rocky and abrupt, but on the whole sufficiently gradual to admit cultivation to the summit. The hills diminish in altitude as they approach the rapids of Louisville, where they rise again to a height nearly equal to what they attained at the head of the river; and from thence they gradually diminish until they reach the mouth of the Ohio and the Ohio and Green rivers. At this point a low country commences, which extends to the mouth of the Ohio, a distance of more than 150 miles: the river also increases in width, and at about 200 miles from the mouth its current on its banks is thickly wooded, and its soil is a deep alluvium. The low hills which bound the alluvial district are at some distance from the stream. As the country is higher along the banks of the river than at the base of these hills, the navigation of the river is said to be deeper at the mouth of it than at the base of the united hills, as the difference of descent of the Ohio from the mouth of the Indiana to the mouth of the Lake Michigan is only 500 feet, whereas the descent of the Ohio from the mouth of the Indiana to the mouth of the Lake Erie is 150 feet. The entire length of these affluents is the Wabash, which has a course of about 500 miles, and is navigable for more than 400 miles, though it is obstructed by some rapids and falls about 15 miles from its junction with the White River. As the remainder of the river approach the upper course of the Maumee river, which falls into Lake Erie, a canal has been projected and begun, which commences at Tippecanoe on the Wabash, and terminates at the mouth of the White river, and at the mouth of its mouth: it is now (1839) in progress, under the superintendence of the states of Ohio and Indiana, and will probably be completed in the course of next year; and thus a double water communication will be established between the Ohio and Lake Erie.

The rivers which fall into the Ohio from the north, as the Big Beaver, the Muskingum, Scioto, Maumee, and Wabash, are navigable in the greatest part of their course. The Muskingum and the Sciota have lately acquired great importance, owing to the Erie and Ohio canal, which runs chiefly along their courses, beginning on the Ohio at Portsmouth and terminating at the mouth of the Ohio at Lake Erie at Cleveland. The largest of these affluents is the Wabash, which has a course of about 500 miles, and is navigable for more than 400 miles, though it is obstructed by some rapids and falls about 15 miles from its junction with the White River. As the remainder of the river approach the upper course of the Maumee river, which falls into Lake Erie, a canal has been projected and begun, which commences at Tippecanoe on the Wabash, and terminates at the mouth of the White river, and at the mouth of its mouth: it is now (1839) in progress, under the superintendence of the states of Ohio and Indiana, and will probably be completed in the course of next year; and thus a double water communication will be established between the Ohio and Lake Erie.

The rivers which join the Ohio from the south, especially the Kenhawa, Great Sandy, Kentucky, Green, Cumberland, and Tennessee, are navigable for keel-boats, and many of them for steam-boats, to a great distance from their mouth during the navigation of the season, which begins about the 20th of February, and terminates early in June. During the remainder of the year it is only the lower parts of these rivers that are navigable for boats of moderate burden.

South of the mouth of the Ohio no considerable river joins the Mississippi from the east, except the Yazoo, which falls into it five degrees of latitude farther south. Its course may amount to about 250 miles, and it is navigable for boats, in some places, to about 140 miles, and at all seasons. The Yazoo, which is about 250 miles in length, and at its mouth a river of considerable navigability, can never sustain a considerable population, nor be applied to agricultural purposes, they can never acquire any great importance. The most northern of the St. Peter's river, which, though its course is relatively short,
may acquire importance on account of the adjacent country containing many fertile tracts of land. It rises on the northern border of the basin of the Mississippi, in Big Stone lake, which, as already observed, is in the same valley which contains Lake Traverse. Thence it follows the course of the Red River of the North, which, with 300 miles south-east, and 200 miles north-east, though its whole course in a straight line does not exceed 275 miles. Its course is exceedingly winding, changing from side to side in its valley, and it is interrupted by obstructions, which are partly in the river itself, and the remainder being shown by the fact, which seems properly attributed to the floods of rain, and those of the principal rivers that lie to its north and south. It is navigable for boats to Big Stone lake, there being but two obstructions that are impassable on such occasions, namely, at Patterson's Fall, nearly 300, and at Great Portage, near 400. Above these the river lies wide, and along its banks are portages of moderate length; but during low-water time the upper part of the river is obstructed by shoals and rapids. The vale in which it flows is in the lower parts a mile and a half wide, and enclosed by bluffs about 100 feet high. Along the upper course it is wider, expanding in some places to two or three miles, and the bluffs are lower. The vale presents a mixture of woodlands and prairies; the former however are less frequent along the upper course, and at last disappear, with the exception of some small detours, to the water. Some parts on the lower course are swampland.

The largest of the affluents of the Mississippi is the Missouri; and as the sources of the Ohio drain the most north-eastern corner of the basin of the Mississippi, so those of the Missouri drain the southern part. It rises in two branches, in which all the waters descending from the eastern declivity of the Rocky Mountains between 42o and 49o N. lat. unite. The northern, called the Missouri, rises and often forms a branch of the Platte river, which rises in 47o, partly within the range of the Rocky Mountains, and partly along its base, a distance of more than 300 miles; it then turns to the east, and, after a course of 400 miles, meets the other branch, the Yellow Stone river, which rises between 30o and 40o, and is very wide, though it then runs upwards of 100 miles more; so that at their junction each of them may be compared with the Rhine in length, and probably also in volume of water, as the Yellow Stone river is 800 yards wide near the junction. But though the Missouri, after joining the other branch, unites in the north of the state of Minnesota, then runs down a large body of water from the Rocky Mountains (portions of which are covered with snow, if not all the year round, at least for the greatest part of it), the Missouri being a part of the Hudson's Bay, and running through a sandy desert; and though it is joined in the lower part of its course by some large rivers, it is stated, and very probably, that the volume of water which it pours into the Mississippi is not greater than what it contains immediately after it has fallen in the prairies, and it is generally covered with a deep and heavy growth of timber and underwood for about 350 miles from its mouth. There are however prairies of considerable extent, even in part of its course above. Higher up the prairies within its vale become more numerous and extensive, till at last all woodlands disappear, except the small tracts at the points formed by the windings of the river.

With respect to the tributaries of the Missouri, it is observed that their mouths are generally blocked up with mud, a fact which seems properly attributed to the floods of rain, and those of the principal rivers that lie to its north and south. The flood of the tributaries carries off the mud which is deposited at their mouth; but on the rising of the principal river, which is caused by the melting of the snow, its floods reach the mouth of the tributaries, and then obstruct it with mud, to considerable distances up these rivers, and in this stagnant state of the waters the mud at their mouth is deposited. It is only in spring-time and before the time of flood in the principal river that these tributaries have any considerable depth of water at their mouths.

We shall notice only two of the affluents of the Missouri, the Platte and Kansas rivers. The Platte or Nebraska rises in the Rocky Mountains with two branches of nearly equal size, called the South and North Fork, which unite after an upper course of about 300, and then run eastward, with the river flows nearly 500 miles in the same direction. It derives its name from the circumstance of its being broad and shallow: its average breadth is about 1200 yards, exclusive of the numerous islands which it contains; and its depth, from 4 to 10 feet, though it is said that the river is generally fordable. The vale in which the river flows, from its mouth to the junction of its forks, is 10 or 12 miles wide, and forms a most beautiful expanse of level land. It is bounded on both sides by sandhills which are from 25 to 30 feet above the vale, and connected with it by gentle slopes. The vale of the Platte river however contains no wood even in its lower course, except on its numerous islands, some of which are of considerable extent, and are altogether covered with willows. The islands decrease in number and size as we ascend the stream, till at length they disappear entirely. Along its northern and southern shores scarce a tree or even a shrub is seen. This river is seldom navigable except for boats made of hides, which are fastened together, and for these only when a freshet prevails.

The Kansas river rises in the desert between the southern fork of the Platte river and the Arkansas, with two great branches, the Republican and Smoky Hill forks. These branches unite nearly opposite Fort Hays, in the state of Kansas, and after about 400 miles from the mouth of the river. This river is navigable for boats of some size, but only during high freshets, and then only for about 150 or 200 miles, the navigation from and to the cities and towns being only easy for small boats. The river has one large island, which resembles that of the Platte: woodlands occur only in narrow belts along the watercourses. Much of the country upon the forks is said to have a good soil, but is uninhabitable for want of timber and water. The bottoms have a light sandy soil.

Below the mouth of the Missouri the Missouri is joined by no considerable river from the west for about 400 miles, until south of 35o N. lat. it receives the St. Francis river. This river rises in the hilly country adjacent to the banks of the Mississippi, west of Cape Girardeau; but after about 40 miles it enters the bottom of that river, of which the Great Swamp constitutes a great portion, which is traversed by the St. Francis in all its length. Flowing through a very level country for about 200 miles, this course is very humble; but the navigation is entirely obstructed by rafts and fallen trees.

The White River follows next. It rises in the Ozark Mountains, towards the western border of that mountain-range, and runs first northward under the name of the Buffalo Fork; afterwards it turns to the east and south-east, traversing the mountains and hills in that direction. Where it issues from that region it is joined by the Big Black River, which rises on the northern border of the mountain, and runs down a mountain-range called the Ouachita, and is joined by numerous rivers, which rise to the west, and bring down a considerable volume of water. From the junction with the Big Black the White River runs south, and joins the Mississippi above the town of Natchez. The course of the White River exceeds 400 miles, and it is navigable in a moderate state of water for more than 300 miles. The Black River and several of its branches, as the
Strawberry, Currant, Eleven-Point, and Spring rivers, are also navigable to a considerable extent. The rich bottoms of these rivers are, with the exception of that on White River, subject to sudden and excessive floods, and consequently less adapted to agriculture than to the rearing of cattle.

The Arkansas joins the Mississippi a little farther south; the Ohio, which has its drainage basin entirely in the United States, its tributary, the Canadian river, are noticed under Arkansas River.

The last considerable river which falls into the Mississippi from the west is the Red River. Its most remote feeding streams are the Ouachita and the Red, that part of the Rocky Mountains which separates the elevated valley of New Mexico from the extensive plain east of it. This plain is traversed by its eastern course for nearly 500 miles, after which it traverses the mountain-region of the Ozarks, and, traversing the Tennessee, is lost for thouands of miles in the same direction. The remainder of its course, which is about 300 miles, is south-south east. Measured along its winding course, the length of the river is probably not less than 1,500 miles. About 300 miles from its mouth is a low swampy district 40 or 50 miles wide, filled with numerous lakes, and inundated for several months in the year. This tract is called the rafts of Red River. Up to this point the river is navigable during the greatest part of the year for large vessels; and, continuing its course for nearly the distance of Alexandria in Louisiana, where two ledges of rocks extend across the channel about three-quarters of a mile from each other, and occasion rapid, which, however, in high-water, form no obstruction to the passage of boats. At the raft the river is six to eight fathoms deep, and open to navigation for hours, but the river which is above the raft is rendered impassable for large boats by shoals and sandbars; but keel-boats of ten or fifteen tons may ascend it for some hundred miles above the raft. The upper portion of its vale seems to contain a greater portion of woodland than the other rivers which drain the desert; but its bottom is not extensive, and the bluffs along the southern banks sometimes rise to the height of 500 feet. The lower part of its vale is described under Louisiana. The most considerable of its affluents is the Ouachita, which is crossed by the Red, and numerous streams which descend from the southern and northern declivity of Mount Masserine: it runs in a south-eastern and southern direction, receiving numerous tributaries, especially from the wide bottom of the Mississippi. After its junction with the Ten- nessee, it takes the name of Black River, and unites with the Red River about 20 miles from its mouth, after a course of about 400 miles. That part of its course which is denominated Black River can almost be ascended by its bottom and the burden of smaller boats may ascend it for 300 miles nearly all the year round. The upper part of its course lies through a hilly country covered with pine-forests, except the bottoms of the river-courses, which sustain a heavy growth of other trees. The melting of snow after the frost is sufficiently to admit of the navigation of the rivers which originate in the Ozarks. The lower part of its course and that of some of its tributaries are in the wide bottom of the Mississippi, and partake of the fertility, marshes, and sandbars which characterize the lowlands of the principal stream.

Inundations of the Mississippi.—With respect to the volume of water brought down by the river at different seasons, it is to be observed that this river flows from north to south, from the cold to the warmer regions. As a whole of its basin is situated without the limits of the tropical rains, it is partly fed by autumnal rains, but mostly by the melting of the snow, which falls within the whole of the winter season, but with the exception of the delta. Though the quantity of snow does not appear to be great, compared with that which annually falls on the great plain surrounding Hudson Bay, or on the northern countries of Europe, the great extent of the basin supplies a large body of water at a time of the temperature of the air. As a whole however is not supplied simultaneously, but successively: the southern rivers send it down early in the year, while the northern continue to furnish their supply up to midsummer. The Mississippi is at its lowest level in summer, and when, as is generally the case, the year's freshets do not appear till May, it may be observed that the levels at the mouth of the river are very low near the same time as those of the Ohio. Before they subside, in May, the great floods of the Missouri and Upper Mississippi commence, and continue to maintain the high level of the water to the middle of July, or even to the end of that month. From the middle of August to October the river is low. In the month of October its level is somewhat increased by the autumnal freshets of the Ohio, but it soon subsides again.

The inundations extend only over the wide bottoms adjacent to the banks of the Mississippi, and differ in all of them, both as to time and duration. The American Bottom and the somewhat elevated country between the mouth of St. Francis river and 33° N. lat. are inundated only a few weeks. A few miles above, less extensive freshets, for a few weeks, these tracts are accordingly cultivable. But a large proportion of the other bottoms is inundated for several weeks, and the low country of the delta even for six months, and exactly at the season which alone is without fear of inundation, and for which reason many extensive tracts are therefore swampy. The water rises on them from 8 to 15 feet, and in some parts of the delta even to 30 feet.

Depth and Navigability of the Mississippi, Missouri, and Ohio.—Though only two of the six mouths of the Mississippi have as much as 12 feet of water (the other four varying between six and eight feet) [Louisiana], the river deepens considerably a short distance above the mouth, and is there navigable for a long distance. Below, the navigation is occasionally obstructed by shoals; but the confluenza of the Missouri, during the low state of the water, the impediments become more numerous and difficult. Slight the main channel, though intricate in many places, has always a sufficient depth of water for boats of five or six feet draft to ascend to the mouth of the Arkansas. The Ohio is even more rapid than that of the Missouri, during the low state of the water, the navigation is obstructed by shoals and the two ledges of rocks called the Big and Little Chain, and only vessels drawing about three feet of water can be used. Between New Orleans and the mouth of the Ohio the depth of the water is not sufficient to admit of navigation except on the course of the river, but during the remainder of the year it can hardly be called navigable, except for boats drawing no more than two or three feet. The average velocity of its current, in a mid-dling state of water, may be estimated at four miles and one-third, in times of freshets, is accelerated to five miles and a half per hour; the navigation is more intricate and difficult on account of the numerous islands and shoals. This upper part of the river is also generally navigable by small boats. The shallowness of the mouth of the Missouri is much more difficult and intricate, on account of its numerous sandbars and islands, and more dangerous on account of the frequency of sandbars and reefs. During the high floods (from March to July) there is no place sufficiently deep to admit of navigation but during the remainder of the year it can hardly be called navigable, except for boats drawing no more than two or three feet. The average velocity of its current, in a mid-dling state of water, may be estimated at four miles and one-third, in times of freshets, is accelerated to five miles and a half per hour. The river is usually blocked up with ice during the winter.

The Ohio has a much more gentle current. Its average velocity in a moderate state of water, may be estimated at two miles and a half, and in a high state, at three miles per hour. The obstructions to its navigation are sandbars, some few sand bars, and reefs, to which we must add the intricacy of its channel in several places. During a mid-dling state of water, the navigation is obstructed by shoals, and an accelerated current is the only difficulty to be encountered. There are large masses of floating ice during part of the winter. The season in which the navigation is most unsafe depends to a considerable extent upon the state of the water. The decision is formed by the appearance of the river, and continues to the latter end of October. An autumnal freshet usually takes place in October or November, and the river is again navigable for a few weeks. During the remainder of the winter, the rapids and rapids of shoals can be used, and they meet with numerous obstructions in their progress from the lowness of the water.

Navigation and Trade.—The city of New Orleans carries on an active trade with the countries which skirt the lower course of the Mississippi, and particularly with those on both sides of its great tributary, the Ohio, and its numerous
affluents, and the trade is rapidly increasing. As the goods are exclusively conveyed by water, the number of steam-boats and of flat-bottomed and keel boats which navigate the Lower Mississippi and Ohio is very considerable. According to an estimate, the number of steam-boats employed in this trade at the beginning of 1834 amounted to 230, measuring more than 39,000 tons, namely:

**Mississippi River**

<table>
<thead>
<tr>
<th>Distance</th>
<th>Number of Boats</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 miles</td>
<td>1617</td>
</tr>
<tr>
<td>4 miles</td>
<td>1844</td>
</tr>
<tr>
<td>7 miles</td>
<td>1617</td>
</tr>
<tr>
<td>7 miles</td>
<td>2865</td>
</tr>
<tr>
<td>7 miles</td>
<td>1002</td>
</tr>
<tr>
<td>120 miles</td>
<td>1168</td>
</tr>
</tbody>
</table>

The remainder, about 126, were of small size, under 120 tons, and employed in various trades.

The number of flat-bottomed and keel boats employed in this trade has been estimated at four thousand, with a tonnage amounting to 160,000, so that the whole tonnage employed in this trade is about 200,000.

The Missouri is only navigated by the fur-traders from Mackinaw to its mouth, and seem to have been the bane of the hostile character of several of the tribes which frequent its banks, render the progress of the common boats very slow, and expose the crews to great dangers in those places where they are obliged to sail near elevated and wooded banks. The Missouri, which is the course of the Indians. At present the American Fur Company established at Mackinaw sends steam-boats up the river as far as the Mandan villages, to collect the furs which the Indians bring down the tributaries of the Missouri in bulk-boat. (Lewis and Clarke's Travels to the Source of the Missouri; Pike's Exploratory Travels through the Western Territories of North America; James's Account of Major Long's Expedition from Pittsburg to the Rocky Mountains; Keating's Narrative of Major Long's Expedition to the Sources of St. Peter's River; Darby's View of the United States; Schoolcraft's Narrative of an Expedition through the Upper Mississippi to Itasca Lake; Irving's Astoria.)

**Mississippi Territory**

The state of Mississippi, the state of Louisiana, and the state of Arkansas form the boundary-line between these two states is formed by the Pearl river, from 31° N. lat. to its mouth, a distance of more than 60 miles. The Gulf of Mexico washes the southern extremity of the state for about 80 miles. On the east it borders on Alabama, which is separated from it by a line extending nearly 340 miles, and running between 88° and 86° 40' W. long. On the north the parallel of 33° N. lat. divides the state.

**Surface and Soil.**—The shores near the mouths of the Pascagoula and Pearl rivers are low and sandy, and in many places interrupted by swamps; these tracts are therefore unhealthy. In the space between the two is a low, marshy plain, extending two miles east from St. Louis Bay, and stretching to Biloxi Bay, a distance of nearly 24 miles. This tract is healthy, and is resorted to by the inhabitants of Lower Louisiana during the sickly season. The soil of this tracts is entirely sandy and covered with extensive pine-forests, which on the Pearl river contain many large trees adapted for the construction of vessels. The country between 31° and 32° N. lat. includes by far the best portion of the state. The tract contiguous to the Mississippi river consists of numerous hills, very irregularly scattered over the surface, and rising from 50 to 100 feet above the general level, and forming some places the lines the course of the river. The hills, the base of which is washed by the Mississippi, are called Bluffs, and this region is generally called by that name. It extends from 10 to 25 miles inland, and is of great fertility, being covered with forests of gum, pine, oak, gum, and maple, and hickory, with a few pine trees. This tract appears to be the western continuation of the country farther east, which rises imperceptibly higher, and extends in wide plains. The numerous watercourses which rise on these plains have formed their own lakes, which extend between the Mississippi, and imparted to them a hilly aspect, together with a great degree of fertility. The surface of the plains themselves generally consists of an unproductive sand, and is covered with the long feathered pine; but the continuity of the level ground is interrupted by the bottoms, which extend along the numerous affluents of the Mississippi, Pearl, and Pascagoula rivers, are several feet lower than the surface of the plains, and from half a mile to three miles wide. These bottoms have a rich soil, covered with a fine growth of trees, such as gum, laurel, oak, and cotton-tree, intermixed in the more elevated parts with loamy canes, and in the lower with cypress.

The Bluff region continues northward to the mouth of the Yazoo river. It is a flat land, which is called the Bluff region, and is covered with forests and swamps, extends somewhat farther north, where they begin to be intersected with prairies, which increase in number and extent as we proceed farther north. The greatest portion of the country lying north of 35° N. lat. The fertility of these plains is doubtful, but they are covered with grass during the greatest part of the year, though the country is dry, and suffers from want of water. East of this prairie region extends a narrow strip of low country, which resembles the bottoms in fertility, but is more extensive. In the northern districts is a range of hills of moderate elevation, terminating on the Mississippi river with what is called the Fourth Chickasaw Bluff, which extends 10 miles along the river, is from 60 to 100 feet above its bank, and is stated to be fertile to a considerable distance from the river. Between these hills and the Walnut Hills, with which the southern Bluffs terminate in about 32° 20' N. lat., a distance of more than 170 miles, the country is occupied by an immense swamp, produced and fed by the inundations of the Mississippi. A few miles south of the Fourth Chickasaw Bluff the river sends off a branch on the eastern side, which traverses the low region, and covers it with water early in the spring. The channel of this region continues the whole of the year, but the others are a perpetual swamp. This tract extends to the banks of the Yazoo river, and is in the widest part (near 34° N. lat.) above 50 miles wide. Like the swamps on the banks of the Atchafalaya, it is covered with timber-trees, especially cypress.

**Rivers.**—Several of the smaller affluents of the Mississippi rise and terminate in this state. The most important are the Homochitto, the Big Black, and the Yazoo rivers. The Homochitto runs about 70 miles, and is navigable to some distance from its mouth for small craft. The Black River flows about 160 miles, mostly in a south-western direction, and is navigable about 70 miles from its mouth in the rainy season. The Yazoo river rises in three great branches in the region of about 400 miles, and is part of the state, and flows mostly with a south-south-western course for more than 220 miles. Not far from its mouth it unites with False River, that branch of the Mississippi which leaves the great river south of the Fourth Chickasaw Bluff. This river rises about 250 miles west, and afterwards south-south-west, for about 250 miles. It falls by several branches into the Rigolets, or straits which unite Lake Pontchartrain with Lake Borgne. It is stated to be navigable for boats for 150 miles, but its waters do not allow of navigation of more than five feet. The upper branch of the Pascagoula, under the name of Chickasawhay, in the prairie...
region, between 32° and 33° N. lat., and flows south for about 120 miles, when its waters are increased by those of the Leaf river, a large affluent running down from the north-west. Below this junction the river assumes the name of Tennessee, continues, and continues to flow southwards for 50 miles, when it falls into the bay of the same name, opposite Cuero or Horn Island. Near its outlet it is joined by a considerable tributary, the Dog river, which runs parallel to it. The Pascagoula is stated to be navigable for small boats, excepting at the mouths of some branches, for 120 miles below its mouth, but from a bar carried in which it falls is too shallow to admit vessels drawing more than four feet water. In the north-eastern districts are a part of the Tombigbee [Alabama] and the Tennessee rivers.

While this state rises from a low shore to 500 feet and upwards in its central and northern districts, a great difference of climate prevails in the different regions, especially as the northern districts are nearly five degrees from the southern. In the latter, respecting the more elevated parts. Along the southern coast the winters are mild, frost being of rare occurrence. The heat of the summer is less oppressive than in many states further north, a circumstance which may be ascribed to the influence of the ocean.

In 1807 the creeks in the neighbourhood of Natchez were frozen, and in many instances covered with ice more than an inch thick.

Productive.—The principal objects of cultivation are cotton, maize, and a little sugar. Wheat, rice, and oats do not thrive so well as in the northern states, and are only cultivated for home consumption. Indigo and tobacco were formerly grown to some extent in the neighbourhood of Natchez, but they have lately been abandoned by cultivation. Plantation produce of rice, sugar, and tobacco is abundant; but oranges do not ripen even in the southern districts. Most of the vegetables of Europe thrive well, but their cultivation is not much attended to. Cattle are very numerous, though of a Lean breed. Sheep are very rare. Sheep are also not numerous; and it is stated that their wool is coarse. Wild animals, such as pumas, wolves, bears, and wild cats, still abound. Alligators occur in the Mississippi as far north as the mouth of the Arkansas river, and in some of the eastern rivers.

Inhabitants.—More than half of the territory of this state was, a few years ago, in possession of two aboriginal tribes, the Chickawas and Chicasawas. The last-mentioned nation occupied the country between 35° and 34° N. lat., and also a tract south of 34°; and the Chicasawas, the country between 34° and 33° along the Mississippi, but along the eastern boundary-line of the state they agreed to some distance south of 32°. The number of individuals composing both tribes within this state was then estimated at 23,000 or 24,000, and no state in the Union had a greater number of aborigines within its limits. Though many of them adhered to their mode of life, others had made settlements, and cultivated some patches of ground, but they attended more especially to the rearing of cattle and swine. By an agreement with the State government in 1832, the Indian tribes ceded the eastern counties, and the remainder of the territory west of the Mississippi river. We do not know if this has already taken place to the full extent. The Natchez and Yazoo, who lived formerly along the banks of the Mississippi, are wholly extinct.

The other inhabitants are whites, principally from other states of the Union, and negro slaves. Their number amounted in 1820 to 75,448, and in 1830 to 136,623, of which number 295,659 were slaves. The best peopled section of the state is in the south-west, and the extreme body of productive soil exists; all the other districts are very thinly inhabited, but the population is rapidly increasing along the upper course of the Tombigbee river.

Political Division and Towns.—That portion of the state in which the whites have formed settlements is divided into 42 counties, including those last laid off in the Indian country. The seat of government is at Jackson, an incon siderable place, on the banks of the Pearl river. The most important town of the state is Natchez, built on a series of small hills, about half a mile from the bank of the Mississippi, and, according to some accounts, about 100 feet above its bed, but it is not visible from the river owing to the interrival of a steep bluff. Though its population in 1820 amounted only to 2184, and in 1830 to 3540, it carries on an extensive trade, exporting annually from thirty to forty thousand bales of cotton. In the other towns, Monticello on the Pearl river, Vicksburg near the Walnut Hills, and Shieldsborough on St. Louis Bay, are the principal; and even these are very considerable places. St. Louis Bay is nearly 10 miles long and four wide, but it is too shallow to admit vessels. Jefferson is a considerable place. Washington near Natchez, is well endowed: there also ample funds for public instruction, but hitherto little has been done with them.

Manufactures.—The manufactures do not extend beyond the most common mechanical arts. Though this state has a coast-line of about 80 miles, it has no harbour deep enough for sloops; and the adjacent country does not produce one single article for exportation. The trade along the Mississippi, which produces cotton and Indian corn in abundance, sends these articles down to New Orleans, whence it is supplied with those goods of foreign growth or manufactures which are consumed in the country.

History and Constitution.—The first settlements were formed in the neighbourhood of Natchez by some Frenchmen in the beginning of the last century, but they did not thrive. When the country was ceded to the British in 1763, some respectable settlements were founded in the same province, and under the laws of 1789 (1800) they again began to decline. In 1800 all that is now comprised in Mississippi and Alabama was formed into a territory by the name of Mississippi Territory. In 1817 this territory was divided into two sections, and the western section was admitted as a member of the Union. The present constitution was formed. The legislative body consists of a senate and a house of representatives, the members of which are chosen by all free citizens of the state who are twenty-one years of age. The executive power is vested in the governor, elected, with the lieutenant-governer, every two years by all the free citizens. Mississippi sends two members to the senate and one to the house of representatives at Washington.

(Upper View of the United States; Warden's Account of the United States; Pittkin's Statistical View of the Commerce of the United States.)

MISSISSIPPI COMPANY. [Law, John.]
MISSOURI, River. (Mississippian, River.)

MISSOURI, one of the states ceded to the North American Confederation, lies on the west of the Mississippi, between 36° and 40° 36' N. lat. and 89° 5' and 94° 30' W. long. Its mean length from south to north is 290 miles, and its mean width from east to west 223 miles. Its surface is estimated at 83,000 square miles, or nearly twice the area of England, including Wales. The Mississippi flows along its eastern boundary for 554 miles, its numerous windings included, and divides it from the states of Illinois, Kentucky and Tennessee. The southern boundary-line runs along the parallel of 36° between the Mississippi and St. Francis, for about forty miles, then along the course of the last-mentioned river northward rather more than eighty miles to 36° 30', which parallel forms the boundary-line of the United States. Southward, individually, the western boundary-line, and the parallel of 40° 30' the northern as far east as the river Moines, which for the last twenty miles of its course separates Missouri from the country in possession of the Fox Indians.

Beginning at the mouth of the Osage river in the most southern district, we find that an extensive bottom land extends along the Mississippi, which commences on the north opposite the mouth of the Ohio river, and extends southward to the line of the state border, it is uninterrupted by hills or high lands, and is subject in many places to being inundated by the Mississippi. It includes many large swamps, which are rendered almost impenetrable by a dense growth of trees, mostly cypress. The most extensive of these swamps, called the Great Black Swamp, is an extensive tract of land, from one to two miles wide, and passes southwards to the mouth of the river St. Francis, penetrating far into the state of Arkansas. This swamp as
about 150 miles in length, with a width varying from five to twenty or twenty-five miles. The cypress-trees, though of small stature, give little value on account of the difficulty of removing them. Within the bottom are numerous lakes, lagoons, and marshes, but it contains also many isolated tracts of considerable extent, which are elevated above the range of the highest floods. The bottom, almost throughout its whole extent, supports a dense and heavy growth of timber of excellent quality, but few settlements have been made in it. Between the mouth of the Ohio river and Cape Girardeau is the Tywapsata Bottom, which, though the appearance from their contiguous forest in proportion to their area, the prairie land being of greater extent and occurring more frequently. The surface of the country between these two large rivers is in general undulating, though it is not entirely destitute of abrupt hills and precipices. The whole is diversified by the mouths of rivers and creeks, and intervening tracts of undulating upland, which are united with the valleys by gentle slopes. The woodlands occur only upon the margins of the water-courses, and the uplands the extensive prairies completely destitute of a timber-growth. These prairies occupy at least nineteen-twentieths of the whole region, and comprehend some of the best land in the state, which however cannot be cultivated at present, as they supply neither wood nor stone for making fences.

RIvers.—The Mississippi washes the eastern boundary for 550 miles, and the Missouri traverses the state from west to east, with a winding course of about 400 miles. [Mississippi.] Some of its affluents require notice. White river and Francis creek unite to form the Maramec, a very rapid river, which enters the Mississippi about 40 miles below the mouth of the Missouri, is only a small river, its course not exceeding 100 miles; but it is important as flowing from the lead district and affording navigable channels to a fever and a rigor. The 360-mile-long Salt River, which joins the Mississippi about 60 miles above the mouth of the Missouri, runs more than 200 miles with rather a gentle course, and through a tolerably fertile bottom; it is navigable for two months and more.

Climate.—The climate of Missouri is cold and extremely variable. The winters are severe and long. Three years out of five the Mississippi can be crossed on the ice at St. Louis, and sometimes it is frozen for two months. The summers are often hot, but subject to sudden and frequent changes of temperature. This circumstance is mainly to be attributed to the north-western winds, whose driving blast is enhanced by the elevation of the Alleghany mountains, and even east of them, but in this state they are felt in all their force. Though they are dry and bracing, they produce sudden and unpleasant changes in the temperature of the atmosphere. The mean annual temperature of St. Louis is estimated at 26°, or about 6° more than that of London, but it has probably been overrated.

ProDUCTIONS.—Wheat and Indian corn are the staples of this state; but in the south-east section cotton is produced. Cattle and horses form an element of the country which has been so lately settled. It seems that most of the vegetables and fruits of England would grow if they were attended to. Tobacco, hemp, and flax are cultivated, and the bottoms are occasionally employed for the raising of cotton. But the native flax is coarse, and is not suited to the climate. Cabbage, potatoes, parsnips, onions, and pumpkins are abundant. Corn, wheat, and oats, hay, and oats, hay, and beans, are the principal crops. But the wheat, though of small quality, is of great extent. Cattle, sheep, and hogs are numerous. Buttercups are met with in large herds in the west of the state. There are also a large number of deer, also elk and deer. The animals, which are killed for their skins only, are beavers, otters, bears, foxes, cats, raccoons, martens, and lynxes. The fur trade however has somewhat decreased of late years.

The mineral wealth chiefly consists of lead, coal, iron, and salt. The principal lead region is in Washington county, on both sides of Big River, an affluent of the Maramee river, and extendings about 100 miles in length by 40 in width; but this mineral occurs in detached masses in other places
also, between White River and the Missouri. In some years these nations have produced more than one million of pounds. Coal exists in several places, but it is not worked, though it must soon become of importance in a country which is so cold and so generally destitute of wood. Iron-ore in abundance occurs in the hills.

Inhabitants.—There are still some aboriginal tribes within this state. The Delawares and Shawnees are situated near the Creeks. Chocktaws, and Chickasaws, have emigrated from the countries east of the Mississippi, and retired into the country extending between the White and St. Francis rivers, where they live in large and commodiously built houses, and exercise more arts and manufactures, and use horses and cattle, but have not abandoned hunting. Along the western border of the state are the Osages, who have their permanent dwellings in villages beyond the boundary-line, near the head-waters of the Osage river; but their hunting-grounds extend within the territories of Missouri.

They cultivate maize, pumpkins, beans, water-melons, and squashes. The number of individuals composing these tribes is stated to exceed five thousand. The remaining population consists of whites and blacks. In 1830 this number amounted to 66,586, of which 52,988 were whites, 375 persons of colour, and 10,222 slaves. In 1830 the number had increased to 140,196, of which 115,200 were free people and 24,996 slaves.

Physical-Territory.—Missouri is divided into 34 counties; but some extensive tracts, especially in the south-western and north-western sections, are not yet laid out in counties. The seat of the government is Jefferson, an inconsiderable place, situated on the Missouri, about two-thirds of a mile from the mouth of the river. The most considerable place is St. Louis, which stands on the gently sloping banks of the Mississippi, about twenty miles below the mouth of the Missouri. The buildings spread from the main street of the town to the brow of the bank, beyond which the country extends in a level and mostly open prairie. In 1816 the population amounted only to 2000, but it is now much increased. The whole commerce of the country is concentrated in this place, which is a depot for all European and foreign produce for the consumption of the country bordering on the Upper Mississippi, Missouri, and Illinois rivers. The channels by which St. Louis is supplied with them are the Lower Mississippi and the Ohio river. Four steam-boats were employed in its trade in 1834, measuring more than 1000 tons. The State having, with the inhabitants, on the Mississippi, is the principal depot of the produce of the mines, which is brought down by the Marmee river. In the mining district is Potosi, a small but thriving place. Next to St. Louis in importance, in the region of which is grown, stands also on the Mississippi: it was visited by a dreadful earthquake in 1811. St. Charles, on the Missouri, about 20 miles from its mouth, has 1200 inhabitants, and some commerce with the country about the town. Franklin, on the Missouri, below the mouth of the Marmee river, has 500 inhabitants, and is the starting-place for the carpenters which visit Santa Fé, in New Mexico, and go even to Chihuahua.

There is a Roman Catholic college at St. Louis, conducted by the Jesuits, and another Roman Catholic seminary at Bois Brûlé Bottom. The principal sects are Roman Catholics, Methodists, Baptists, and Presbyterians.

Manufactures and Commerce.—Most manufactured articles are imported from the states east of the Mississippi. Commerce is limited to the export of Indian corn and live stock, with cotton in a moderate quantity, and lead. Besides its own live stock, many horses and mules which are imported from Mexico are sent to the states farther east. Furs still form a considerable article. The imports chiefly consist of manufactured goods, with some colonial goods and wine.

History and Constitution.—Although this country for more than a century had been visited by the French from Canada, the first permanent settlement was made by the Spaniards in 1763, at a village on the Mississippi, called St. Genevieve, and in 1764 St. Louis was founded, and in 1765 St. Louis. But these and a few other places remained in a backward state up to 1803, when the United States got possession of the country by the peace of 1803. The Osages, on the Missouri, and the Black Hills, a few years following the state was called Louisiana was separated from it, and Missouri became a separate territory. In 1821 it was admitted as a member of the Union, and founded its constitution. Slavery is allowed in this state.

The legislative body is composed of two assemblies, a senate and a house of representatives. The members of both are chosen by all the free citizens who have completed twenty-one years. The executive power is vested in a governor, elected, with the lieutenant-governor, every four years by all the free citizens. The judges are appointed by the governor, with the advice and consent of the senate: they hold office during good behaviour, but not beyond the term of four years. Missouri sends two members to the senate, and one to the house of representatives at Washington.

(Darby's View of the United States; Wardan's Account of the United States; James's Account of an Expedition to the Western Exploration through the Western Territory of North America; Lewis and Clarke's Travels to the Source of the Missouri; Pitkin's Statistical View of the Commerce of the United States of America, MIST. The vapour of water, when mixed with air of the same or a higher temperature, is invisible; but when the temperature of the air is reduced below that of the vapour, the vapour becomes visible, and forms a mist. Water, in the state of vapour, is present rising into the atmosphere at all the usual temperatures. And even below the freezing-point water evaporates, and ice and snow, in a dry atmosphere, gradually disappear without becoming liquid. But as heat is the sole cause of the conversion of water into vapour, the quantity of water remaining the same, is in proportion to the temperature; so that in very hot weather the air is not easily saturated with vapour, and in cold weather vaporisation is slow: thus there is more vapour in the air in summer than in winter, and it is difficult to communicate to the reader cases in which similar surfaces of water are exposed to the sun's rays. Indeed, it has been found that the quantity of vapour in the air diminishes nearly uniformly with the temperature from the equator to the poles. But as the quantity of vapour which the air will hold at any given temperature is limited, whenever that quantity is near or at the point of saturation, a very small reduction of temperature renders the air misty, and a further reduction converts the mist into rain. As every reduction of the temperature of the air has a tendency to destroy the transparency of the vapour which it contains, the atmosphere in our variable climate is seldom very clear. Soon after sunrise however, in fair weather, the atmosphere near the earth's surface is usually clear, and every object has a clear outline which it never has at any other time of the day.

When the mist is very thick, it is called a fog. The fog, which frequently occurs in London in the winter arises from the large quantity of vapour produced by a great city being condensed by the cold air. Mists and fogs are commonly produced, whenever a light breeze blows from the sea, and a fog is formed with the smoke, and forms a thick mass in and about the town; while at a short distance the air is often quite clear, and the limits of the fog may be distinctly observed.

When the vapours in the upper regions of the atmosphere are condensed and become visible, they form clouds. [Cloud.] When those near the surface of the earth are precipitated upon cold objects, they form dew and hoar-frost. Dew and hoar-frost.

MISTONUSK, one of the Cree Indian names for the American badger, Miles Labradoria (Sub.)

MITAU, MITTAU, or MITEAU, a government of European Russia, is composed of the ancient duchy of Courland and Semgallen or Semarina. It is situated between 55° 20' and 57° 45' N. lat., and between 23° 18' and 25° 45' E. long. Its area is 10,000 square miles, and the population 600,000. [Courland.] MITAU, the capital (in Letonian, Jelgava), in 56° 40' N. lat. and 23° 45' E. long. Is the seat of a convent, which formerly formed the As a few miles north of the town, and the Jacob's canal, which was completed in 1821, and supplies the town with water. It was founded in 1727 by Conrad von Medan. It was founded in 1772 by the French. It is surrounded with oaks, and has 16,000 inhabitants, and 11 churches. There are nine churches of the several Christian sects, a synagogue, a gymnasion, founded in 1775, which has a museum, an observatory, a library of 24,000 volumes, and a separate free-masons' library of 16,000 volumes; there are
several well-ordered schools and charitable institutions. The town, which lies in a flat marshy spot near the Ae, has not an inviting appearance, though it is not closely built; it contains large gardens within the walls, and has some broad, straight, regularly built streets. The only town of which however are paved. Out of the town is the fine palace (which was never completed), the former residence of the dukes of Courland, but now converted into barracks. The manufactures are linen, leather, and soap. Mitau was for several years the capital of the Livonian. The residence of Louis XVIII, king of France, during his exile.

MITHRIDATES, or MITHRIDATES, a common name among the Medes and Persians, which appears to have been derived from the Persian name for the sun, and the root da, signifying to grow; it occurs in several of the Indo-Germanic languages. The name however was written in several ways. In Herodotus (i 110) we find Massaraparta in Xenophon (Anab., vii. 8, § 25), Midraparta; in the Septuagint (Ezra, i. 8, iv. 7), Midraparta, which represents the Hebrew יְצִירָּה; and in Tacitus (Ann., xii. 10), Meherdath.

On the Greeks coins it is written Μήθριδατος.

A large class of names in different dialects of the Indo-Germanic languages have the same termination as Mithridates. Thus in Sanskrit we find the names Denuadatta, Haradatta, Indradatta, Somadatta, that is, given by the gods, and Siva, or Sire; by Indra, 'by Soma, or the moon;' and in Greek, such names as Theodotus, Diadotus, Zenodotus, and Herodotus. In Persian names the same termination occurs; as in the Hormizdaites of Agathias, the Hormizdaites and Faramizdaites of Herodotus (vi. 37, ix. 76), and the Medades of Confucius (v. 3).

Mitra, or Mithra, is said by writers to have been one of the most powerful good spirits created by Ormuz. The mysteries of Mithra were celebrated with much pomp and applause, and the revival of the Persian religion under the Sassanidjah; but we do not read of the worship of the sun under this name in the earlier Greek writers. (Hyde, Hist. reli. sect. Persa, c. 4, p. 109.) The word is evidently the same as mitra, one of the names for the sun in Sanskrit.

This word also appears in many other ancient Persian names, as Massroparta (Herod., iii. 120), Mithraparta (Ispah. ix. 102), Mitavarta (vii. 67), Zamavarta (vii. 68), &c.; and in Mardos, Mithra, Mithra, or Mithravarga (Xenoph., Hel., ii. 6; Artar., Ab., i. 17, iii. 165), which appear to be derivatives. (Pott's Byzant. logische Forschungen, i. p. xxiv, &c.; Rosen, in Journal of Education, ix. p. 334, 335.)

The most celebrated race of princes of the name of Mithridates were the kings of Pontus, who were descended from Artabazes, one of the seven Persian chiefs who overthrew the Magi (Florus, iii. 28). The last Mithridates, Mithridates VI., who reigned from 120 B.C. to 66 B.C., was the founder of the dynasty which afterwards had so many successors. (Polody, v. 43.) The following is a list of these kings:

**MITHRIDATES I., of whom little is known. (Aristot. De rep., v. 10.)**

**MITHRIDATES II.** succeeded Artabazes II., A.C. 363. He took an active part in the various wars which were carried on by the successors of Alexander the Great; and being an active and enterprising prince, he greatly extended his paternal dominions, whence he is frequently surnamed the founder (erector) of the kingdom of Pontus. He also ruled over Cappadocia and Phrygia. He was put to death by Antigonus, A.C. 302, at Cius, in Myasia, at the age of eighty-four, according to Lucian (Macrob. c. 13), because he was suspected of favouring the interests of Cassander.

**MITHRIDATES III., son of the preceding, ruled from A.C. 302 to 266.**

**MITHRIDATES IV., B.C. 240-190; the son of Artabazes III., was left a minor by his father. He attacked Scythia, which was his successor Pharmaces, and carried on war against Eumenes II. He was in close alliance with the Rhodians, and joined with some other princes of Asia Minor in making valuable presents to that people, to assist them in their losses after an earthquake. (Polyb. v. 89, 90.) He married the daughter of Seleucus Callinicus, by which alliance he obtained Phrygia. His own daughter was married to Antiochus the Great.**

**MITHRIDATES V., surnamed Eupater, reigned from A.C. 190 to 189.** He was an ally of Antiochus, who assisted them in the third Punic war with a considerable fleet. He was assassinated at Sinope, and was succeeded by his son.

P. C. No. 948.

MITHRIDATES VI., B.C. 120, surnamed Eupator, and called the Great, was one of the most formidable neighbors that the Romans ever encountered. He was only eleven years old at the death of his father; and during his minority his life was frequently in danger from the numerous conspiracies against him. He is said to have been in the habit of taking an antidote discovered by himself, which was sufficient to counteract the effect of the most violent poisons. (Plut. H. N., xxiii. 77; xxv. 3; xxix. 8.) Mithridates possessed a strong mind and a vigorous body; he excelled in all athletic sports, and was as strong at the age of early years by his bodily strength and his daring spirit. He also had great attention to the study of philosophy and polite literature; and, according to Pliny, was able to converse in twelve different languages (H. N., ix. 3).

As soon as Mithridates was old enough to govern into his own hands, he attacked the Colchis and the other barbarous nations who dwelt on the eastern shores of the Black Sea, whom he reduced to subjection. The next successor which he made was Paphlogion, which was said to have been left to the kings of Pontus by Pylennus I., king of Paphlogion, who died about A.C. 121. Part of Paphlogion he gave to Nicomedes II., king of Bithynia, who was, next to Mithridates, the most powerful monarch in Asia Minor. He governed, however, on the increasing power of Mithridates; and on the death of Ariarathes VII. king of Paphlogion, who had married a sister of Mithridates, Nicomedes married his widow, and seized the kingdom of Cappadocia, to the exclusion of the son of Ariarathes. Mithridates immediately took the throne from the heir of his nephew, defeated Nicomedes, and placed his nephew on the throne under the title of Ariarathes VIII. In a few months afterwards he was murdered by his uncle at a private conference, after which place his own on the vacant throne, and defended successively, the throne of the late king, and a pretender to the throne, whom Nicomedes represented as a son of Ariarathes.

Unable to cope with his formidable enemy, Nicomedes applied to Rome for aid, and the Romans being anxious to weaken the power of Mithridates, declared the kingdom of Cappadocia and Paphlogion to be free states, but allowed the Cappadocians, at their own request, to elect Ariobarzanes as their king. Mithridates however did not tamely submit to the claim of his rival, but immediately took the cause of Tigranes, king of Armenia, to whom he gave his daughter in marriage; and with his assistance he expelled Ariobarzanes from his kingdom, and also deprived Nicomedes III., who had lately succeeded his father, of Bithynia. The Romans declared kindred cities, and supplied them with commissions for assistance, who reinstated them in their kingdoms, and sent an army, under the command of Aquillius, to support them.

A war with the Romans was now inevitable, and Mithridates conducted it with the greatest vigour. The Roman armies were defeated one after another; Aquillius was taken prisoner, and put to death by having melted gold poured down his throat; and in A.C. 88 the whole of Asia Minor was in the hands of Mithridates. The Roman commander was ordered to leave the country; but before they could do so, they were massacred by the inhabitants of the different provinces of Asia Minor, to the number, it is said, of 60,000. Whether this massacre took place by the order of Mithridates, or was occasioned by the hatred which the Asiaties bore towards the Romans, is doubtful. The islands in the Grecian Archipelago followed the example of the countries on the mainland. Athens also submitted to him, and offered to send several other places in Greece. The Rhodians, the only people who opposed him, had no vigorous resistance, were attacked, but without success.

In A.C. 87, Sulla arrived in Greece, and immediately proclaimed the siege of Mithridates, which was taken on the 1st of March in the following year. Sulla followed up this success by the defeat of Achaeus, the general of Mithridates, near Chersones, and shortly afterwards by another victory near Orchomenus.

During the successes of Sulla in Greece, the party of Marius had obtained the ascendancy in Rome; and Flaccus, who had been consul with Cinna, was sent to succeed Sulla in the command. Flaccus however was put to death by Fimbria, his lieutenant-general, an unprincipled man, who possessed inconsiderable military talents. In the same year the war against Mithridates in Asia with great success. The
victories of Fimbria, and the state of parties at Rome, made Sulla anaxmus for peace, which was at length agreed upon (A.C. 84) on condition that Mithridates should abandon all his conquests in Asia, and restore Bithynia to Nicomedes, and Cappadocia to Ariobarzanes.

But this war was scarcely finished before Mithridates was again involved in hostilities with the Romans. Mithridates had collected a large army to carry on war against the Colch. Murania, who commanded, was either persuading or pretending to perceive a disposition in Mithridates to renew the war, seized the opportunity of enriching himself, and, without any authority from the senate or Sulla, invaded the dominions of Mithridates, and looted the much-needed funds. The dominions, having vainly complained to the senate, collected an army to defend his dominions, and completely defeated Murania on the banks of the Halys. But as Sulla was displeased with Murania for having attacked Mithridates, the peace was revoked, and thus an open rupture was avoided for the present.

During the next eight years Mithridates employed himself in making preparations for a renewal of the war; and in A.C. 75 he broke the treaty which existed between him and the Romans by the invasion of Bithynia. Lucullus was appointed to the command, A.C. 74, and commenced the campaign by besieging Cyzicus, a city on the Propontis, which had been supplied by Mithridates with every description of military stores. In the following year Mithridates made an effort to relieve Nocera, but was defeated by Lucullus, and obliged to retire to Pontus. He was soon followed by Lucullus, and having lost another battle at Cabiri, on the borders of Pontus and Bithynia, he fled into Armenia to his son-in-law Tigranes. His own son Mithridates, his younger son, perished in the battle, an event to the Romans as the Roman Catholic religion was of no state. Since that time the mirre has appeared only as an heraldic ensign, surmounting the escutcheon of arms, unless perhaps a few instances, such as Evelyn refers to in his "Diary." He says, '29th Dec. 1661.—The bishop of Gloucester preached at the abbey of the bishop of Hereford, brother to the duke of Albermarle. It was a decent solemnity. There was a silver mirre with episcopal ornaments, bound up with a heraldry under the title of the bishop's brother and the duke, with divers noblemen.' (Evelyn's Memoirs, vol. i., 343.) Aniently, the mirre, as an ornament, seems to have descended from bishop to bishop. Among the Cottonian manuscripts there is a mirre, dated July 7th, 4th Hen. VI., bearing the title of Archbishop Chichely the mirre which had been worn by his predecessor. That it was an ornament of great expense may be gathered from the circumstance that Archbishop Pechelian's new mirre, in 1528, cost 173L. 4s. Id. (MS. Reg. Titul. Excerpta from the Lambeth Registers; MS. Brit. Mus.)

As an heraldic ornament the mirre of a bishop is only surrounded by a fillet set with precious stones. The abbot's mirre issues from a ducal coronet.

MITROFOLIA. [VOLTA.]

MITTUMUS, a legal term applied to certain writs and warrants in which the word mittimus, 'We the king send,' is expressed or implied.

If a record of one court be, for any purpose, required to be transmitted to another, as one court can exercise no direct authority over another, the course is, for a writ to issue out of Chancery, in the king's name, requiring the return of the record; if for a writ to be issued in the course of an action, it is to certify the same to the king in Chancery; and when the record is removed to the Court of Chancery by this writ (of certiorari), it is sent from the Chancery to the court in which it is wanted by writ at mittimus.

The form is however in more frequent use as applied to the warrant by which magistrates commit and send persons charged before them with offences to the proper custody, in order that they may be forthcoming to answer the charge, when ripe for judicial decision. This warrant may be either in the name of the king or in that of the committing magistrate, but the term 'mittimus' is used, even when the latter, which is now the more common course is adopted.

As to what persons may be committed, the place to which they may be sent, the form of the warrant, &c., see Burns's Justice, 2d ed. vol. i. p. 154.

MITU, a name for some of the Cusamow birds. [Cola

CIDES, vol. viii. p. 129.]
MIXTURES, in Pharmacy, signify liquid medicines consisting of several ingredients, either in a state of mechanical suspension in some viscous medium, or in a state of complete solution. In preparing these, care must be taken not to mix in the same prescription substances which exercise an antagonizing action on the body, or which are incompatible, from one ingredient decomposing another. Sometimes however it is the substance resulting from the decomposition of one or more of the constituent articles which is wished, and substances of iron, and in this case the composition of the materials is inadmissible.

No greater quantity of a mixture should be prepared at one time than is likely to be used before the compound is spoiled, either by the atmosphere, if the materials are of a vegetable kind, or by the action of the various ingredients on each other.

MNE'MIA. [Chiliogra, vol. vll, p. 162.]

MNEMONICS. [Memory.]

MNEMOSYNE. [Muses.]

MOAB. Moab was descended from Moab, the son of Lot by his elder daughter (Gen., xix. 37), and consequently related to the Ammonites, with whom we find them closely connected in their subsequent history. [Ammonites.]

The earliest accounts represent them as dwelling in the country of Ammon and Moab, east of the Dead Sea, on both banks of the river Arnon (Wady Modjeb), from which they had driven out the Emim, who were said to be a tribe of giants. (Deut., ii. 11; Gen., xiv. 5.)

The plains on the east of the Jordan near its mouth were called from their residence, Moab Plateau (Numb., xxxii. 1, 4, 19; Deut., xxxiv. 1, 8.) Before the invasion of Canaan by the Israelites they had been dispossessed by the Amorites of the country north of the Arnon, which was thenceforth their northern boundary. (Numb., xxxi. 18, 26; xii. 36; Judges, i. 13.) [Amorites.] At the division of Canaan the tribes of Israel, this tract of country was given to Reuben and Gad.

By the command of God, the Israelites left Moab in uncharacteristic haste, and some of their people were left behind in Ammon. (Deut., ii. 9; Judges, xi. 15, 18; 2 Chron., xx. 10.) But while the Israelites, after conquering the Amorites, were encamped in the plains of Moab, Balak, the king of Moab, sent for the prophet Balaam to curse them. (Numb., xxiii. 22-xxiv.) Balaam found himself compelled by divination to bless the children of Israel, and he was prevented from cursing them by the licentious worship of Beal-peer by means of the daughters of Moab. (Numb., xxv. 1; xxxi. 16; Rev., xii. 14.)

This offense, and for neglecting to assist the Israelites on their march, God had denounced regretful calamities to the congregation of God to the tenth generation. (Deut., xxxii. 3, 4; Nehem., xiii. 1, 2.)

In the time of the Judges, Moab, in league with the children of Ammon and Amalek, invaded the land of the Israelites, and ruled over them for eighteen years. They were at last defeated by Ehud, who assassinated Eglon, the king of Moab. (Judges, iii. 12-30.) After this time it appears from the book of Ruth that there was a period of friendly intercourse between the two nations. Saul warred against Moab (1 Sam., xiv. 47). It seems that they were left tributary to Israel (2 Sam., ii. 8).

The tribute which they paid consisted of sheep and lambs. (2 Kings, iii. 4.) After the partition of the kingdom, we find Moab subject to the king of Israel, against whom they rebelled after the death of Ahaziah (2 Kings, ii. 2). Jehoram, the son of Ahab, assisted by Jehoshaphat, king of Judah, defeated them in a great battle, but failed to subdue them. (2 Kings, iii. 5-27.) Soon after this, Moab, with the Ammonites and other nations, invaded Judah, but the invaders were consumed among themselves and destroyed each other. (2 Chron., xx.) In the reign of Joash, about B.C. 838, the Moabites again made incursions upon Israel. (2 Kings, xiii. 20.) It is probable that after the tribes of Israel had been carried captive by Tiglath-pileser (about B.C. 749), the Moabites recovered the country they formerly possessed north of the Arnon, for Isaiah (xxv., viii.) speaks of towns of the Moabites in that district; but from the same prophecy it would appear that they were again driven from over the Arnon by the Assyrians. In common with the other nations on the borders of Palestine, the Moabites were subdued by Nebuchadnezzar, under whom they made war upon Judah. (2 Kings, xxiv. 2.) From Josiah, both previous and subsequent, appeared that near the beginning of the reign of Zedekiah, the Moabites and the Ammonites, and again the nations endeavoured to persuade him to revolt from Nebuchadnezzar, but without immediate success, as the rebellion of Zedekiah did not take place till about the ninth year of his reign. (2 Kings, xxiv. 20.) After the fall of Jerusalem to Josiah, the Moabites and Ammonites were reduced to so small a state that they were no longer mentioned in several other passages of the Old Testament and by Josephus. The prophecies contain many threatenings against them. Their name ultimately disappeared in that of the Arabsians.

The Moabites were a pastoral people. (2 Kings, iii. 4.) Their country was well adapted for rearing cattle, and also produced corn and wine. (Ruth, i. 13; xvi. 8-10.) It contained many mountains and fertile valleys, and was watered by the Arnon, the Zered, and other rivers which fall into the Dead Sea. It is called Moab (Bell. Jud., iii. 3; iv. 8, 2), and corresponds to part of the present district of Kerek. Several cities of Moab are mentioned in the Old Testament. (Is., xv., xvi., &c.) The capital was Aram-Ram, or Ram-both, called Areopolis. Its ruins, which still remain the name of Rabba, lie about 25 miles south of the Arnon, near a stream which is now called Beni-Hamed. Jerome states that the city was destroyed by an earthquake in his youth. The country of Moab was well peopled, as is proved by the numerous ruins found there. The Moabites were governed by kings (Numb., xxvii. 4; Judges, xii. 12; Sam., xxvii. 3; Jer., xxvii. 3) and inferior princes (Numb., xxvii. 14, 18; xxviii. 9). The religion was the licentious idolatry of Baal and Ashtaroth, and the worship of Chaltar, called Chaldean worship. (Numb., xxxiv. 13.) In cases of extreme danger, they offered human sacrifices (2 Kings, iii. 27.)

(Reiland, Palestina; Calmet's Dictionary; Wine's Biblical Realiworterbuch; Burchard's Travels in Syria.)

MOALLAKAT. [Arabia, p. 219.]

MOBILE. [Alabama.]

MOCARANJU. [ONAMATAPATA. [Sopala.] MOCHA. [Arabia.]

MOKING BIRD, the vulgar name for that singular songster the Mimic Thrush of Latham, Turdus polyglottus of Linnaeus, Scyticus polyglottus of Olfers, and Mimus polyglottus of Böse. Generic Character. [Merulidante, p. 122.]

Description.—Male. Upper parts of the head, neck, and back, dark brownish ash; and, when new-moulted, a fine grey; wings and tail, without the black, the uncommo rows of coverta tipped with white; primary coverta, in some males wholly white, in others tinged with brown. Three first primaries white from their roots as far as their coverta; white on the next six, extending from an inch to one and three-fourths further down, descending equally on both sides of the feather; the tail is cuneiform, the two exterior feathers wholly white; the rest, except the middle ones, tipped with white; chin white; sides of the neck, breast, belly, and vent, a brownish-white, much purer in wild birds than those that have been domesticated: iris of eye yellowish brown colour, tinged with golden; bill black, the base of the lower mandible whitish; legs and feet black and strong.

Female very much resembling the male, but the white is less pure, spreads over only seven or eight of the primaries, does not descend so far, and extends considerably farther down on the broad than on the narrow side of the feathers. The black is also more of a brownish cast.

Young birds in the same manner as that of a thrush; young male with the white on the wing broader and of greater purity than in the female. (Wilson.)

Habits, Reproduction, &c.—The extraordinary vocal powers of this wonderful song-bird and its lively habits, being recorded by one of the early travelers, we think, that we should think we were reading of some magic.
bird in a fairy tale, did we not know the fidelity and accuracy of the excellent observers who describe it. Wilson thus portrays this polyglot:

'The ease, elegance, and rapidity of his movements, the animation of his eye, and the eloquence of his voice...are beyond the power of description. He takes up lessons from almost every species of the feathered creation within his hearing, are really surprising, and mark the peculiarity of his genius. To these qualities we may add that of a voice, full, strong, musical, and that of a song so far superior to the usual murmuring of the swallow tones of the wood-thrush, to the savage scream of the bald eagle. In measure and accent he faithfully follows his originals. In force and sweetness of expression he greatly improves upon them.

In his native groves, mountains, or a tall bush, the Mocking Bird sings of the dawn of dewy morning, while the woods are already vocal with a multitude of warblers, his admirable song rises pre-eminent over every competitor. The car can listen to his music alone, to which that of all the others seems a mere appendage. Neither is this the fabled gift of imitative.

His own native notes, which are easily distinguishable by such as are well acquainted with those of our various song-birds, are bold and full, and varied seemingly beyond all limits. They consist of short expressions of delight, the singing of a bird, interspersed with imitations, and all of them uttered with great emphasis and rapidity, and continued with undiminished ardour for half an hour or an hour at times. He never lost his fox-trot, his grace and elegance, or the buoyant gaiety of his action, arrest the eye, as his song most irresistibly does the ear. He sweeps round with enthu-

The Mocking Bird loses little of the power and energy of his song by confinement. In his domesticated state, when he commences his career of song, it is impossible to stand by uninterested. He whistles for the dog; Caesar starts up, wags his tail, and runs to meet his master. He sings a song for the thicket, and glides the living branch with the rapidity of an arrow, as if to recover or recall his very soul, expired in the last elevated strain.'

While thus exerting himself, a bystander, destitute of sight, would suppose that the whole feathered tribes had assembled together on a trial of skill, each striving to produce its utmost effect, so perfect are his imitations. He many times deceives the sportsman, and sends him in search of birds that not within miles of him, but whose notes he exactly imitates; even birds themselves are frequently imposed on by his admirable mimicry, and are deluded into the nest of their mates, or dive with precipitation into the depths of thickets at the scream of what they suppose to be the sparrow-hawk.

'The Mocking Bird possesses particularly strong, and he appears to the eye of a musician, and is esteemed an object of great beauty. His song is a full display of his vocal powers, making the whole neighborhood ring with his inimitable medley.'

Audubon is of opinion that in song it is far beyond the nightingale. He pronounces the notes of that bird to be 'artificial to those of a -thistledown note, who could she stand under a Mozart, might perhaps, in time, become very interesting in her way. But he thinks it quite absurd to compare her essays to the finished talent of the Mocking Bird. In confinement its melody, though very beautiful, does not appear to be far removed from the most ordinary efforts of its wood-notes. He describes its imitative powers as amazing, and says that these birds mimic with ease all their brethren of the forests or of the waters, as well as many quadrupeds; but though he has heard that the bird possesses the power of imitating the human voice, he never met with an instance of that mimicry.

The last-mentioned author gives us a most interesting detail of the loves of these charming birds amid the rich scenery where the great Magnolia, with its thousand beautiful flowers, Big-bellies, the white-flowered Styrax, and the golden orange, are intertwined with innumerable vines.

'For awhile,' continues this graphic describer, 'each long day and pleasant night are thus spent; but at a peculiar note of their feathers, male ceases his songs, and attends to her attentions. A song is to be understood as a phase in which to lay it to become a matter of mutual consideration. The orange, the fig, the pear-tree of the gardens, are inspected; the thick bristly patches are visited. All is not immediately settled, however. I have seen two or three males, so well does the bird know that man is not his most dangerous enemy, that instead of retiring from him they at length fix their abode in his vicinity, perhaps in the nearest tree to his window. Dried twigs, leaves, grasses, cotton, dried gum, and other objects, are preserved as the sparrowhawk.'

These eggs are deposited in due time, when the male, having little more to do than to sing his mate to repose, attends its pipe anew. Every now and then the nest is revisited, and the male's taste of which he is sure will please his beloved one. He drops upon it, takes it in his bill, beats it against the earth, and flies to the nest to feed and receive the warm thanks of his devoted female.'

The eggs are pale green, blotted and spotted, nearly all over with umber brown. The female sits fourteen days.

The enemies of the Mocking Bird are cats, the Pelor Stanleii, and snakes, especially the black snake, which Wilson describes as the most voracious of all snakes.'

The Mocking Bird is a car. Heolk, with gum berries, gall-berries, and a profusion of others with which the swampy thickets abound, as well as winged insects, of which it is exceedingly fond.

Geographical Distribution.—The Mocking Bird, says Wilson, 'inhabits a very considerable extent of both North and South America, having been traced from the states of New England to Brazil, and also among many of the adjacent islands; much more numerous in those states south and west of the river Delaware, being generally migratory in the winter and returning to the north, or remaining in the former. A warm climate and low country, not far from the sea, seem most congenial to their nature; accordingly we find the species less numerous to the west than to the east, and to the south of the great range of the Alleghany, in the same parallel of latitude. In the several groups of these birds occasional from Fredericksburg in Virginia, to the southern parts of Georgia.'

Nutall states that it inhabits the whole continent and the adjacent islands from Rhode Island to the larger islands of the West Indies, continuing through the southern states, and as far south as Brazil. Nor is it confined to the eastern or Atlantic states; for it is found in the territory (new state) of Arkansas, and more than a thousand miles from the mouth of the Mississippi, as breeding at the western sources of the Platte, near the base of the Rocky

MOC 292 MOC
The line of eight companies, a battalion of light infantry of six companies, three companies of dragoons, a company of artillery, one of pioneers, and one of veterans. These corps are recruited by voluntary enlistment with bounty money. There are two "battaglioni urbani," one as city guard, one at Reggio and the other at Modena, besides a guard of nobile, or body guards, who attend the sovereign and his family. There is a military academy at Modena.

The establishments for public instruction consist of one lyceum at Modena, one college for studies and another for medicine at Modena, Reggio, and Mirandola; three schools of philosophy, at Carpi, Correggio, and Castelnuovo, the chief town of Garfagnana; besides several colleges for boarders kept by the Jesuits and other religious orders. There are five primary schools for free children, kept by nuns, four of which are at Modena, one at Reggio, and two at Carpi. For elementary education there are six schools for boys and six for girls, distributed among various municipalities; but there is no general system for the rural communes. There are also seven special schools, namely, the academy of the fine arts, the military academy, the institute of cadets, a veterinary school, a school of sculpture at Carrara, and a deaf and dumb school.

The country is divided into four bishoprics: Modena, Reggio, Carpi, and Massa, and 649 parishes. Besides the chapters in each bishop's see, there are six collegiate churches, namely, S. Maria in Pomposa, and S. Consolario, in the diocese of Modena; S. Prospero, S. Maria Nuova, S. Nicolao, and S. Andrea at Carrara; besides the abbey of Nonantola. There are also ten clerical seminaries, one in each town of the state. The monastic clergy are more numerous in proportion than in most other parts of Italy; there are seventeen monasteries of women, and at least 3000 Jews reside at Modena, Reggio, and other towns of the duchy.

The principal towns of the states of Modena are—1. MO
dena. 2. Reggio, the Regnum Lepidi of the Romans, a walled town in the midst of a fine and fertile plain, is well known as the birthplace of the great Italian poet, Dante Alighieri, who was born here July 26, 1265. It is surrounded by hills, and is a noted centre of the Apennine trade. It is the seat of an archbishop, the cathedral of which is one of the finest in Italy. The town is celebrated for its fine linen and silk.

The government of Modena is the most absolute in Italy, there being no provincial states of any kind. The present duke, Francis IV. of Este, is the son of Ferdinand, archduke of Austria, and is the successor of his grandfather, who reigned for sixty years. The duchy of Modena is divided into three provinces, each with a governor and a chief of police. The capital of the duchy is Modena, which is situated on the river Po, and is a noted centre of manufacturing and commerce. The population is about 300,000, and the revenue is derived chiefly from agriculture. The duke is the head of the state, and has complete control of all affairs. The government consists of a council of state, which is appointed by the duke, and a council of ministers, which is appointed by the duke. The duke is also the chief of the military, and has complete control of all military matters.

The military duty of a battalion of infantry of the
MODULATION

EXAMPLE I

Example I: Consecutive

Example II: In D Minor

Example III: In D Major

Example IV: In A Minor

Example V: In A Major

Example VI: In G Minor

Example VII: In G Major

Example VIII: In C Minor

Example IX: In C Major

Example X: In F Minor

Example XI: In F Major

Example XII: In B Minor

Example XIII: In B Major

Example XIV: In E Minor

Example XV: In E Major

Example XVI: In G Sharp Minor

Example XVII: In G Sharp Major

Example XVIII: In A Flat Minor

Example XIX: In A Flat Major

Example XX: In C Sharp Minor

Example XXI: In C Sharp Major

Example XXII: In F Sharp Minor

Example XXIII: In F Sharp Major

Example XXIV: In B Sharp Minor

Example XXV: In B Sharp Major

Example XXVI: In E Sharp Minor

Example XXVII: In E Sharp Major

Example XXVIII: In A Double Flat Minor

Example XXIX: In A Double Flat Major

Example XXX: In C Double Sharp Minor

Example XXXI: In C Double Sharp Major

Example XXXII: In F Double Sharp Minor

Example XXXIII: In F Double Sharp Major

Example XXXIV: In B Double Sharp Minor

Example XXXV: In B Double Sharp Major

Example XXXVI: In E Double Sharp Minor

Example XXXVII: In E Double Sharp Major

Example XXXVIII: In A Double Sharp Minor

Example XXXIX: In A Double Sharp Major

Example XL: In C Double Flat Minor

Example XLI: In C Double Flat Major

Example XLII: In F Double Flat Minor

Example XLIII: In F Double Flat Major

Example XLIV: In B Double Flat Minor

Example XLV: In B Double Flat Major

Example XLVI: In E Double Flat Minor

Example XLVII: In E Double Flat Major

Example XLVIII: In A Double Flat Major
Enharmonic Modulation is the change from a given key to another quite unanalogous, by means of an enharmonic interval,—that is, by the same interval binominously considered; as c and b, A and G, &c. [ENHARMONIC]

Examples:

\[
\begin{align*}
t & \rightarrow g \\
c to g. & (from Kirnberger).
\end{align*}
\]

In these examples we have endeavoured to show the most direct method of modulating, and, except in one instance, by means the dominant 7th and the diminished 7th, or their inversions. By the intervention of a few additional chords, more elegant effects might have been produced, both as regards harmony and melody. But it must also be remarked that suddenness of transition is often essential to the design of the composer, in which case he takes the shortest road from key to key that the ear will permit.

It will be seen that we entirely differ from those who—perhaps misled by the word *modulatio*, and its interpretation by antient writers—think that modulation may be carried on without any change of key. We are decidedly of opinion, though in opposition to some highly respectable authorities, that modulation and change of key are identical terms.

**MODULES (Architecture),** from the Latin *modulus*, as being a lesser measure than the diameter of the column, is employed to signify one half of the latter, or thirty minutes. Some writers reckon entirely by *modules* and minutes. Thus instead of saying a column is eight or eight and a half diameters high, they would describe its height as being sixteen or seventeen modules.

**MOGIS, Lake.** [EGYPT.]

**MOESIA, the name of a province of the Roman empire, extending north of the range of Mount Haemus, the mountain Balkan, as far as the Danube, and eastwards to the Euxine, and corresponding to the present provinces of Servia and Bulgaria. Its boundaries to the west were the rivers Drinus and Savus, which divided it from Pannonia and Illyricum. Strabo (vii. 326) says that the old inhabitants of the country were called Mysi, and were a tribe of Thracians, like their eastern neighbours the Getæ, with whom they have been confounded [G.E.T.], and that they were the ancestors of the Mysæ of Asia Minor. The Romans first invaded their country under Augustus (Dion, cap. 51), and it was afterwards made into a Roman province, and divided into Mysis Superior, to the west, between the Drinus and the Oesus or modern Ister, and Mysis Inferior, extending from the Oesus to the Euxine. Being a frontier province of the empire, it was strengthened by a line of stations and forresses along the south bank of the Danube, of which the most important were Axiopolis, Duroston, Nicopolis ad Istrum, Viminacium, and Singidunum. In the interior of the country were the towns of Naissus, modern Niš, Sardica, Marcianopolis; and on the coast of the Euxine, Odessus or Odysseyss, near the modern Varna, Dioniopolis, and Tomi, the place of Ovid's exile and death. A Roman colony was built from the Danube to the Euxine, from Axiopolis to Tomi. The empire was divided against the Scythians and Sarmatians, who inhabited the delta of the Danube.

The conquest of Dacia by Trajan removed the frontier of the empire farther north beyond Morina; but after the loss of that province, about A.D. 250, Mysis became again a border province, and, as such, exposed to the irruption of the Goths, who, after several attempts, crossed the Danube and occupied Mysis in the reign of the emperor Valens. The Mysæ-Goths, for whom Ulphilas translated the Scriptu-

**MOFFAT.** [DUMFRIESSHIRE.]

**MOGADORE.** [MAROCCO.]

**MOGUL EMPIRE** is the name commonly given to the empire founded in Hindustan by the successors of Timur, in the sixteenth century. Baber, a descendant of Timur, and a prince of the Jangeri Turki tribe, after conquering Samarcand, Bokhara, and Cabul, crossed the Indus, and invaded the Punjab. He marched upon Delhi, defeated and killed Sultan Ibrahim Lodî, the Afghan sovereign of Hindustan, took Agra, a powerful base, of Rasûl Bânta, a powerful Hindu prince, extended his conquests to the mouths of the Ganges, and established his Tatar dynasty over those vast regions, 1526-8. As he had many Mongols in his service, and as he was a successor of Timur Beg, who, though a Torki, to whom he himself belonged and who had re-united for a time the old Mongol empire of Genghis Khan, the dynasty established by Baber in India became known in Europe by the name of the Mogul empire, and the misnomer has perpetuated itself in history. [Mongol.]

Baber, after distinguishing himself as a great conqueror, became also a wise administrator, and applied himself to promote the prosperity of his vast dominions. [Babër.] He died in 1530, and was succeeded by his son Humâûin, a mild and good prince, who however had not the abilities of his father. The Pasûntribe of Afghans, rose against him, and forced him to emigrate, and a Pasûn dynasty was established at Delhi. Humâûin however returned with a fresh force of Turcomans and other Tatars, and re-took Delhi. He died in 1530, and left an unsettled throne to his son Akbar, then a mere youth.

Akbar, by means of his generals, re-took Agra from the Afghans, re-conquered Mâ鸟ra and Behar, defeated the Uzbek chiefs who had revolted, invaded and conquered Gunter (and Sinde, and consolidated the empire in the house of Timur. For an account of his life see **Akbar.** Deviating from the old principle that all the land belonged to the crown, and that the occupiers were yearly tenants, Akbar alienated many lands in favour of the person to whom he gave them, and enicted the right of transferring their property without the necessity of obtaining permission from the crown.

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Akbar died in 1605, and was succeeded by his son Jehangir, a good though rather weak prince, who followed his father in the stern administration.

Jehangir died in 1627, and was succeeded by his son Sultan Kuiram, who assumed the name of Shah Jehan. He was an able prince, who extended the limits of the empire south to Zimbubbad, as far as the frontiers of Gondola and Vizapore.

Shah Jehan was deposed in 1658 by his third son Aurangzeb, whose long reign was the most brilliant period of the dynasty of Timur in India. For particulars see Aurangzeb.

Aurangzeb died in 1707, and was succeeded by his son Babar, who died in 1712, and was succeeded by his son Moaz ud Din, styled Jehandar Shah, who reigned only eighteen months, and was succeeded by his nephew Firrocksene.

In 1717 Firrocksene was deposed, and deprived of his sight by two chiefs, Abdullah Khan and Hassan Khan, who raised to the throne Rafeel ud Dinjeet, another grandson of Bahadar Shah, but put him to death after three months.

In 1718 Mahommedul Multuk, who was deposed, being discovered amongst the rebellious chiefs, gave himself up to indulgence and pleasure. In the meantime the Maharratts had become extremely formidable, and the various khans who disputed this great sovereignty. To crown Mahommedul Multuk's misfortunes, Nadir Shah, the usurper of Persia, invaded Hindustan and entered Delhi. Mahommedul Multuk surrendered to him, and was treated with some regard; but the exception of the brave officers occasioned immediate apprehension in the city. Nadir gave orders for a general massacre, in which many thousands, without distinction of age and sex, lost their lives, A.D. 1739. Nadir soon after returned to Persia with large plunder, leaving Mahommedul on the throne, who consequently led to him all the armies which were west of the Indus. The governor of the Deccan, Nisam ul Multuk, usurped the sovereignty of that province, and an adventurer, Alverdi Khan, likewise usurped Bengal. Mahommedul Shah died in 1747, and was succeeded by his son Aliverde.

The reign of Aliverde was still more disturbed than that of his father, by invasions of the Maharratts, Rohillas, and other predatory bands, and by the ambition of the various chiefs, or governors of provinces. Ghazi ul Din, the eldest son of Nizam ul Multuk, being disappointed of his father's inheritance by his brothers, after several attempts to recover it, died of poison, leaving a son, young Ghazi, who held an office of trust at Delhi under the emperor. He was a brave youth, and an admirable officer of cavalry, but his young age made him less bold; but Aliverde, becoming jealous, endeavoured to get rid of him. Ghazi discovering this, marched upon Delhi, took it, and deposed Aliverde, who was at the same time deprived of his sight, in the year 1755. Ghazi then put an end to the Maharrattles. This was a brave blood, who assumed the name of Alunghir, while Ghazi, in fact, ruled the empire with the title of vizier.

Achmet Abdallah, of Herat, who, in the midst of the confusion into which the affairs of Persia had fallen after the death of Nadir Shah, had formed a new empire in Afghanistan, invaded the Penjub, took Lahore, and advanced towards Delhi, A.D. 1757. Ghazi went out to meet him, but was forced by part of his troops in consequence of some action, whereupon Alunghir, who was the nominal possessor of the throne, under the control of the vizier. In 1759 Alunghir was defeated, into Mohun, by Alunghir, who kept a correspondence with him, which being discovered by Ghazi, the latter caused the emperor to be assassinated. He then placed on the throne another prince of the blood, named Shah Adbul Mozaffar, who was obliged to agree with the victor, who entered Delhi, and raised enormous contributions, in consequence of which a revolt having broken out among the inhabitants, a general massacre ensued, and a great part of the town was destroyed by fire, A.D. 1761. Shah Adbul Mozaffar, the name a new invasion of the Maharratts, who entered Delhi after Alunghir's departure, obliged the vizier to escape, deposed Shah Jehan, and raised another puppet prince to the throne. Meanwhile Shah Allah II., the son of Alunghir, had himself proclaimed emperor at Patna, under the protection of the Souleihab of Bengal, Surajul Dowlat. The Souleihab being defeated by the British forces, Shah Allum came into the hands of the latter, who gave him the town of Allahabad, and part of that province, for his subsistence. After numerous subsequent vicissitudes, Shah Allum died in 1806, a pensioner at Allahabad.

In the twenty-fifth year of his age Mohammed became acquainted with a rich widow Khudja, whom he subsequendy married; and during the fifteen following years more was known of him than the preparatory to his intended mission he frequently retired to the bursting mountains, and also Syria and occasional visits. During these journeys he
and in such degree as circumstances permitted, and he is said to have conversed most familiarly with some learned Jews and Christians, among whom are particularly men tioned a celebrated rabbi, Abdullah Ibn Salsam, and Waraka, the nephew of his wife, who first deserting his native polytheism, and afterwards forsaking his Jewish faith, had embraced the Christian religion, and was well acquainted with the Old and New Testament. (Abulfedla, Annals, L. 283; Mar rucius, Prophets, 1, 44."

In the fourth year of the age of Mahomet assumed the prophetic office, and displayed his views and principles to his own domestic circle. His first efforts were successful, for his wife Khadijah, Waraka, Abubeker, his cousin-german Ali ben Abi Taleb, and several other members of the family, receded to acknowledge his divine mission, and himself as the Apostle of Allah.

After being three years silently employed in the conversion of his nearest friends, he invited the most illustrious men of the family of Hashem to his house, and after having enjoined them to leave idolatry for the worship of one God, he publicly proclaimed his calling, and declared that by the command of that one God, revealed to him by the angel Gabriel, he felt compelled to impart to his countrymen the most precious gift, and the only means of their future salvation. Fear and terror mixed with the daring spirit of the prophet, with surprise mingled with contempt. The young and enthusiastic Ali alone, throwing himself at the feet of Mahomet, with a solemn vow offered to be his companion, but his father, the mild and sober Abi Taleb, seriously advised that he should address him to his father. Mahomet replied, that even if the sun should be placed on his right hand and the moon on his left, they should never divert him from his career. Stimulated rather than intimidated by the example of his son, the reformation soon began to frequent the public places of Madinah, openly to preach the unity of God, calling upon the citizens to repent of their idolatry, exhorting them to devote themselves to the service of a supreme and most merciful Being, and to use a number of prayers, to affix at the doors of the Kasaba. It is reported that he bad the honour of thus converting the celebrated poet Lebid, who, struck with the sublime beauty of a passage thus promulgated, declared it far superior to any production of human genius, and resolved to become Mahomet's disciple. The people listened to the precepts of the moralist, and though they were enrapured by the force of his eloquence, very few were yet inclined to desert their hereditary and long-cherished ceremonies, and to adopt a spiritual faith the internal evidences of which were not yet sufficiently known. Mahomet was repeatedly urged by them to confirm his divine mission by miracles, but he wisely appealed to the internal truth of his doctrine, and expressly declared that wonders and signs would depreciate the merit of faith and aggravate the guilt of unbelief. Accordingly, it is understood that Mahomet professed to have accomplished, and which has been greatly exaggerated by his credulous adherents, is a nocturnal journey from the temple of Mecca to Jerusalem, and thence through the heavens, which he pretended to have performed on an imaginary animal like an ass, called Borak (lightning); but we need scarcely remark that the simple words of the Koran (Sur. xvii.) may as well be taken in the allegorical sense of a vision.

In the meantime several of the Koreh noblest citizens, such as Abou Obeida, Hamza, the uncle of Mahomet, Othman, and the stern and inflexible Omar, were successively gained by the moderation and influence of Abubeker, with whom, by marrying his only daughter Ayosha, the prophet had become master of the chief devotion, and the supply of all his affairs. Nevertheless for more than ten years the new faith made little progress within the walls of Mecca, and might have been extinguished in its birth, if the jealous leaders of the Korehites had not directed their animosity and violence against the idolatrous inhabitants of the holy city. Mahomet, however, and persecution, too often repeated to be minutely related here, had compelled the few votaries of Mahomet to retire into Abyssinia, the spirit of party continually kindled the flames of contention, and the reign of which he had established. The life of Mahomet, broke out at Mecca, and the prophet took his flight to Yathreb, afterwards known by the name of Medina (Medinat-al-nabii), or the city of the prophet. This retreat happened on the 16th of July, 622, and has been adopted by the Moham.ans, as the commencement of the year of the Islamic. The citizens of Medina, among whom the seeds of Islam had been sown by some converted pilgrims returning from Mecca, were readily inclined to embrace the cause of the reformer, whom they had often invited by several previous deputations, and to whom they had promised their alliance and protection against his enemies. Accordingly they advanced in the body to meet Mahomet, and invested him with the regal and sacerdotal office, and offered their assistance in propagating by force the tenets of his new religion. From this moment a vast theatre opened to the enthusiasm and ambition of Mahomet. His revelations assumed a much more sublime form; he imposed the new religion and of faith the waging of war against the infidels; and the sword once drawn at the command of Heaven from that time remained unsheathed until the tribes of all Arabia and the adjacent countries had joined in the profession that there is no God but Allah, and that Mahomet is his apostle.

After various enterprises and petty excursions, three great battles were fought with the Korehites under Abu Sophian, the implacable foe of Mahomet and of the House of Ali, who, after the death of Abu Taleb, had succeeded to the principality of Mecca. A military force of nearly a thousand men had been collected by Abu Sophian, in order to protect a wealthy caravan on its way to Syria, and to attempt the converting the prophet, who, with a small band of hundred warriors, awaited them in the vicinity of Beder, twenty miles from Medina. The Moslems, inflamed with enthusiasm and expectation of booty, furiously assailed the enemy, who, after a short battle were totally defeated and dispersed, leaving to the Moslems the spoils of war, and avenged this disgraceful defeat Abu Sophian advanced in the following year (Hejr. 3) with an army of three thousand men towards Medina, and a bloody action, in which Moham ed was severely wounded, took place near Mount Ohud. The Korehites were routed, and the Moslem army was followed closely by the enemy, and at last pursued, but the city of Medina was besieged for twenty days, was terminated by a single combat of the valourous Ali. Surrounded by an ambuscade of the Moslem forces, the prophet had recourse to the stratagem of pretending to retire, and or at least of a doubtful dispositions, the idolators either wanted strength or courage to protract hostilities, and accordingly an armistice of ten days was agreed upon by both parties. This interval Mohammed employed in converting or subduing the principal Jewish tribes, namely, those of Kau kiko, Koraditha, Nahitir, and Chabaar. (Abulfedla, Vita Moham., p. 67; Pococke, Specimen Hist. Arabum, p. 11.)

The castles and towns of the outlying nations were rapidly taken and plundered, and the unhappy people, being unwilling to embrace the new religion of Mahomet, were driven out, or persecuted and slaughtered with the utmost cruelty. But the prophet paid dearly for this, as he never entirely recovered from the effects of poison prepared for him by a Jewish female of Chabaar. Thus advancing among the tribes of the north of Arabia, the most fierce and ambitious apostle increased like an avalanche, and as the Korehites had been guilty of violating the truce, he proceeded at the head of ten thousand warriors towards Mecca (Hejr. 8). The town submitted to the west resistance, and yielding to the victorious banners of Islam, the people unanimously hailed, as the sovereign of Mecca, the prophet whom they had driven from his paternal hearth. Mohammed readily forgave his converted brother the insults which he had formerly received from them, and after having broken the three hundred and sixty idols round the Kasaba, and destroyed every vestige of idolatry, he adorned and consecrated the temple to the worship of God. In doing this he himself set an example of the most earnest prayer and thanksgiving, and in the solemn and public ceremonies which the pilgrims to the holy shrine had therefore invariably observed. The conquest of Mecca, and a subsequent prosperous expedition against the hostile forces of Tayef, were speedily followed by those of Peace throughout Arabia, and even the petty chiefs of the neighbouring provinces presented gifts or offered their friendship and alliance to the victorious prophet. Intoxicated with ambitious pride, Mohammed now despatched the said ambassador, Abu Patrik, to distant points, such as the empire of Byzantium, and to the king of Abyssinia, solemnly inviting them to the profession of Islam, or threatening them with war. Accordingly an army of three thousand Moslem invaded the eastern territories of Palestine, and though this and subsequent expeditions were only momentary excursions, a number of foreign tribes
and cities willingly submitted. This arose principally from the
clenency and moderation of the prophet towards the
Christians, from whom he claimed only a moderate tribute,
and was most liberal in granting his protection, security
and freedom of trade, and toleration of their
worship, and whose conversion to his religion he rather
expected than enforced. On this occasion a patent in favour
of his Christian subjects, known under the name of 'Tes-
tamantio,' was formerly published; perhaps whatever may be thought of its authenticity, is at least in
accordance with many passages of the Koran, declaring that
"no force shall be employed in religion; that the prophet
is the guide of the world, and administers the laws of the
people shall not be governed by violence, and that the believers
shall leave those who do not believe to the punishment of
God, for He is the only arbiter, and will reward every one as
heseders.' (Sur. ii., 257; xliv. 14; xlii. 21, &c.)
Returning from these military expeditions, and having once
more accomplished a solemn pilgrimage to the temple of
Mecca, Mohammed retired to Medina, where, to the great
consolation of his followers, he died. This event happened,
after a severe fever of fourteen days, on the 8th of June,
632, in the sixty-third year of his age. Omar, who with many
enthusiastic disciples, firmly believed that a prophet could
ever die; and it required all the authority of the sober
and prudent Abubeker to refute so absurd an opinion. 'Is
it Mohammed,' he exclaimed to the frantic multitudes 'or the
God of the prophet? Shall we continue his disciples, whom
well lived for ever, but the apostle was a mortal like ourselves,
and has experienced the common fate of mortality.

Hence thus rapidly sketched the political life of the
Arabian prophet, by whose noble aspirations and intrepid
courage the hostile tribes of an immense country were
for the first time united in faith and obedience; and be-
fore discussing the principles of a religion, which, during
the space of a century, displayed itself to every part of the
world. Syria, Asia Minor, Persia, Egypt, and the coasts
of Africa, and whose precepts even now are zealously fol-
lowed from the Ganges to the Atlantic by more than a
hundred and twenty millions of people—we feel it necessary
to notice the number of the prophet's followers in the
state of Arabia, previous to the introduction of Islam. The
aboriginal in-
habitants of the peninsula had, from time immemorial, been
divided into a great number of free and wandering clans,
limited communities, and petty states, whose peculiarities
of character, mode of life, and political institutions, as they
were mostly dependent upon local circumstances, were for
centuries stamped with the same unalterable features, and had
been preserved almost unchanged even from the time of the
Fitzgerald's translation (Sur. ii.) the book of Genesis. The mountains
and table-land of central Arabia, abounding in rich pasture
and fertile valleys, but at the same time intersected
and skirted with dreary wastes and sandy plains, was occupied
by those roving tribes who, in opposition to the settled in-
habitants of the plains and the mountainous coast of the
plain. Most of them were addicted to a wandering pas-
toral life, but from being strongly disposed to war and chia-
valous adventures, their peaceable occupations were inter-
rupted, either by conducting a caravan of merchants, or
still oftener by assailing and robbing their fellow-tribes.
Every tribe was governed by the most aged or worthy
Sheikh of that family which had been exalted above its
brethren by fortune and heroic deeds, or even by eloquence
and the herculean powers of the Median and Persian
and moralists, by whom the races and virtues of their
countrymen were impartially censured or praised, a noble
enthusiasm for poetry animated those Arabs, and an un-
usual at the annual fair at Okbald, thirty days were consecrated to poetical
emulation, after which the author of the most stately
letters of gold and suspended in the temple of Mecca.
Those meetings however formed only a very feeble bond of
union among the independent and hostile tribes, who only
occasionally, and in times of danger and warfare,
subjoined to a chief or some emir, and even that
never yet been united into one body. And the tie was
still less binding on those inhabitants who, being col-
clected in flourishing towns and cities on the coasts of
the peninsula, and mostly employed in trade and agri-
culture, submitted to the will of the Beduins, as a weak and
degenerate race of savages. The
religions worship of the Arabs chiefly consisted in the adora-
tion of the heavenly luminaries, which were considered as
so many tutelary deities of the different tribes; and no
of their labours, the sun and moon, the planet Venus had
required such peculiar pre-emience, that even to the
Moslem inhabitants of Arabia, the third day of the
week. These deities, with many other images of the
personified powers of nature, rudely represented by idols
in every variety of shape, were principally gathered round
the ancient Caaba, or square temple, the sanctuary of
Abel and Melchisedec. Mohammed, the Prophet, was accompaniced,
in only with the most horrid rites and shocking ceremonies,
deeply impressed with the neglect of the God of Abraham
and Isaac, and that Jehovah, who appeared to Moses and
his disciples, and preserved their seed for forty years in
the wilderness of Shafe. (Sur. iii. 57; lix. 8) We shall therefore
be able to form some idea of the immense changes which
the Arabians underwent in their manners, but more
especially in their religious opinions, the apostle Paul,
and from the mission of Jesus, the grandson of god,
and the same of Christ, and the same of Jesus. (Sur.
iv. 137; lxx. 58; xxxii., 8) and we need scarcely remark, that,
except the vogue belief of the soul becoming transformed into animals
and reverting on the grave, there is no indication that the
Arabians had discovered the knowledge of immortality.
(Procter, Specimen Historiae Arabum, ed. White.
1806.) Among the foreign settlers in Arabia, we pass over
in silence the few adherents of Zoroaster, scattered along
the Persian gulf, and the Selahans, or the presbyters of
the Hasmah, which hitherto the true spirit of
the temple of David and Solomon, stored their rich emporiums of
Ophi-
the and afterwards Aden, with Indian merchandise
and who, as is clear from many good arguments, were
undoubtedly of Hindu origin. The Christian church at first
adhered entirely to the genius of Arabia, but
the Christianity of the Oriental church, at that time, also
resembled paganism, being associated with monaschism
and with the worship of martyrs, relics, and images. As
has been already remarked, many of the
political and other abstruse dogmatical controversies, like
upon each other with the utmost hatred, we find particularly
mentioned the Nestorians, Jacobites, Maronites, and
the three chief sects of the Christian church, of which the
Arabian reformer first and most eagerly looked for prop-
lies, and his early predilection in favour of the
function of Scripture, as they are honourably called, might be attract-
through immeasurable passages of the Koran. He not only approved
at his early death the sects of former times, and consequently the truth of
his divine mission (Sur. ii., 134; x, 93; xxv. 77; xxxii.,
14), but to gratify the Jewish superstition, he ever
structed his first disciples to direct their prayers towards
the shrine of Jerusalem, which was afterwards altered to
favour of the Caaba. (Sur. ii., 143-146.) But the followers
of the Mosaic institution, being then already entangled in
their fanciful Talmudic lore, were by no means inclin-
ed to accept the new teaching, and clung tenaciously
and when the most persuasive summons of the prop-
hecy were repeatedly answered by ironical sneers and an-
svinduct contempt, his former friendship was converted to an
impossible hatred, and the Jews were accordingly stran-
ted as the enemies of the Moslem, and the Salamis
prophets, as interpolators of sacred Scripture, and, in,
those to be the chosen people of God, as the
fathers of mankind. (Sur. ii., 58, 73; v. 21, 74, 85.)

Nevertheless it is to his Jewish instructors, and par-
cularly to the above-mentioned rabbis, that Mohammed is indebted for that ample knowledge
of biblical history, and for all those dogmatical legends,
factual ornaments, and absurd interpretations of Scripture
Koran is stam-
pled to those sacred
of man.
law for many millions of mankind: a work which, from the force and sublimity of its style, has been for centuries admired, and has become the model and standard of all Arabic writers, and whose language is even now the vehicle of communication for nations between the Polynesian isles and the Columns of Hercules; a work which is consecrated by ages of thoughtful meditation of their happiness on earth, and as the only means of their eternal bliss and salvation hereafter; a work which, according to pious Moslems, was written before the throne of God with the help of his everlastings decrees, and of which a mere copy was brought down and revealed to Mohammed by the angel Gabriel.

The Koran (lecture), or with the Arabic article, Alkoran, commonly called the book, or book of Allah, both in imitation of the most ancient histrio, and with propriety of the most ancient histrio, and with propriety of the manner, namely, Mika and Khitab, is a collection of all those various fragments which the prophet, during the time of his apostolic office, successively promulged as so many revelations from heaven. It would be almost impossible to characterize the grandeur of the Koran, or even to give a full and clear account of its contents; for the chronological order of the incoherent rhapsodies has been neglected, and we are at a loss either to trace any logical connection between them, or to reconcile the many glaring contradictions, either of love each other. The Koran is now published as an official journal of the progress of Islam. According to the momentary feelings of the prophet, his frame of mind, or the mere suggestions of his fancy, pious meditations and verses, or his own views on any subject, the Koran is a combination of occasional and admonitory discourses. Apostrophes of Allah to the listening apostle, and of course to the refractory unbelievers, are interrupted by legendary tales and fabulous traditions of ancient Arabic heroes and tribes; and religious observances are multiplied in a marvellous manner, and the most energetic recommendations of gratitude, charity, patience, and piety, are occasionally illustrated or strengthened by the examples of the biblical patriarchs and prophets derived from rabbinical authority. Add to this, that the Koran is the most Chinese and refined dialect of Hezaj, and the harmony and copiousness of the style, which in splendid imagery, bold metaphors, and occasional rhyme, rather resembles poetry than prose, and, though sometimes obscure or verging upon tenuity, is generally vigorous and mutilated, which may render it difficult to the uninitiated in the judgement of Goethe, that the Koran is a work with whose dulness the reader is at first disgusted, but is afterwards attracted by its charms, and finally ravished irresistibly by its many beauties. The Koran had been originally preserved by oral tradition, or handed about in fragments, written on palm-leaves and pieces of parchment by the slave of Mohammed, Said ben Thabet. The scattered leaves were collected into a volume by the caliph, Al-Mahmoud, and he caused them to be copied, and many apocryphal additions having crept into the collection, an authentic copy was afterwards revised and sanctioned by the Caliph Omar (632). The code is divided into 114 chapters, or surs, which are inscribed with the name of Mosse or Medina, where they had been promulged, and with the number of verses which they contain; but they are mostly arranged according to their length, and without any regard to chronology, the seventy-fourth and ninety-sixth having some part of the book as the first revelation. Among the numerous illustrations of the Koran we may notice the celebrated commentaries of Abul Kasem Mohammed Al-Samachari, and Nazreddin Al-Beidhavi (in the twelfth and thirteenth centuries), both of whom have eagerly sought to explain the contradictions of the work, and to explain its occasional obscenity, mostly by means of that recognised oral tradition which, recording in more than 7000 anecodes the private life, opinions, discourses, and sentences of the prophet, had been handed down by his followers, and must be appropriate to the time and place of the ninth century. This collection, combined with a previous controversy respecting the exclusive right of Ali or of Abubaker and the two following caliphs to the supreme pontificate and secular sovereignty over the Moslems, gave rise to the great division of the whole Mohammedan community into Shiites, or sectarians, by whom the authority of tradition is rejected, and Sunnites, or orthodox believers. [A H B I S U D E S.] The first printed edition of the Koran, by Pagninun Bruxiens (Rom, 1590), was burnt by order of the pope; and that of Lud. Marracci was not allowed to appear unless attended with a Proemium ad Refutationem Ilic. Padua, 1698, folio. A quarto edition of the text by Abr. Hinkelmann (Hamb., 1694) has been critically revised and reprinted by G. Fluegel (Leizp., 1834). A French version by Savary (1783), carefully corrected by G. de Tassy, appeared in 1825. The English translation by G. Sale (London, 1785), and his dia- nary Discourse and Notes, was first published in 1734, and has been often reprinted.

The religious system of Mohammed, designated by the name of Islam, is displayed throughout the Koran in single and often-repeated compositions of two parts: of a dogmatical (or Imam) faith, and a practical (or Din) religion. The principal articles of belief are the following:—There is but one God, eternal, omnipotent, almighty, beneficent, to whom all adoration are due, and whose majesty is daily proclaimed by a host of angels above, as well as by his own works around us; he is the author, preserver, and governor of the universe, and the supreme ruler of fate, by whose divine providence and absolute predestination the destinies of mankind have from eternity been decreed. The will of God and his divine law were often and fully declared by the former prophets, Adam, Noah, Abraham, Moses, and Christ, whose authority and station rise in just gradation among whom it is thus expressed, 'I am the chief prophet of a true believer.' The patriarch was neither a Jew nor a Christian, for he believed in the unity of God: he was a religious Moslem, and the friend of God, and the defender of the Islam. The Koran is the Lamb, and the Isaak of the antient and prophetic (Sur. ii., 134; xvi, 120). Nor is Isaac to be considered as the beloved son of the patriarch; for it was Ismael, the pious father of the Arabian race, whom God asked for a sacrifce (xxix., 55; xxx, 65; xxxvii., 101); and it may be asked of the enthusiastic author of the Koran, 'Do the figures of the apostle of God, and his word, which he conveyed unto Mary, and a spirit proceeding from him, countenance the presence of God? Yet Jesus was a mere mortal, and not the son of God; his enemies conspired against his life, but a phantom was substituted for him on the cross, while he was translated to heaven' (iii. 54; iv. 156, 159).

But, after all, Mohammed is the last and by far the most powerful of the希族 prophets, who have closely allegorised the words of God, to the point of supplanting the personal name of the author, or God, by the name of Mohammad, which in the Koran is often so totally absorbed by his thoughts, and the truth of his assertions so deeply worked into his mind, as to identify his own feelings with those of the biblical characters. Equal veneration and deferential respect are paid to our Saviour: 'Verily! David, the former of your father's family (O. Lord, the Lord of the worlds, to the Lord of the worlds), to his apostle of God, and his word, which he conveyed unto Mary, and a spirit proceeding from him, countenance the presence of God? Yet Jesus was a mere mortal, and not the son of God; his enemies conspired against his life, but a phantom was substituted for him on the cross, while he was translated to heaven' (iii. 54; iv. 156, 159).

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Arabian custom of circumcision, generally practised in the eighth year, the legislator retained; and in many usages and ceremonies he indulged the prejudices of his countrymen, either by conforming a point of repugnance with the morals of a purer faith, or by restricting an abusive practice within its just limits. For example, instead of the former polygamy, four wives at most were legally allowed, and the matrimonial rules were more strictly regulated. The Koran enumerates as deadly sins, wilful murder, theft, perjury, and false testimony. Usury, gaming, and the use of wine and pork, are strongly forbidden; and it is but doing justice to Mohammel to observe, that every precept enjoined upon his converts, he had but confirmed in his own example, if we except his incontinence with the sex. The prophet married no less than seventeen wives, strangely enough all widows, except Ayesha, the daughter of Abubeker. This sensuality, almost the only stain on his character, can neither be palliated by the natural temperment of the Arabs nor by his hope of posterity and linear succession, which nevertheless failed, as the four sons of Mohammel died in their infancy. But we hardly need to apologize for the infirmities of a great man (and a great man Mohammel certainly was), who in every line is described as a perfect model of Arabian virtue, brave and liberal, eloquent and vigorous, noble and simple in all his dealings, and of irreproachable morals. That fraud, cruelty, and injustice were often observed, is undeniable: the first of his prophets was not deified; but it is impossible to account for the overpowering suggestions of his imagination, which he easily persuades himself to be the inspirations of Heaven, and according to his own conviction of the importance and apparent advantage of them. As to this, the prophet repeatedly and in the strongest terms expresses his purpose of uniting and reconciling the hostile tribes of his country by destroying their gross idolatry, and by bestowing on them the most salutary and precious gift of a pure religion, in whose peace and light he himself firmly believed. And indeed it will readily be admitted that the religion of the Koran, by which prayers and alms were substituted for the blood of human victims, and which, instead of hostility and perpetual feuds, breathed a spirit of benevolence and mutual social virtues, has been a real blessing to the Eastern world, and has had a most important influence on its civilization. It is not merely to the conquering sword and to the intrepid courage of the conqueror and his successors, but also to the intrinsic merits and active features of a system which, in the presence of the grandeur of Eastern poetry, and most congenial to an ignorant and sensual generation, that the rapid progress of the Arabian conquests must be attributed, although favoured and promoted by the discord, internal revolutions, and weakness of the neighbouring governments.

*Arabia, p. 216; and for the further development of Islam, see Adr. Reiland, De Religione Mohommedica, Utrecht, 1717.*

MOHAMMED. [SANSKRIT LITERATURE.]

MOHAWK, River. [NEW YORK.]

MOHILEW, or MOGILEW, a government of European Russia (in the division called West Russia), lies between 53° 44' and 55° 10' N. lat. and 23° 50' and 3° 40' E. long. It is bounded on the north by Vitepok, on the north-east by Smoleisk, on the south-east and south by Tsiernigow, and on the west by Minsk. The area is 19,360 square miles, and it is divided into twelve circons, namely, no mountains, but only hills near the river. It has fewer lakes, than some of the adjoining provinces; the soil is not so sandy, and abounds with clays. The principal rivers are Issas from Smolensk and flows first north, it receives on the left the and the S. Iesia, which last comes from several small streams on the north by the Drezd and the Zemly. The isle which is this province, the north-west part; there are the Illy and the Semnoje; the others and milder than in Vitepok; and here there only in sheltered spots, a particular rare.

The inhabitants are agriculture and the breeding of cattle. The soil is equally favourable to both, and if the higher lands produce the finest corn, the low grounds on the banks of the rivers have the most

*This species of grass grows in marshes, ditches, on the banks of rivers, and in low damp places, and in general grows in proportion as the soil is extremely stenches, and to be removed by the name of marsh grasses. In Poland it is said to grow in every variety prepared, that it is reported to Sweden, Prussia, peasants, Norway, etc.

The water-fowl and trees are very kind of the seed. The grass is good moulded, salt for all kinds of cattle, especially black cattle and sheep.
MOL, 303

bazaar, two stories high. There are a seminary for Greek priests, a gymnasmium, seven schools, six poorhouses, and an infirmary. The tanneries are of considerable importance, and there are some manufactories of iron articles. The adjacent country being very fertile, the inhabitants have extensive gardens, which are a source of great profit. They have very considerable trade, which was formerly chiefly directed to Riga, Königsberg, Memel, and Danzig, but of late years has turned to Odessa. The population has much increased of late years: Stein states it at 12,900, Hassel at 14,126, and Nagornoy at 5,665.

The other principal towns are, Mtsislaw, 5000 inhabitants; Dubrownia, 4000 inhabitants; Skiwor, a fortiified place, 2590 inhabitants; Orcha, 4000 inhabitants; and Homel, in the lordship of the same name belonging to Count Romanow, where there is a small garrison, 150 men.

There is in the town a Lancastrian school for 400 peasant children, 200 of whom are boarded and instructed in handicrafts, agriculture, and gardening.

Schoen, in 1835; Stein, Geo. Lexicon, Horschelmann, Geo. 1833; Hassel, Cannabich, 1836.)

MOHILLA. [Comoro Islands.]

MOHISTE, crystallized tinitate of iron. The primary form is a rhomboed. The crystals occur attached and maced. They are used for magnetic instruments, and are sufficiently hard to scrape glass readily. Brittle. Colour black; streak the same. Lustre metallic.Opaque. Does not obey the magnet. Found in Dauphin.

MOIDORE. [Money] Line of fortifications south of France, capital of an arrangement in the department of Tarne et Garonne, in 41°7' N. lat. and 1°5'E. long., 426 miles from Paris by the road through Orleans, Chateauroux, Limoges, Cahors, and Montauban.

The area is first noticed in the fifth century, when it was taken from the Romans by the Goths, from whom it was shortly after taken by the Franks. It was plundered by the Northmen, and subsequently came into possession of the Albigenses. From it it was taken by Simon de Montfort. The area of the English lordship, which is the test of the sixteenth century completed its ruin. The remains of the ancient walls show how far its former extent exceeded its present size.

The town is on the north bank of the Tarn (which is navigable), about three or four miles above its junction with the Garonne. The houses are tolerably well built, and among the most striking objects are the public fountain and the bridge over the Tarn. The country round the town is very high, not accessible, and though mountainous, it is beautiful and of delicious fruits. The population in 1831 was 5950 for the town, or 10,165 for the whole commune; in 1836 it was 10,618 for the commune. There are many mills for grinding flour for exportation to the colonies, and, besides wheat, flour, saffron, wine, and wool. There are eight fairs in the year.

The arrondissement has an area of 340 square miles, and comprehends 49 communes. It is subdivided into six cantons or districts, each under a justice of the peace. The population in 1821 was 62,489; in 1836 it was 62,725.

MOIVRE, DE. [De Moivre.]

MOLA. There are two artists of this name, who were contemporaries, and both studied for a time under Albano. Of these the elder, called Guercino, was born at Colone, in the Milanese territory, in 1621, and after receiving his first instructions in art from his father, who was both a painter and architect, he studied successively under Giuseppe, Albano, and Guerino. He attained to great eminence in his art, which deservedly won him the highest honour, and though his chief merit lay in landscape, to which he chiefly applied himself, he also painted history occasionally, and with much ability. His talents obtained for him the patronage of princes and nobles, and among others of Christina of Sweden. He was subdivided into three departments, to which he belonged, in the department of Garonne, France, and he was making preparations for proceeding thither at the time of his death, which happened at Rome in 1666. According to other notices of him, the dates both of his birth and death vary from those above given, those assigned being respectively 1609 and 1664; besides which, he is stated to have been born at Lugano.

GIANNATTISTA MOLA, who was not at all related to the preceding, but is said to have been of French extraction, was born in 1629. He studied first at Paris under Vouet, and afterwards under Albano, at Bologna. Like his namesake Pier Francesco, Giannattista was an excellent landscape-painter, and well skilled also in perspective, though in other respects his inferior. He died in 1661.

MOLASSES, the uncrystallized syrup produced in the manufacture of sugar, and which is suffered to drain from the casks into a cistern called the curing-house, before the sugar is sent away from the plantation. To facilitate the draining, the casks are ranged upright on a frame-work of open joists over the cistern; several holes of about an inch diameter are bored in the bottoms of the casks; and before the sugar is made sugar-canes, or in some such many channels or conduits for the passing away of the greater part of the molasses: some wilt always remain in the hogheads, and, draining away by slow degrees, will in the great measure be lost during the voyage; but even after the arrival of the sugar in Europe a proportion of molasses, which is less or more opposite to the good or bad quality of the sugar, remains in the mass.

Nearly all the molasses made in the English sugar colonies are imported for the purpose of manufacturing and distillation on the estates; but the price of that spirit, having declined, and improvements having been made in the processes of refining sugar in Europe, whereby a large proportion of West India molasses has been rendered crystallizable, a considerable quantity of the crystalline molasses is shipped for that purpose. The syrup, which ultimately remains in a liquid form after passing through the processes of a refining-house, whether the same are the produce of Muscovado sugar or of molasses, are sometimes imported for the same purpose.

The quantity of West India molasses imported and taken for consumption, in each year from 1820 to 1838, has been as follows:

<table>
<thead>
<tr>
<th>Years</th>
<th>Imported</th>
<th>Consumed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1820</td>
<td>92,495</td>
<td>7,341</td>
</tr>
<tr>
<td>1821</td>
<td>100,185</td>
<td>8,471</td>
</tr>
<tr>
<td>1822</td>
<td>76,708</td>
<td>7,587</td>
</tr>
<tr>
<td>1823</td>
<td>18,799</td>
<td>10,408</td>
</tr>
<tr>
<td>1824</td>
<td>936,398</td>
<td>20,540</td>
</tr>
<tr>
<td>1825</td>
<td>35,555</td>
<td>11,181</td>
</tr>
<tr>
<td>1826</td>
<td>290,514</td>
<td>9,719</td>
</tr>
<tr>
<td>1827</td>
<td>28,344</td>
<td>4,968</td>
</tr>
<tr>
<td>1828</td>
<td>51,708</td>
<td>3,761</td>
</tr>
<tr>
<td>1829</td>
<td>96,426</td>
<td>5,163</td>
</tr>
</tbody>
</table>

The consumption duty charged on molasses is nine shillings per cwt., or three-eighths of the rate charged on crystalline sugar.

MOLD. [Pollish.]

MOLDA'VA, a province of northern Turkey, situated between 45°25' and 48°13' N. lat. and 26°10' and 29°0' E. long. Near it on the lower Dnieper, is the province of Bessarabia, which constituted a part of the principality previously to the peace of 1812, and from which it is separated by the river Pruth; on the south by the Danube and Dniestr, on the west by Transylvania, and on the north by the Bukowina and a part of Galicia or Austrian Poland. Its greatest length from south to north is about 200 miles, its breadth about 120, and its area about 17,000 square miles. The Danube, which touches too a small part of Moldavia, receives within the limits of the principality the rivers Siret and Pruth. Branches of the Carpathians extend along the western frontier of Moldavia, and separate the principality from Transylvania. These mountains send out offsets into the interior of Moldavia, which divide it into three provinces, the principal being of the Sirhet and Pruth, where they terminate in hills covered with vineyards. Moldavia is divided into Upper Moldavia, or Tzara de Sus, which is subdivided into four districts, and Lower Moldavia, or Tzara de Jos, which is subdivided into six districts.

The climate is much colder in winter than might be expected in a latitude corresponding with the north of Italy: the rivers are generally frozen, and the ground covered with snow for a considerable time. On the lower rivers are considerable quantities of ice. The country is subject to earthquakes, but the last very violent: the most remarkable was that which occurred on the night of the 3rd of February, 1821. The country possesses much mineral wealth, of which however little advantage has been taken, in consequence of the unsettled state in which the country has been for several centuries. There
is an abundance of rock-salt in the vicinity of the Carpathian mountains; there are also some mineral sources; and asphalt deposits of coal, salt, red lime and chalk are found in several parts; a great quantity of saltpetre is also produced, chiefly in the northern part of the principality. The sand of the river Biétritz contains gold, but not in a large quantity. The soil is generally exceedingly fertile, and, notwithstanding the inferior state of agriculture, the greatest abundance of grain and vegetable in the greatest abundance. A great number of horses, cattle, and sheep are fed on the rich meadows which Moldavia contains, and the vast forests produce a large number of timber and fuel. Jassy, or Yaassy, the capital of Moldavia, is situated on the Bahliei, a small muddy stream which flows into the Pruth. It is in 47° 9' N. lat. and 27° 29' E. long. It is the residence of the voivode, and of the principal authorities of the province, and is the seat of a Greek archbishop. The palace of the voivode is an eminence on the southern side of the town, and is surrounded by an old slight wall, which is a sufficient defence against bands of robbers, but would be small protection from an enemy; this is however nearly as strong as the former strong fortifications of the town, which were destroyed in 1788. It has been frequently taken by the Russians, but has always been restored on the cessation of hostilities.

The country is a large space of ground, the most of the houses being separated from each other by woods and gardens and plantations of trees. In 1723 it was almost entirely destroyed by fire; in 1772 it was desolated by the plague; in 1722 it was burnt by the Janissaries, when 4700 houses were burnt and 12,000 persons were killed. In 1827 the fire was reduced almost the whole town to a ruin. It now presents a melancholy aspect; instead of well-built houses, it consists chiefly of wooden buildings one story high, with wide spaces vacant or filled with ruins. The principal street, which is very broad, is flanked with small wooden houses on each side; the other streets are narrow and crooked; most of them are laid with rough planks of oak; in the rainy season they are covered with wet mud, and in summer with a thick layer of black dust, which the slightest wind raises in enormous clouds. The population in 1827 was 45,000, more than from 15,000 to 20,000. Before the great fires in 1827 its population was 40,000, and it had 43 churches and chapels, 26 convents, one Catholic and one Lutheran church, a hospital, a bazaar, three public baths, and a wall with printing-office, the only one in the province. There are not many manufactures, but a considerable commerce is carried on, especially during the fairs which are held here.

Galatz, or Galatz, in 45° 23' N. lat. and 29° 5' E. long., is a seaport on the Aulnice, about 15 miles east of the junction of the Sireth and ten miles west of the junction of the Pruth with that river, and about eight miles north from Brailoff, which is the chief port of Wallachia. Galatz is the only port of Moldavia, so that it is the principal place of export for the produce of that country, and the chief medium of the commerce carried on between Germany andConstantinople. By a law of 1834 the privilege of a free port has been granted to Galatz; and a steam communication having recently been established between Vienna and Constantinople, it is likely to become a general mart for Austrian merchandise, which will be shipped thence to the Levant and the ports of the Black Sea. Galatz is for the most part better built than the other towns of Moldavia, having numerous houses of stone, several Greek churches, a hospital, and a large bazaar always well filled with merchandise, together with a great number of warehouses for grain and other produce; the streets however are narrow and dirty. Vessels of 300 tons burthen can come close up to the town. In 1834 the vessels sailing at Galatz, of which 87 were Russian and 31 Ionian; the rest were Austrian, French, Sardinian, Turkish, Neapolitan, and Servian. The population is about 12,000.

Focşani lies on both sides of the Mijov, a small stream which joins the Nistru between Moldova and Wallachia in 45° 41' N. lat. and 27° 16' E. long. It was formerly a large commercial town, but was almost destroyed in 1789, during the war between the Russians and the Turks. It was partly rebuilt afterwards, but was set on fire in 1822. It has few tolerable inns in the town, and contains several Greek churches and a convent. The population is about 2000. It is about 45 miles west from Galatz.

The population of Moldavia, according to the census of 1833, amounted to 450,000. It consists chiefly of Wallachians, Jews, Armenians, and gipsies. The law has prohibited schisms, and has connected with that of Wallachia, from which it is separated only by a political boundary, having been originally the same country.

Moldavia has been subjected to great devastations by the several armies which invaded the Byzantine empire, and a large number of its subjects, dispersed from the kingdom, settlers, retired to the west of the Carpathian mountains, in the present country of Hungary. About the middle of the thirteenth century a colony of the same inhabitants re-appeared in the Moldavian principality, which is called by the Turks and the natives Bogdania; whilst the name of Moldavia is derived from a river bearing a similar appellation. There must have been in the above-mentioned colony an admixture of Slavonians, as the name of the chiefland is Slavonic, and indeed the language of the inhabitants, who call themselves Romans, Roomoon, consists of Latin with an admixture of Slavonic. Divine service is performed in the Slavonic tongue.

From this time the rulers of Moldavia, called voynovers (a Slavonic term which signifies military leader), were often subject to the kings of Hungary, but also frequently asserted their independence, until they submitted to the protection of the Porte in 1537. Until that time, the Governors or the voynovers, who acted according to the advice of his father Stephen, endeavored to ensure by a voluntary submission privileges which it would have been impossible to obtain if the country had passed under the dominion of the Ottomans by conquest, an event which was likely, as the country was again subjected to the Turks; and indeed the language of the inhabitants, who call themselves Romans, Roomoon, consists of Latin with an admixture of Slavonic. Divine service is performed in the Slavonic tongue.

These conditions were maintained in the main points. Moldavia was however exposed to several wars which were carried on between Turkey and Poland, as the latter country had an old claim on the principality, which was finally abandoned by the peace of 1623.

In 1711, 1715, 1737, and 1771, the privilege of electing the voynovers, and nominated to that dignity the Greek princes of the Fanar. [Fanariots.] The princes or voynovers of Moldavia, called also hospodars, governed with the assistance of a council, called a divan, composed of twelve members, of whom one was appointed by the Sultan, and the rest were chosen by the council of the metropolitan, whose ecclesiastical dignity entitles him to a permanent seat. The laws were administered according to a code framed after that of Justinian. There were a great many offices, several of which were copied from those of the Greek empire. The national army was composed of about 6000 men.

The tribute paid to the Porte was not so oppressive as the monopoly of trade: several articles, as wheats, timber, and cattle, were exported to Constantinople, and bought from the inhabitants of the country, to which amount was added one-fifth of the current market-price. As the hospodars were obliged to give considerable presents to the Turkish officers, and as they also sought to enrich themselves, the country was heavily burdened with a most oppressive taxation.

Russia has long wished to extend her influence over this province. With this view, in 1710, Peter the Great made a campaign, which turned out unsuccessful, and he only escaped destruction by the prudence of his wife Catherine, who bribed the commander in order to obtain a surrender of arms. Moldavia was occupied by the Russians in 1739, under field-marshall Munnich, but was evacuated by the peace of Belgrade. By the tenth article of the treaty of peace concluded between Turkey and Russia, at Koochook Kirmandik in 1774, Russia stipulated for several advantages to Moldavia and Wallachia, and to herself for permission to intercede with the Porte in favour of the above-mentioned principalities. The fourth article of the treaty of Yaasy, Jan
9, 1792, confirms all the privileges of the two principalities, and the inhabitants from the payment of tribute for two years. By the treaty of Bucharest, 1812, an independent part of Moldavia, situated on the left bank of the Pruth, was ceded to Russia, the rights and privileges of the two principalities were confirmed, and a release from tribute granted.

The events of the Greek revolution had a fatal influence on Moldavia, which was entered by Prince Ipatiani at the head of a troop of the Heterists, or Greek patriots; he was defeated and obliged to escape to the Austrian territory, but the Turks finally occupied both the principalities, committed great excesses. This led to many demands on the part of Russia, which were temporarily adjusted by the treaty of Acreman in 1826. At the peace of Adrianople, which followed the war of 1826 and 1829, the prospects of the principalities were much improved by the separate article in that treaty, concluded on the 2nd September, 1829, by which it was stipulated 'that the hospodars should, instead of seven years, as had hitherto been the case, be invested with their dignity for life, except in cases of voluntary abdication or for the crime of murder. The same hospodar was to administer the internal government of their provinces, with the assistance of their ducan, according to their own pleasure, but without any infracion of the rights guaranteed to the towns in the Grand Signor's dominions (ordinances of the sultan), nor shall their administration be disturbed by any command tending to the violation of those rights. All the fortified points and cities occupied by the Turks on the left bank of the Danube were to be absolutely evacuated by them, and the author of all those wrongs in the principalities, and those who possessed real property there were obliged to sell it in the course of eighteen months. The principalities are relieved from all those contributions of corn, provisions, cattle, and timber, which they were bound to furnish both the hospodars and the same hospodar to administer the internal government of their provinces, with the assistance of their ducan, according to their own pleasure, but without any infracion of the rights guaranteed to the towns in the Grand Signor's dominions (ordinances of the sultan), nor shall their administration be disturbed by any command tending to the violation of those rights. All the fortified points and cities occupied by the Turks on the left bank of the Danube were to be absolutely evacuated by them, and the author of all those wrongs in the principalities, and those who possessed real property there were obliged to sell it in the course of eighteen months. The principalities are relieved from all those contributions of corn, provisions, cattle, and timber, which they were bound to furnish both the hospodars and the

In 1661, pleased by his predecessors. With its literature and economy, it is a very beautiful country, and has the disadvantage of resembling each other too closely. The portrait marks the beginning of Molière's tendency to sketch character, though character is here subservient to incident. In 1654, having returned to Languedoc, he produced his second piece of 'Le Dépit Amoureux,' which was likewise successful. The Prince de Conti was so pleased with his productions as to make him director of the entertainments which he gave in the province, and even to offer to him the place of secretary. Molière however refused this offer. After returning four years in Languedoc, the company quitted that province for Grenoble, where they played during the carnival. They then went to Rouen, and finally to Paris, where Molière was introduced to the king. Louis XIV., before whom his company played the tragedy of 'Nicomedé,' in 1658, was so pleased with it that he invested him with the livery of the old Louvre. Molière felt that in tragedy his company was inferior to that of the Hôtel de Bourgogne, and therefore, when the play was ended, he came forward and observed, 'It is my misfortune to possess such excellent originals, and hoped that the king would allow them to play the little comic pieces which had been successful in the provinces. The king granted the request, and the piece, which was one of those early works of Molière which have not been collected, formed a part of the stock. He wished the company to remain at Paris, gave them the title of 'Troupe de Monsieur,' and allowed them to play, alternately with the Italian comedians, at the theatre called Le Petit Bourbon. In 1660 they removed to the Palais Royal.

In 1658 Molière's early pieces of 'L'Etourdi' and 'Le Dépit Amoureux,' which had been acted with such success in the provinces, were played with great applause at Paris, and in 1659 was produced his celebrated 'Précieuses Ridi- cules,' which was so successful that they were trebled on the second day of performance, and the piece notwithstanding had a four months' run. With this comedy the fame of Molière may be said to begin; the modern reader may find in it only an ordinary farce, but the Parisian public then saw in him a strong and strong prouyter of prevailing characters and manners It is written in prose, and the design is to ridicule those ladies, called Précieuses, who indulged in an affected way of talking peculiar to their time and nation, whose character, 'Le Coq Imaginaire' with great success, though it was not so popular as its predecessors. It is ingeniously con- structed, but it is not so much an exhibition of character as the 'Précieuses.' Don García de Navarre, brought out by Molière in 1661, was unsuccessful, and injured his reputation. It is called an heroic comedy, and is a weak, heavy production, scarcely readable. His fame was again raised by the 'Ecole des Maris,' which was pro- duced in the same year with great success. The characters of this latter piece are the two principalities, and in this piece Molière outshone the two of the brothers in the 'Adelphi' of Terence. An excellent character piece followed in the same year, called 'Les Fâcheux,' which perhaps exhibits Molière's peculiar talent more than any of his other plays. This piece is the type of the character, and in proportion as there is more or less of character to draw, does Molière become strong or weak. The object of 'Les Fâcheux' was to exhibit every species of disagreeable person in one short drama, and though the plot is nothing, the characters are always alive and natural, as a man who talks of nothing but hunting, a composer, a carl-player, a duellist, &c., pass in quick succession, and present a most happy pantomimic picture of the times. In 1662 appeared 'L'Ecole des Femmes,' which had no very great success in Paris; although it was a most interesting character, Agnes, is the original from which Wycherly has taken his Mrs. Pinchwife, in the 'Country Wife,' subsequently altered by Grierick into the 'Country Girl.' Molière was so indifferent at the slight success of this piece, that he wrote another, called 'La Critique de l'Ecole des Femmes,' in
Dandin, which is a droll little farce, Molière ventured on a second representation of 'Le Tartuffe,' to the great indignation of the bigots. The theatre was crowded to excess, and the piece was just about to begin, when a prohibitory order arrived from parties who held authority during the absence of the king, who was in Flanders. The actors, not having received this appetiser, returned the spectators their money, and extinguished the lights. Molière instantly despatched two of his actors to the king, to solicit his protection; and on their return with an order in their favour, the piece was played without interruption. Of the laugh of this second representation, so well known to the English public by the imitation called 'The Hypocrite,' there is no doubt; but whether religious imposture is or is not a fit subject for ridicule on the stage, is a question we leave open to the opinion and feelings of our readers. Monsieur de Porquerusse, a farce representing a pompous country-gentleman in a large metropolis, and containing an incidental satire against the physicians, was represented in 1669 with great success, and the famous 'Bourgeois Gentilhomme,' brought out in the following year, was equally fortunate. Thus, although in five acts, it is a farce of the most extravagant kind, and being, as it is called, a comédie-ballet, the author has allowed it at the close to run almost into a pantomime. In construction it is a curiosity, but on the stage, it would look a very pretty piece that go by the name of 'comédie-ballet;' so easy is it to avoid difficult unravellings by the introduction of dances. Several of the pieces named above belong to the class, although they have not been so specified. In spite of their success, the author was certainly too fond of his piece, and allusions are perhaps more frequently made to it than to any other play of Molière's. The pompous ignorance of the principal character and the pretensions of several of his fellow-masters are extremely laughable; but as far as construction goes, it is a mere succession of farcical incidents.

In 1672 Molière produced his 'Femmes Savantes,' one of his best comedies, in which the learned ladies and writings of the time are admirably satirised. Its success however was not so great as that of the first 'Tartuffe.' In the same year appeared 'Le Médecin malgré lui,' a humorous attack on the physicians, well known to the English by Fielding's version, entitled 'The Mock Doctor.' With respect to the date of the celebrated comedy 'Le Tartuffe,' there is a little difficulty. In collections of Molière's works it is placed at some distance after the 'Misanthrope,' and is dated 1667; but some lines in the 'Misanthrope' appear to allude to a book which the bigots of the day, offended by the 'Tartuffe,' published as Molière's, in order to injure his reputation. The question is also whether Molière's account of making that first three acts of 'Le Tartuffe' were played in 1664, but that the entire piece was not acted till 1677. However this may be, on its very first production the more bigoted part of the community were enraged; and such earnest applications were made to the king that he commanded the piece to be withdrawn. The representations of Molière induced the king to revoke this order, but Molière did not consider it prudent to perform it at once. About the same period he produced the insignificant little piece, 'Melicerte' (a mere fragment), 'Pastorale Comique,' and 'Le Sicilien;' and 1668 appeared his 'Amphitryon,' a clever version of the 'Amphitryon' of Plautus, altered by the addition of a wife to Sosia, and the substitution of a prophecy of the birth of Hercules for that of a son. The title of 'Le Précieuses ridiculées,' which was brought out in the same year, but played at first with little success, owing, it is said, to its having been written in prose, which the audience did not think calculated for pieces of five acts. It is one of Molière's very best pieces; moreover, and for certain and bestavoured upon whose supposed to be imputed from the Eucloe of Plantus's 'Au-

...
MOL

strength lies in the delineation of character. His plots are often excessively inartificial and improbable, but in character he is almost unrivalled. He also enters deeply into the humour of a comic situation, though here it is rather difficult to measure his merits by a right standard, as many of his most striking situations are notoriety borrowed from the Italian comedies. On character therefore alone rest his unequivocal pretensions to fame, for even if the idea be borrowed from other writers, still the minute portraiture of an individual character, with all its propensities and bearings, is so often effective in itself. Their comic effect may be pul-
rowed, the execution must still be original. He has naturally run into the failing, too common with those who make distinctive character their principal object, of degenerating into mere caricature. The Molina, in the bol of a single passion or whim, the omission of the qualifying tints of real life necessarily throws out the single character-
stic so prominently, that caricature almost necessarily arises. The personages of Theophrastus and La Bruyère become caricatures, from their representing certain in qualities taken abstractedly, instead of a mixture such as is observable
in real life.

Besides his dramatic works, Molière translated nearly the whole of Lucrètius, but all his translation has been lost, excepting that from the base, with the additions.
His works have been so frequently published, and can be so easily procured in every shape and size, that it is almost useless to point out any particular edition. A very good one was however published at Paris in 1698, in which the French names are prefixed, with some, and which thus shows that Molière always played himself the principal comic parts, and also forms a very agreeable illustration to the dramatic history of the times.

In the original edition just published with woodcuts by Johannot.

MOLINA, LOUIS, born at Cuenca in Castile, entered the order of Jesus in 1553. He studied at Coimbra, became a learned divine, and taught theology for twenty years in the college of Evora. He died at Madrid in the year 1600. He wrote commentaries upon Thomas Aquinas, and a treatise 'De Justitia et Jure; but the work which has rendered his name famous as the head of a school of theology is his book 'De Concorria Gratiae et Libert. Absoluti,' published and republished, as it afterwards was
published after. In this work Molina undertook the task of reconciling the free-will of man with the foreknowledge of God and predestination. He observed that the early fathers who had preceded the heroey of Pelagius had defined pre-
determination in its widest sense, to the extent that those who have it, are limited to that extent in their own
eternity of the use which each individual would make of his free-will; but St. Augustine, who had to oppose the Pelagians, who granted too much to free-will, spoke of pre-
determination in its narrowest sense, and said that man requires grace in order to do good, but that God never fails to grant this grace to those who ask it with fervour. He also asserts that man has it in his power to answer, or not, to the calling of grace.

The opinion of man of an seventeenth century, who was the founder of the theory of piety and devotion called Quiet-
ism, of which Fénelon and Madame Guyon were distinguished supporters. [FENELON]

MOLINISTS. [MOLINA.]

MOLLEBART. [BAREM LAND.]

MOLLUSCA. [MALACOLOGY; CONCHOLOGY; CON

character, and the various articles relating to this class of
invertebrate animals.]

MOLOSI, a people of antient Epirus, who occupied the southern part of that country along the banks of the river Arachus, and extended to the shores of the Ambracian Gulf. Their state was previously a union of the Molosi, under their king Alexander, about 320 B.C., gained the pre-
ponderance over the rest of Epirus, which they maintained under his successors, of whom Pyrrhus was the most cele-
lated. [PYRRHUS.]

After the defeat of Perneus, Paulus Amilicus, the Roman general, ravaged Epirus and the Molosi, as well as the rest of Epirus, and destroyed their towns. The effects of the devastation which he caused were still visible in the time of Strabo.

MOLOTHUS, Mr. Swainson's name for a genus of birds placed by him in the subfamily Icterina, under the family Sturnidae, with the following

Generic Character.—Bill very short, thick, fitch-like, conic, entire; the culmen not flattened, but only arched a little on its larger end. Wynter says, the bill is pointed; the first quill longest. Tail slightly rounded. Middle toe as long as the tarsus; lateral toes of equal hind; tarsus shorter than the tarsus. All the claws rather small, and fully curved.

Example.—Pecora, S. (Icterus Pecora, Linn.); Emberiza Pecora, Wils. (Fringilla Pecora, Gm.).

Description.—Male.—Head and neck brown, inclining to black; the rest of the plumage shining black, glossy with a violet reflection. The upper tail coverts are a broad shot with greenshadow above; irises hazel; legs and claws black.

Female.—Sooty-brown above, pale beneath.

Young.—Like the female, with the breast spotted.

Habits, Food, Reproduction, &c.—This species, which is the Com-Pen Bird, Coo's nest. As a constant companion to this ordinance they do not pair, but polygamy prevails among the flock without exciting any great jealousy; though now and then there may be a battle, as is usual in such cases, in which the strongest generally pre-

The egg, which is nearly oval, is laid in the leaves of water-plants: some-
times the ground-colour is white tinged with green and sprinkled with spots of brown, and sometimes pure white with spots of black or grey spots. It is a very little larger than that of the blue-bird. The egg is always hatched before the legitimate one. Were this not the case of nature, the species would probably perish; for the legitimate nestlings would suffocate the newly-
hatched young, as the latter actually does suffocate the young of its foster-mother, when they afterwards come into existence.

The favourite nests appear to be those of the Red-eyed and White-eyed Flycatchers, and the Maryland Yellow-
throat; those of the Blue-bird, the Indigo Bird, the Chip-

pew, the Song Sparrow, the Blue-eyed Yellow

Warbler, the Blue-grey Flycatcher, the Golden-crowned

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Thrush, and Wilson’s Thrush, are however also selected as places of deposit. From the various and interesting accounts of this curious phenomenon we select that of Nuttall, whose personal observations we proceed to lay before the reader. When the female is disposed to lay, she appears restless and dejected, and separates from the unregarding\footnote{Stealing through woods and thickets, she pries into the bushes and brambles for the nest that suits her, into which she darts in the absence of its owner, and in a few minutes is seen to rise on the wing, cheerful and relieved from the anxiety that oppressed her, and proceeds back to the flock she had so reluctantly forsaken. If the egg be deposited in the nest alone, it is uniformly forsaken; but if the nursing parent have any of her own, she immediately begins to sit. The Red-eyed Flycatcher, in whose beautiful basket-like nests I have observed these eggs, proves a very affectionate and assiduous nurse to the uncouth foundling. In one of these, I found an egg of each bird, and the hen already sitting. I took her own egg and left the strange one; she soon returned, and, as if sensible of what had happened, looked with steadfast attention and shifted the egg about, then sat upon it, but soon moved off, again renewed her observation, and it was a considerable time before she seemed willing to take her seat; but at length I left her on the nest. Two or three days after, I found that she had relinquished her attention to the strange egg, and forsaken the premises. Another of these birds however forsook the nest on taking out the Cow-bird’s egg, although she had still two of her own left. The only example perhaps to the contrary of deserting the nest when solely occupied by the stray egg, is in the Blue-bird (Blue-Bird), who, attached strongly to the breeding-places, in which it often continues for several years, has been known to lay, though with apparent reluctance, after the deposition of the Cow-bird’s egg. My friend Mr. C. Pickering found two nests of the Blue-eyed Yellow Warbler, in which he had deposited an egg of a Cow-bird previously to any of their own; and unable to eject it, they had buried it in the bottom of the nest, and built over it an additional story! I also saw, in the summer of 1830, a similar circumstance with the same bird, in which the Cow-bird’s egg, though incarcerated, was still visible on the upper edge, but could never have been hatched. At times, I think it probable that they lay in the nests of larger birds, who throw out the egg, or that they drop the eggs on the ground without obtaining a deposit, as I have found an egg of this kind thus exposed and broken. I have also remarked sometimes two of these eggs in the same nest, but in this case one of them commonly proves abortive.’ The same author in 1831 saw a hen Red-eyed Flycatcher sitting on two eggs and one of the Cow-bird, and he adds that this species, \textit{Vireo olivaceus}, and (more lately) \textit{Vireoidea olivacea} of Bonaparte, \textit{Muscopapa olivacea}, Linn., appears to be its usual nurse. He has known this \textit{Vireo} begin her incubation with only an egg of each kind, whilst in other nests he has observed as many as three belonging to the \textit{Vireo}, as well as that of the intruder; and he suggests that, from the large size of the egg, the nest probably immediately feels full to the incubating bird, so as to induce her to sit directly, when the larger egg, being brought nearer to the body of the nurse than her own, is first hatched, generally, as he believes on the 12th or 13th day. The legitimate eggs are hatched about a day later, are often stirred by the larger bird, and the stranger, which is affectionately nursed by the poor dupe of a dam, and when the young are dead, are conveyed to a distance by the parent and dropped; but they are never found immediately below the nest, as would be the case, if they were ejected by the young Cow-bird, as is done by the young cuckoo. [\textit{Cuculina}, vol. viii., pp. 208-9.]

Indeed,” continues Mr. Nuttall, “as far as I have had opportunity of observing, the foundling shows no hostility to the natural brood of his nurse, but he nearly absorbs their whole attention, and early displays his characteristic cunning and self-possession. When fully fledged, they quickly desert their foster-parent, and skulk about in the woods, until at length they instinctively join company with those of the same feather, and now becoming more bold, are seen in parties of five or six in the fields and lanes gleaning their accustomed subsistence. They still however appear shy and watchful, and seem too selfish to study anything more than their own security and advantage.” The Cow-bird is but a poor songster. Its little migrations are generally made in the night or in the grey of the morning.

Geographical Distribution.—Besides the localities noted above, this species is also found in Mexico; but, according to Audubon, it is rare and a visitor only in Louisiana. The Prince of Musignano, in his \textit{Geographical and Comparative List}, gives ‘Africa generally’ as its locality.

Mr. Darwin (\textit{Journal and Remarks}) states that another species (\textit{Le Trouvel. commun of Azara}), of a peculiar black and blue colour, with a metallic lustre, feeds on the plain near Madrid in large flocks, mingled with other birds. Several, he says, may often be seen standing on the back of a cow or horse. While perched on a hedge, and plunging themselves in the sun, they sometimes attempt to sing, or rather to hiss: ‘the noise is very peculiar; it resembles that of bubbles of air passing rapidly from a small orifice under water, so as to produce an acute sound.” Azara states that the bird, like the cuckoo, deposits its eggs in other birds’ nests.

I was several times told by the country people that there was some bird with this habit; and my assistant in collecting, who is a very accurate person, found a nest of the sparrow of the country (\textit{Spaonatrachis}) with one egg in it larger than the others, and of a different colour and shape. The egg is now in the museum of the Zoological Society of London.

MOLSHEIM. [Rhin Bar.]

MOLTON, SOUTH. [Devonshire.]

MOLUCCA ISLES, constitute a part of the Indian.

\textit{Molothrus Personii.}

a, Male; b, female; c, young. (Wilson.)
Archipelago, and are situated between 5° N. lat. and 9° S. lat., and between 122° and 131° E. long., being dispersed over the sea, which extends from the eastern coast of Celebes to the western coast of Papua or New Guinea. In a more limited sense, and properly speaking, the Archipelago is only applied to the islands from which spices are obtained. These islands are, for instance, the Ambonaya, Banda, Ceram, &c. Others apply the term only to the northern group, or the islands lying in the Molucca Strait, between Celebes and Gilolo, including the last-mentioned.

Soil and Surface.—We are very imperfectly acquainted with the natural features of these islands, as the Dutch, who have settled on several of them, and who keep their sovereigns in a considerable degree of dependence, have been careful to exclude all other Europeans, and have succeeded in doing so, except for a few years during the wars between 1798 and 1814. It is however known that nearly all these islands are mountainous, and that some of them contain peaks which rise to the height of 7000 or 8000 feet. The rocks of which they are composed seem to be mostly of a volcanic nature, and there are at least eight volcanoes still in action. These volcanoes seem to be the southern extremity of that extensive series which commences on the north in the peninsula of Kanti-chin, and extends through Korea, Japan, and the Philippines, enclosing the eastern shores of Asia, as it were, with a volcanic barrier. On the other hand, it may be said that the most southern of these volcanoes is the highest in elevation. Dr. Leyden, who made a complete survey of this barrier, which skirts Eastern Asia on the south, and proceeds from the Moluccas westward through the Lesser Sunda Islands and Java, where it terminates. Like other volcanic countries, the surface of all these islands is very rugged, and very consistantly to a very great degree of fertility; and the coast, which in many parts rises from the water's edge to a considerable elevation with a very steep declivity, contains a great number of harbours for every kind of vessels. Except where the declivity is too steep, the most sociable and luxurious colonies such as that of the Komoro in Java, and that of the Chinese in the Moluccas, are built in the gulfs and inlets of these islands. For instance, there are some hundreds, of which however many are small and uninhabited. They may be divided into three groups: the Gilolo group, or Proper Moluccas; the Ceram group; and the Timor Laut group. The Gilolo group is the most southern, and constitutes the “islands, 2° S. lat., and contains the islands of Gilolo, Morty, Mandioly, Batchian, Oby, and Mysole, with numerous smaller islands lying between and about them, among which the island of Ternate and Tidur are the most important. In figure Gilolo resembles Celebes, being composed of four long peninsulas, which are connected near 10° N. lat. Its greatest length from south to north may be 220 or 230 miles, and its surface, on a rough estimate, about 8000 miles, or more than twice the size of England. The southern and north-eastern peninsulas rise into high mountains, whilst the southern attain only a moderate elevation. It seems to have a considerable population. The northern peninsula is or was subject to the sultan of Ternate, and the southern to the sultan of Tidur; but the two peninsulas, projecting towards the east have their own sovereigns. Morty rises with a gentle ascent to a considerable height, and is said to have good harbours. Mandioly and Batchian are separated from one another by a narrow strait, which affords good anchorage. They are of moderate elevation, and are governed by their own sovereign, to whom also the island of Oby belongs. The last-mentioned island is very little known. The islands of Ternate and Tidur are small, but lying only in 5° 30' S. lat., they are very fertile, and they are very populous. Their sultans possess the greater part of Gilolo, and also several districts on the eastern coast of Celebes. To this group belong two smaller groups lying farther north-west. The eastern group, called the Salibobo Island, consists of three large islands, Sulawesi, Tidulour, Salambao, and Kaburuan, and several smaller islands. The island of Salibobo has a good harbour at Leron, in the narrow strait which divides that island from Kaburuan. The western group, called the Sangir Islands, is much smaller and numerous smaller islands. Sangir Island is about 70 miles long; through its central part runs a ridge of high mountains, which terminates on the north in a volcano, which in 1711 made an eruption accompanied by a dreadful earthquake. The Ceram group occupies the middle, between 3° and 5° S. lat., and comprehends the two large islands of Ceram.
and Booro, and among the smaller ones, which lie to the south of them, the Spiece Islands, or Ambonya and Banda Islands, the principal export is cachou wood from Céram, as well as from Booro, which is about 75 miles long from east to west, and 38 miles wide. Its surface is also rugged, and rises into high mountains. Respecting the Spiece Islands, see AMBONYA and BANDA.

The Timor Laut group is the most southerly and least known. It consists of the large island of Timor Laut and four others of considerable extent, Larat, Little Key, Great Key, and Key Watcha, with several smaller ones. Timor Laut is about long and wide; but the other is nearly all we know of this and the adjacent islands. The island of Arron [Arroo], lying farther east, is also sometimes considered as belonging to the Moluccas.

History.—When the Portuguese were exploring the eastern seas in the beginning of the sixteenth century, they arrived at the Moluccas in 1510, and had hardly begun to form settlements when the vessels of Magalhães arrived from the east, and a dispute arose between the Portuguese and Spaniards respecting the possession of the islands, which lasted many years. The Dutch took these islands from the Portuguese about a hundred years afterwards, and, in order to secure to themselves the exclusive trade in nutmegs, mace, and cloves, they formed numerous small settlements on nearly all the principal islands. Thus in subjection, and, with their assistance, were enabled to extinguish all the spice-trees in the islands, except Ambonya and Banda, which they subjected entirely to their sway. In 1795, possession of the islands was left to the Dutch by the peace of Amiens (1801), when they were restored to the Dutch. The British again took possession of them in 1810, and again gave them up to Holland at the treaty of Paris in 1814. Since that time the Dutch have abandoned several of their larger establishments, but they still maintain several at Ternate, Tidor, and other places.

(Forest's Voyage to New Guinea and the Moluccas; Staunton's Voyages to the East Indies; Delano's Voyages and Travels; Crawford's History of the Indian Archipelago; Lander's Voyage and Description Geogr., Hist., et Commerciale des Javo et des autres Isles de l'Archipel Indien.)

MOLYBDENUM, a metal discovered by Scheele, in 1778, in a mineral which resembles and had been confounded with plumbago; for it, they also call it of molybdena. This mineral is composed of sulphur and molybdenum; and it has also been met with in other states of combination presently to be mentioned. This substance was first extracted from it by its discoverer; but it was afterwards reduced to its metallic state by Häckel, another Swedish chemist, and its properties have been since particularly examined by Bucholz and Berzelius.

The metal is obtained from the native sulphuret by reducing it to fine powder and heating it in aqua regia; by this process, it is converted into sulphuric acid, and the metallic oxide is reduced into molybdcic acid, which remains in the state of a white powder after being heated to expel the sulphuric acid; when this is very strongly heated with charcoal, it is reduced to the metallic state; or the metal may be procured by passing hydrogen gas at a high temperature over the acid in a porcelain tube. This metal is obtained as a porous mass or in globules, and has not yet been procured in the state of a button or bar. The grains are somewhat crystalline; sometimes they are of a silver-white color, and have a cold luster, and the rest of the oxidized metal has not much lustre, but acquires it by burning. Its density is 8.6. When long exposed to the air at ordinary temperatures, it appears to tarnish, but the oxidation is superficial; it may be exposed to air and heat, and is first converted into brown oxide, afterwards it becomes blue, and eventually molybdcic acid, which is white. This oxidation does not however take place completely, but only at the surface. Sometimes the metal takes fire at the moment of oxidation.

Ores of Molybdenum.—Oxide of molybdenum occurs enriching the sulphuret of molybdenum, and also between its laminae in thin layers. Its structure is thin fibrous, earthy, friable, and pellervent. Colour pale yellow or greenish. It has been obtained only in small quantity in Bretonland, Norway, and North America. Its composition has not been ascertained.

Molybdic acid also occurs in nature in combination with lead and silver.

Sulphuret of Molybdenum, Molybdenite, is the most common mineral of this metal. Decrude or molybdic acid, or crude molybdenum,mall solids, in hexagonal crystals. Cleavage very distinct, perpendicular to the axis of fracture. Hardness, 4.5. It is scratched by calcareous spar. Colour lead-grey, and streak the same. Fracture papery. Cleavage distinct, with numerous pebbles of Opaque. Specific gravity 4.591. Rubbed on paper, it leaves a grey metallic mark, and on porcelain a greenish one. Massive variety amorphous; structure foliated, granular. When heated by the blow-pipe on charcoal, emits a scorching smell. It has a very strong taste, and is injurious to the skin. It occurs in various parts of the world,—in England, France, Germany, and America; more especially however in Siam and Bohemia. It contains, according to Buchholz, 60 parts of molybdic and 40 of sulphur.
New Contrivance for adapting a Telescope to an Horizontal Dial, 4to, Dublin, 1668; ‘Journal of the Three Months’ Campaign of His Majesty in Ireland, with a Diary of the Siege of Limerick,’ 4to, 1691; ‘The Case of Ireland being bound by Acts of Parliament stated,’ 8vo, Dublin, 1696-1706-70-76.

( Account of the Family and Descendants of Sir Thomas More, Knt., Evesham, 1820, 4to; Hutton’s Mathematics, 1820, 4to.)

MOMBAÇA, or MOMBAS, is a town situated on that part of the eastern coast of Africa which is called the coast of Zanguebar, and in 4° 45’ lat. and 39° 28’ E. long. It is built on the eastern side of an island, which occupies the greatest part of the coast, but lies lost in the sea. The island is three miles long by two broad; the two streets which divide it from the continent are hardly half a mile across. The eastern strait constitutes the harbour of the town, which is one of the most perfect in the world. It has good anchorage ground at the entrance, sheltered by an extensive reef on each side; the shore is steep and rocky, that in many places whars is unnecessary. The cliffs surrounding the island are of madrepore, and rise with a steepness which seems to be the work of time. The town is built on the high tide, which occupies the most northern portion of it. The former, which was once inhabited by the Portuguese, is now inhabited by the Arabs. Some free coloured people and slaves constitute the population of the Black Town. The population latterly amounted to 10000, but has not been equal to 3000 or 4000. Though the Arab inhabitants of this town are poor, they cause their children to be instructed with great care in reading and writing, and in order that they may at the same time acquire a good knowledge of their religion, they are instructed in the Koran, and by the Koran are taught what is right and what is wrong, and what is the duty of a good man. The commerce is not considerable, and is mostly in the hands of some Banyans from Hindustan, who, during the favourable monsoon, send a small quantity of ivory and other produce to Bombay, for which they obtain in return rice and English manufactures.

Vasco de Gama visited this port in 1498, and was well received, but nearly fell a sacrifice to the treachery of the inhabitants. It was afterwards taken and burnt by Fransisco de Almeida in 1509, who did not keep possession of it. Twenty-three years later it was taken by Nuno da Cunha, after a stout resistance from the inhabitants, and was again reduced to ashes. It seems, that from that time the Portuguese remained in possession of it for nearly two centuries, and when they left it, it was in possession of the Imam of Muscat. It appears however, that he lost it soon afterwards by a rebellion of the inhabitants. In 1824 the Imam sent a force against it. The Arabs, who inhabit the town and adjacent coast, being aware that the British sympathize with the Imam, put themselves under the protection of the British, and hoisted the English flag, by means which they have preserved their independence. The Arabs are governed by a sheik, whose office is properly hereditary, but the course of descent has often been interrupted by intrigues and civil war.

(Owen’s Narrative of Voyages to explore the Shores of Africa, Arabia, and Madagascar.)

MOMENT OF INERTIA. [MOMENT, or Moment of Inertia.]

MOMENT. This word has been used in various senses. It simply means a motion, the word moment, from moemem, being found in several antient authors. Momentum was originally one rapid motion, whence our word momento is derived. It is now used to signify the amount of an effect of motion of the actual or conceived. Thus we have one in the article Virtual Velocities, another in Level, a third in Moment of Inertia, and a fourth, the most common of all, which we proceed to explain in our present discussion. The fourth sense is ‘quantity of motion,’ and we may observe that in this sense it is most usual, in our language, to adopt the Latin form momentum, instead of the abbreviation moment. It is impossible to give an actual definition of momentum, in simple terms: but the conception is obtained by those who observe that the effects produced by matter in motion (both notions are necessary) may be augmented either by giving the same motion to more matter, or greater motion to the same matter. Imagine a ballistic pendulum, and suppose a bullet of two pounds weight to strike it with a velocity of 100 feet per second. The excursion of the pendulum may, if it is found, be produced by a bullet of one pound weight striking with a velocity of 200 feet. The same effect being produced in both cases, though by different quantities of matter and different velocities, there is something which we can assert to be unaltered by the difference, and it is the smaller bullet with the larger velocity. This something is the momentum, or quantity of motion, a notion of a cause which is asserted to be the same when effects are the same. This mere definition would be useless except in connection with principles observed or deduced, by which it may be applied. That there is a reality in connection with it, all who know the difference between light and heavy, as these words are frequently used, are well aware. A heavy blow, for instance, does not mean a blow with a heavy body: thus the fall of a poker may give a light blow, while that of a book of one-tenth part of its weight may give a heavy one. The difference in these cases is that of momentum.

The velocity remaining the same, the momentum or quantity of motion produced by the two weights will be different, as the mass remaining the same, the momentum increases proportionally to the velocity communicated. But the peculiar proposition on which the utility of the term and the notion depends is this, that in all mechanical effects produced by matter in motion, the product of the mass of the moving body and its velocity will be the same in the two cases. Thus the preceding instance of a bullet 4 x V is 2 x 100 in the first case, and 1 x 200 in the second. And as long as M x V = 200, the same effect will be produced, if the pendulum be supposed so heavy that the addition of M to its mass is not worth considering.

MOMENT, or Moment of Inertia. Let us conceive a system of bodies possessing weight, and immovably attached to a fixed axis, round which the system can turn. It is known from experience, as well as deducible from the laws of motion, that the nearer the bodies are placed to the axis, the more rotatory motion may be communicated by a given force. The moment of inertia is a quantity given to a mathematical function of the masses of the system and of their positions with respect to the axis, on the magnitude of which the rotatory motion produced by a given pressure, acting for a given time, depends. This function is the sum of the products made by multiplying the number of units in each mass by the number of units in the square of its distance from the axis. Thus, if m, m', m", &c. be the masses of material points situated at the distances r, r', r", &c. from the axis, the moment of inertia is Mr + Mr' + Mr", &c. It is also the moment of the masses 1, 2, 3, &c. in a solid, and if dm be one of the elements of the mass, at a distance r from the axis, the moment of inertia is then r² dm, the integration being made throughout the whole extent of the solid.

Let A B be the axis, and let a pressure be communicated to the system at the point P, and such as would, were a single mass of the system placed at P, produce the system of that single mass only to revolve with a velocity v, being at the distance a from the axis. The momentum of this velocity is Pw. Let the system of m, m', m", in come
quence of this pressure, begin to revolve with an angular velocity \( \theta \) (measured in theoretical units [Angular]). The consequence is, that \( m, m' \) and \( m'' \) begin to rotate with velocities \( \omega \), \( \omega' \), and \( \omega'' \), and moments \( m \omega, m' \omega', m'' \omega'' \). Now if pressures which would just prevent this motion in the same time as the applied pressure generated it were

applied in the opposite direction, the three pressures so applied would counterbalance the pressure at \( P \). But [Pressure] the pressures which in the same time produce motions are to one another as the moments produced, so that if \( a.P_{0} \) represent the pressure at \( P \), those applied in the contrary direction at \( m, m' \), and \( m'' \) are \( a.m \omega, a.m' \omega' \), and \( a.m'' \omega'' \). and if the first be produced in the extremity of the arm \( a \), the others at the arms \( r, r' \), and \( r'' \). Hence \( a.m \omega r + a.m' \omega' r' + a.m'' \omega'' r'' \) must be the same as \( a.P_{0} x a \), whence it is evident that

\[
\theta = \frac{m \omega + m' \omega' + m'' \omega''}{a.P_{0}}
\]

the denominator of which is what has been called the moment of inertia of the system. Hence it follows that the communication of a given pressure at a given distance from the axis of rotation will cause an angular velocity which is inversely as the moment of inertia: if the masses or their distances were increased in such a way as to double the moment of inertia, the angular velocity produced by a given pressure would be only half of what it would have been before the change.

The moment of inertia may be represented by \( \Sigma m^2 \) (sum of all the terms of the form \( m^2 \)) and the whole mass by \( \Sigma m \). Let \( k \) be such a distance that if the whole mass were concentrated at that distance, the moment of inertia would not be altered: that is, let \( \Sigma m \times k^2 = \Sigma m^2 \). Then \( k \) is what was called the radius of gyration. [Gyration.]

The property which is most important in the actual determination of moments of inertia by the integral calculus is one in virtue of which the moment may be found with respect to any axis when it is known with respect to a parallel axis passing through the centre of gravity.

Let \( PQ \) be an axis passing through \( G \) the centre of gravity, and let \( AB \) be another axis parallel to \( PQ \) and distant from it by \( GR \) or \( k \). Then, whatever the moment of inertia may be when \( PQ \) is the axis, that with respect to \( AB \) is found by adding the moment of inertia of the whole system concentrated in \( G \), or \( \Sigma m x k^2 \). That is

\[
M. of I. (\text{axis } AB) = M. of I. (\text{axis } PQ) + \text{Mass of system} \times GR^2.
\]

Hence it appears that of all axes parallel to a given axis the moment of inertia is least for that axis which passes through the centre of gravity; so that, ceteris paribus, the greatest motion is produced by a given force when the axis passes through the centre of gravity. Of all the axes which pass through the centre of gravity there are three, each at right angles to the other two, which possess remarkable properties, and are called principal axes. [Rotation.]

From what has been said it may easily be supposed that the moment of inertia is as important in the consideration of rotary motions as the rectangle in mensuration. We shall therefore adopt a practical mode of finding the moment of inertia.

MOMORDICA ELATIFRUIT, or Wild Cucumber, an annual plant, of which the fruit, and more particularly the juice surrounding the seeds, are used in medicine. The ripe fruit is about two inches long, roundish, maricaceous, and glossy, possessing the power of ejecting, along with a mucilaginous greenish juice, the compressed ovate seeds; on which account it is called the squirting cucumber. The juice has an extremely bitter taste, and even very small quantities act violently on the stomach, producing numerous watery stools. It owes its power to its acid and drastic bitter extractive, to which the name of Elaterin has been given. This is soluble in alcohol, acet- and fat oils, but scarcely soluble in water or dilute alcohol, and while strong acids destroy it.

The very minute dose which is required of elaterin recommends it in many cases as a remedy in dropsey, especially ascites, but few persons can bear the violence of the action for any considerable time; two or three doses should never be allowed to elate the patient up to the dose. It is apt to cause vomiting as well as purging, and a dose of even a quarter of a grain may produce such extreme action as to sink the patient into a state of alarming debility.

It is peculiar that therefore only be used when the abdomen has previously tried without success, and it should be exhibited with great precaution. Surrounding the abdomen with a tight bandage will lessen the disposition to fainting, which is apt to be experienced from the rapid renewal of the fluid during the cavity of the peritoneum.

MOMOT, or MOTEOT. [Patriotism.]

MOMPAK. [Granada, New.]

MONA. [Anglesey; Man, Isle of.]

MONACHA. [Muscipula.]

MONACHUM (from the Greek μονη, alone; whence μονοχία, to live alone; and μονοχικός, a solitary, or a monk. In this its proper and original signification of a solitary monk may be considered as only another name for an anchorite, or anchoret (in Greek ἀναχωρητής), that is, a person who retires from society, and who having been corrupted to hermit (in the same way as the old and more correct ethnick has been corrupted into heathen), in Greek ἤπειρος, that is, a dweller in a desert or solitude.

The practice of retiring from the world for mortification or pious contemplation has been of most eminent in the Brahminical and other religions of the East, and was known even among the Jews long before the birth of Christianity. We need mention only the instance of the father of the church, St. Ignatius, to whom Catholic writers indeed are fond of referring, who was the founder of monasticism. The spirit of still more venerable antiquity is afforded by the Naza- rites, male and female, described in the sixth chapter of the Book of Numbers, whose "vow of separation" however lasted for only a certain fixed term.

In the earliest days of Christianity, many of the converts to the new religion, in their ambition to signalise themselves by extraordinary piety, adopted a remarkable severity in life and strictness of religious observance, whereas the same to be known by the name of ascetics (in Greek ἄσκητος), that is, literally, exercisers. Another name by which they are sometimes spoken of by the early ecclesi- astical writers is Spoudaios (σπουδαῖος), that is, zealous. The connection of these ascetics with the description of persons after a recent period of monks has been a subject of much con- cussion, the admirers and champions of the monastic system in general ascertaining the identity of the monks and ascetics, and their opponents maintaining that asceticism as it existed in the primitive church, and monachism, as apprehended in a later age, were two things wholly different.

The truth appears to be that the early ascetics were cer- tainly not universally, nor perhaps even generally, monks or solitaries; but still a separation, more or less rigid, from the world was the obvious mode of mortification and devotional abstraction, and one that was subsequently adopted by some of the ascetics, though most probably without any- thing resembling the vows and other methodical restric- tions which make part of monachism in its mature state.

The ascetics themselves, it may be here observed, are com- monly derived from the Jewish sect of the Therapeutae, or Essenians, who inhabited the banks of the lake Marceius, in the delta of Egypt, and who, having previously cast off much of the ancient reverence of their nation for the Meansae.
law, had embraced Christianity in great numbers very soon after its promulgation. 'The souter life of the Esseni,' says Gibbon, 'their fasts and excommunications, the community of goods, the love of celibacy, their zeal for martyrdom, and the warmth, though not the purity, of their faith, already offered a very lively image of the primitive discipline. (Decline and Fall, chap. 15.) And in a note, after admitting that Basnage, in his 'Histoire des Juifs,' has demonstrated, in spite of Eusebius and a crowd of modern Catholics, that the Therapeutae were neither Christians nor monks; he adds, 'It is true that they changed their name, preserved their monastic arts, and gradually became the fathers of the Egyptian ascetics.' Afterwards (chap. 37), it seems distinctly to represent the ascetics as the fathers of the monks. 'They,' he says, 'solemnly renounced the business and the pleasures of the age; abused the use of wine, of flesh, and of marriage; chastised their body, mortified their affections, and embraced a life of misery as the price of eternal happiness. In the reign of Constantine (A.D. 306-337) the ascetics fled from a profane and degenerate world to perpetual solitude or religious society. Like the first Christians of Jerusalem, they resigned the use or the property of their temporal possessions; established regular communities of the same sex and a similar disposition; and assumed the names of Abbot and Stylites of the desert.'

It is admitted on all hands that the immediate founders of monachism were two Egyptians, named Paul and Anthony. St. Jerome calls the former the author of that mode of life, and the latter the pattern of the illustrator etiam Antonius.' (Hieron, Ep. 22, ad Eustoch., c. 16.) Paul is designated the Thebæan. An account of St. Anthony, as he is styled, and of the progress of the monastic life, which extended from A.D. 251 to A.D. 356, has already been given under monasticism (iv. 96). We shall only note here that the first monastic community is said to have been established at Phæniun, near Aphroditopolis, in the Thebæa of Egypt, about the year 293 A.D., by a young wrestler called Paul, and the ascetics which had originally driven Anthony, Paul, and others to the deserts. Simply speaking however this and other monasteries appear to have been founded rather by Anthony's disciples, and in obedience to the spirit which his example and diffused, than directly under his own superintendence.

Of these disciples, the most eminent was Pachomius: if the Decian persecution and Anthony gave rise to monachism, monasteries owe their origin to Pachomius and the fact that first times. The custom which extended from A.D. 325 to A.D. 356, has already been given under monasticism (iv. 96). We shall only note here that the first monastic community is said to have been established at Phæniun, near Aphroditopolis, in the Thebæa of Egypt, about the year 293 A.D., by a young wrestler called Paul, and the ascetics which had originally driven Anthony, Paul, and others to the deserts. Simply speaking however this and other monasteries appear to have been founded rather by Anthony's disciples, and in obedience to the spirit which his example and diffused, than directly under his own superintendence.

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as they continued, without ceasing to make the wilderness resound with their hymns and psalms, and when it was time to eat, every man, taking his knife in hand, and proceeding to cut or dig for himself a dinner of herbs from the ground. Still another sort of old monks is made mention of under the name of Gyrovagi, or globe-headed Monks, and St. Benedict describes these as roaming about continually from province to province, getting themselves well entertained for three or four days at every cell they came to, mere slaves to their glutinous appetites, and in all things worse even than the Saracens.

From this sketch it is evident that the institution of monachism had arrived at a state of very considerable corruption both in the Eastern and the Western churches, when St. Benedict undertook to reform it, in the early part of the sixth century. [Benedict, Saint, and Benedictine Order, vol. iv., p. 213.] It does not appear however that St. Benedict, in drawing up what is called his Regular Monachorum, or Rule, had any intention of founding a new order of monks; he writes in the first place, that the observance of all the monasteries then existing. In point of fact, from the year 530, or 532, according to others, when he established his first monastery at Monte Cassino, till after the commencement of the thirteenth century, when the new monks were of a very different order, the appearance of the monasteries that were founded throughout Europe were of the Benedictine order. The Cistercians, Catecumeni, Grandmontensians, Premonstratensians, Cluniacs, &c, were all only so many varieties of Benedictines. The historians of the Middle Ages were at the same time, and in the same subdivision of this order in all, distinguished only by such local or other specific appellations, and by some slight differences of habit and discipline. The innovations introduced by Benedict were of course longest in penetrating to the more remote corners of Christendom; and perhaps in no other part of Europe were they so long in being generally received as in the British Islands. Bede and others denominate the system which prevailed among the British monks before the arrival of St. Augustine in 597, the monastic discipline of the eastern part of the rule of Pachomius. It is even disputed whether St. Augustine brought over with him the rule of St. Benedict; and at all events it is tolerably clear that that rule was not universally established in the British churches till the eighth century. In 714 St. Dunstan and his friend Oswald, in the reign of Edgar, after the middle of the tenth century.

Meanwhile in the Eastern church also monasteries and nunneries had been made the subject of legal regulation by a constitution of Justinian (Nov., 529), and the jurisdiction of the archbishopric of Constantinople and ecumenical patriarch, in the consularship of Belisarius, A. D. 535. By these enactments no monastery could be founded except on the ground that was first consecrated by the bishop within whose diocese it was, who was required to put up a cross on the spot. Persons were not to assume the monastic habit till after a three years' probation, and the abbots (συγμαθοι) were required, during this time, to examine well into their life, conversation, and fitness for the monastic profession. On being approved, the candidates assumed the dress and tonsure. Both free persons and slaves were alike admissible into monasteries, and were received on the same footing in all respects. A master might claim and take away his slave within the three years, if he could prove that the person was lustful and inclined to evil lives for himself, but not otherwise. Thus the monasteries became a place of refuge to slaves who had severe masters. The law ordained that the monks should eat together, and should all sleep in a common dormitory, each in his own bed, but an exception was made of the nuns, those called amachae and heterochoi (ἀμαχαῖοι καὶ ἑτεροχαῖοι), who led a contemplative life in perfection (such is the phrase), and were allowed to have separate cells. It seems that a man could leave his monastery and enter the world again, though it was conditioned that all the property which he had disposed of before entering the monastery (subject to some provisions for his wife or children, if he had any) became the property of the monastery on his entering it, if he chose to leave it, he could not take with him without the consent of the bishop. Lascivious and chastity were required of the monks, though at this time marriage was permitted to certain clerical persons, as singers and readers. Further regulations on the life of monks and nuns are contained in the 13th Article. A monk was prohibited from entering a female monastery (for one word only is used in these laws for male and female convicts), and a nun was prohibited from entering a male monastery, under any pretext whatever. Other regulations to the same general effect of ensuring chastity and the due observance of all monastic duties are prescribed by the charter.

In the earliest age of the monastic system, the monks were left at liberty as to many things which were afterwards made the subject of strict regulation by the laws of the church. St. Athanasius, in one of his epistles, speaks of a rule that they drank, that they ate and drink; bishops that drink no wine, and monks that do; bishops that are not married, and many monks that are the fathers of children. Originally, too, monks might eat at the table of a layman, and, although they might now and then, and more and more frequently for the sake of taking holy orders, it was not till the year 1311 that it was made obligatory upon them to do so by Pope Clement V. Nor was any vow of celibacy or any other particular vow formally taken by the earliest monks; it appears even that it was not usual for persons to embrace the monastic life with the intention of only continuing monks for a few years, and for those who had spent some time in a monastery actually to return to the world. We have just mentioned that the profession of these vows came at length to be regulated by the Imperial law.

The word nun, in Greek Νυνις, in LatinNonna, is said to be of Egyptian origin, and to signify a virgin. Another account is, that the original meaning of the Latin nonna, of which the word nun is a corruption, was the name of a sort of hermitage or cell, which was afterwards used for a nun's cell. Some of these ecclesiastical or canonical virgins, as they were called, appeared already to have formed themselves into communities, similar to those of the monks; but others continued to reside in their fathers' houses. The progress of the female order, which had for a long time, from the rules of the earliest converts, been the subject of the first form of the institution, to the strict regulation which characterised its maturity, moved on side by side with that of male monachism.

Monasteries are called by the Greek fathers not only Μοναστηρια and Νοναλιστηρια, but also sometimes ευχαιρια, that is a holy places; ευχαιρια, the residences of the abbots, ευρισκομενοι, or chiefs; μακρινα, inclosures; μακρινα, places of reflection or meditation, that being one of the principal reasons why it was very early applied. For a general account of the different sorts of religious houses and their government, see the articles Abbess, Abbot, and Convent.

The habits and other peculiarities of the principal orders of monks and nuns are extensively treated of in preceding articles. It is only to be wished to notice here, that the three vows of chastity, poverty, and obedience are taken by all monks and nuns at their admission. All, both male and female, likewise receive the tonsure, like all the ecclesiastics of the Roman church. In all the orders the candidate for admission must first undergo a novitiate, which varies from one to three years. The age at which novices may make profession differs in different countries; but the rule laid down by the council of Trent only requires that the party, whether male or female, should be of age, or at least 18 years old, to add, that in the modern constitution of monachism, the vows and status of a professed person, as indeed of all ecclesiastics, are by the law of the Roman church for life and indelible.

The greatest revolution by which the history of monachism has been marked since the establishment of the rule of St. Benedict, was the rise, in the beginning of the thirteenth century, of the Mendicant Friars. Of these an account has already been given under the word Friars; and further particulars will be found under the names of the several orders. The general dissolution of monastic establishments was one of the first consequences of the Reformation in our own and all other countries that separated from the Roman church. There are however to notice here, that a few Protestant monastic establishments some parts of Germany. Even in certain Catholic countries, especially in Germany and France, the number of these establishments has been greatly reduced.
within the last fifty or sixty years, and the wealth and power of some of those that still exist most materially curtailed. The reform of the German monasteries begun by the emperor Joseph II.; those of France were all swept away at the commencement of the Revolution; but some of them have been set up again, though with diminished splendour, since the restoration of the Bourbons. Since the revolution of the ancient and low church, several notable cathedrals have been erected in England and Scotland, as well as in Ireland. Monks and nuns of all descriptions still swarm in Italy, and in the countries of South America, lately subject to the Spanish and Portuguese crowns; in Southern Russia and the rich and fertile provinces within these few years. Even in modern times we still hear occasionally of the institution of a new order of monks. One, called the Congregation of the Blessed Virgin Mary, was established by the late Pope Leo XII. in 1826. But the most important new foundation in Ireland, which has been the Roman Catholic church since the first outbreak of the Reformation, is that of the Jesuits; for an account of which see vol. viii. p. 110. [Monk.]


MONACO, the Principality of, a small state in the Western Alps, bounded on the west by the small town of Beaulieu, on the east by the town of Mentone, and the village of Roquebrun, with a small territory about five miles in length along the coast, between Nizza and Ventimiglia, and extends inland about three miles. The country is rocky, being on the south low and on the north steep. The closest town is Antibes, which is close to the sea. The town of Monaco is built on a steep naked rock rising above the sea-coast, is fortified, and has about 1000 inhabitants, and a harbour for small vessels. Mentone, farther to the east, lies on the sea-shore in a narrow valley of fertile land, sheltered by the mountains from the north winds, and planted with olive and lemon trees: it has a warm southern climate, and carries on some trade by sea. Mentone has about 4000 inhabitants, and a handsome chimney which, though not conspicuous from the sea, has been in possession of the Genoese family of Grimaldi, under the protection of France and of the Genoese republic. The actual prince of Monaco, Onorato V., is a peer of France, and generally lives at Paris, but he acknowledges the king of France as his suzerain. The limestone of Mentone has long been used for lime, but the rocks have been little worked for this purpose. See also *Thomasin, Discipline de l'Eglise*, tom. i.; *Bingham's Antiquities of the Christian Church*, book vii.; and *Gibbon's Decline and Fall of Rom. Emp.*, chap. 37.

MONAGHAN, a county in the province of Ulster in Ireland, bounded on the north by the county of Tyrone, from which, toward the north-east, it is separated by the river Blackwater; on the east by the county of Armagh, from which it is separated by the river Moneymore; on the south by the county of Louth, on the south by that of Meath, and on the south-west by that of Cavan, from all three of which it is partly or entirely separated by the Lagan, a river of the Ulster province; and on the west and north-west by the county of Fermanagh. The form of the country is that of an irregular quadrangle. Its greatest dimensions are the diagonals of the quadrangle: one from north-west by south east, by the banks of the Blackwater; the other from west-north-west to east-south-east, from the neighbourhood of Clones to the neighbourhood of Inniskeen, on the Fane, 32 miles. The area of the county was given by Dr.

Beaufort (Memoir of a Map of Ireland), in 1792, at 450 square English miles, or 288,000 English acres, and by Mr. W. Acrefield, in 1812 (Account of Ireland, Statistical, and Political), at 450 square miles. In the Population Returns for 1831 the area is given, from the best authorities extant, at 277,472 acres; in the Map of Ireland published by the Society for the Diffusion of Useful Knowledge in 1840, the area is given at 313,636 acres; and in Lewis's *Topographical Dictionary of Ireland*, from the Ordnance Survey, at 327,048 statute acres, of which 9236 are unimproved mountain and bog, 6167 under water, and the rest cultivated land. The county is one of the most densely populated in Ireland, and is only exceeded by those of Dublin, Arvaugh, and Down: by the census of 1821 there were 195,536 inhabitants. Monaghan, the assize-town, is situated in the northern part of the county, 68 English miles in a straight line north-north-west of Dublin, or 76 miles by the main road inferior to Drogheda, Carrickmacross, and Castle Blayney, in 54° 15' N. lat. and 6° 57' or 58' W. long.

Surface.—The whole county is hilly, but the hills seem as if seaweeded in an irregular manner, without forming lofty ranges. The principal heights are, Slieve Baugh or Slieve Beagh Mountains, in the north, which define in that part the basin of the Blackwater, and those in the east, which rise about the sources of the Dodder and the Brosna, and are connected with the Fews Mountains of Armagh (Beauvoir, Monaghan, and others), which are 1035 feet high. The Slieve Beagh Mountains form an interesting waste along the boundary of this county and Tyrone, and are sterile without being picturesque.

The Geology of the county consists of a great variety of rocks, but the sandstone and limestone series predominate. The county is a small district, extending to Kingscourt in the county of Cavan, occupied by the new red-sandstone or red marl. This formation contains a valuable deposit of gypsum, in which however no workings have yet been commenced. The coal-field is immediately adjacent to the red-marl district on the east is a small coal-field. Though many trials have been made to obtain coal, none has yet been found of sufficient value to defray the expense of working; but one bed of 14 inches, another of 12 inches, and several smaller ones, have been discovered. The coal-field rests on a small tract of carboniferous limestone, which crops out from beneath it on every side (except where the coal and red-marl districts are contiguous), and is itself insolated in the transition district of the east of Ulster. Carboniferous limestone appears in that part of the county which lies north-west of a line drawn through Monaghan and Clones. The Slieve Beagh or Slieve Baugh Mountains in this part are composed of a wanton rock, which has been little worked for. These rocks were long considered to belong to the true coal formation; and sanguine but fallacious hopes were long entertained of the discovery of workable beds of coal. This part of the county is comprehended in the Leinster coal-scouting district; in the north of this county the yellow sandstone and sandstone conglomerate, which form the lowest members of the limestone series, appear in some places along the northern border.

The rest of the county is occupied by the rocks of the transition formation, which cover an extensive district in the east of Ulster and north of Leinster. These transition rocks consist of grunwacke slate, fusa-clay-slate, fusa-slate, and chlorite slate, with hornblende slate, schistose phorphyry, and other metamorphic rocks, where the transition and crystalline rocks have worn one another out, or approach near each other. Escars, or eskers, which are low steep ridges of alluvial matter, usually composed of clay and limestone gravel, are found in several parts of the county. Those near Tullow, not far from Carlow, are composed entirely of sand, and are called "ahags" or "sandy banks." The yellow sandstone, sandstone conglomerate, and clay-slate, form the lowest members of the limestone series, appear in some places along the northern border.

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Hydrography and Communications.—The northern part of the county belongs to the basin of the Blackwater, the southern to the basin of the Fane and the Gleyde, and the western to the basin of the Erne. The Blackwater has about 10 or 12 miles of its course along the north-eastern boundary, and several streams which rise in the Slieve Beagh Mountains fall into it in this part. The Fane rises not far from Castleblayney, and flows south-east, partly upon and partly within the border of the county, for 12 or 15 miles, before it enters the county of Louth, through which it flows into the Irish Sea. The Gleyde rises in the south part of the county, and has a course parallel to the Fane, and the northern border of the county; this considerable stream, has about 13 miles of its course along the southern boundary of the county. The Finn is the most important of the streams which flow into the Erne; it rises in the Slieve Beagh Mountains, and has about 20 miles of its course in this county. None of these rivers are navigable. There is one navigable canal, now in progress, the Ulster Canal, which is to unite Lough Neagh with Lough Erne. It commences in the river Blackwater at Charlemont, and crosses the county in a south-west direction near Monaghan, and Clones. Its whole length, when finished, will be about 46 miles, of which about 20 will be in this county.

There are several loughs, but all of them small. The principal are: Muckno, Lough, near the eastern part of the county, and Inner Lough, on the south-west border, near Rockcorry. Muckno or Barrac Lough is of very irregular form, about 3 miles long from north-west to south-east, and in some parts about a mile wide. The water of Lough runs through it. Lough Inner is about 3 miles long from east to west, exceedingly narrow throughout and of very irregular form. Lough Enny, near Ennely, and Glis Lough, near the town of Glislough, in the northern part of the county, and Loughs Carnskehe, Ballynagore, Lough Rockcorry, Newbliss, and Lough Long, near the village of Drum, in the western parts; the White Lough and Corlin Lough, near Ballybay, in the central parts; Lough Egish, or Eglish, Lough Avaghon, and Lough Down, near Ballylany, in the southern part of the county, with a number of smaller waters. The Fane runs through it. Lough Inner is about 3 miles long from east to west, exceedingly narrow throughout and of very irregular form. Lough Enny, near Ennely, and Glis Lough, near the town of Glislough, in the northern part of the county, and Loughs Carnskehe, Ballynagore, Lough Rockcorry, Newbliss, and Lough Long, near the village of Drum, in the western parts; the White Lough and Corlin Lough, near Ballybay, in the central parts; Lough Egish, or Eglish, Lough Avaghon, and Lough Down, near Ballylany, in the southern part of the county, with a number of smaller waters. The river Fane runs through it. Lough Inner is about 3 miles long from east to west, exceedingly narrow throughout and of very irregular form.

The usual rotation of crops on a small farm is, potatoes, wheat or oats, straw, clover, then pasture; another not usual rotation is, potatoes, oats, barley, wheat or oats, clover. The wheat grown is generally red wheat, and it is of inferior quality; the potatoes are mostly imported. The farming is of two kinds, the one is being grown, and the other on a naked fallow; partly to feed the stock which are allowed to grow up with it; and partly to the want of proper machines for winnowing and screening it. It is not uncommon to thresh in the field, and winnow it in the open air by masses being drawn backwards and forwards, which are sometimes driven by carts or by horses. As the wheat is used for animal food, and not for flour, the farmer makes the most of it, and he is in a great measure governed by the price, which is paid for it.

From the want of good pasturage, no cattle are fattened, except a few on the demesnes of the gentry. The cattle of the district are chiefly of the native Irish breed, of a reddish colour with a streak of white along the back. They are mostly brought from Connacht, Kerry, and Hesse in Germany, and are of the hardy and shaggy breed. Many of them are housed in winter, but those of the poorer farmers get little hay, only straw, and the run of the stubble-ground. The breed of cattle has been much improved; the Devon, Durham, and Hereford breeds are now generally kept. The shorthorn breed of cows. The native breed has been crossed in several instances with the imported stock. The price of cattle is declining.

The quantity of butter made has much increased from the internal intercourse that has been established, the supply of Monaghan has trebled of late years. It is chiefly taken to market there, but some of it is sent to Newry. It is considered to be inferior in the making by the smoke of tim

The following particulars from the Reports of the Commissioners for inquiring into the State of the Poor in Ireland (Parliamentary Papers for 1836, vol. xxix.), for reference chiefly to the barony of Magheraugh, but may be probably extended, without much variation, to the county at large. The soil of the barony is mostly a good loam, upon a firm subsoil of clay mixed with lime, gravel, or sand. In the elevated parts the soil is moory or peaty, with the sub-soil clayey. Lime, dunghill, ashes, and peat are used for manure; lime is dug near Monaghan and Glaslough (barony of Trough); marling is little practised, but burning the soil is common, though very injurious in most cases. The barony of Monaghan is altogether a Lilage barony, except near the river Lagan, where there are some very good, which some young cattle are kept: there is no grazing-land in the district capable of fattening cattle. Sheep are not rare that the assistant commissioners did not see one in the barony, except in gentlemen’s demesnes. The farms are so small as to admit of keeping them with a small number of hands; a farm of 8 to 10 acres; a few farmers, and but a few, in the barony held over 50 and not exceeding 80 acres. The only branch of agriculture is the raising of potatoes, and these are generally of good quality. The harvests vary: one year they are very good, another they are very poor. Not very many of the farms are thus worsted in the present distress, and they are not even such in their own extent.
emigrated at their own expense. Several of them have been Protestants, and persons of good character and enter-
prising spirit.

**Divisions, Towns, &c.—**The county of Monaghan is di-
divided into five baronies, which, with their situation and
population, are as follows:—

<table>
<thead>
<tr>
<th>Barony</th>
<th>Central and E.</th>
<th>Pop.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cremore</td>
<td></td>
<td>51,892</td>
</tr>
<tr>
<td>Dartry</td>
<td>Central and W.</td>
<td>40,135</td>
</tr>
<tr>
<td>Farney</td>
<td></td>
<td>41,213</td>
</tr>
<tr>
<td>Monaghan</td>
<td>Central.</td>
<td>42,728</td>
</tr>
<tr>
<td>Trough</td>
<td></td>
<td>19,220</td>
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</tbody>
</table>

It contains the corporate, assize, and market town
of Monaghan, formerly a parliamentary borough; the market
and post towns of Carrickmacross, Castle Blayney, Bally-
bay, Clones, and Newbliss; and the post towns of Emyvale
and Glaslough. The principal villages are Ballytrain, Smithbarrow, Tydavnet, Scotstown, Scotscourt, Drum, Rockcorry, and Magheracoolane.

Monaghan is on the mail-road from Dublin to London-
derry: the distance from Dublin has been already given.

The chief industries are agriculture and fisheries.
The land is chiefly under tillage, with some meadows.

The chief cattle are sheep, and some cattle. The soil
is good, but the pastures are not so good as in other
parts of the province. The farms are generally of
small size, and the peasants are chiefly engaged in
agriculture.

The chief crops are oats, barley, and potatoes. The
people are principally engaged in the cultivation of
these crops, and their principal occupation is the har-
col

The annual value of the land is about £30,000. The
poor rate is about 8s. 3d. in the £.

The principal public buildings are the county
court-house, a handsome modern building in the centre of
the town; the county jail on the east side of the town, on
the main road to Castleblayney; the police station on
the west side of the town; and the diocesan school on
the west side of the town. There is a large and
handsome parish church lately erected in the Gothic
style of architecture, two Presbyterian and two Methodistic
meeting-houses; one Roman Catholic chapel in the town,
and two others in other parts of the parish. There is a market-
house and a linen-hall. Some ancient walls, near the
Diamond-square, are said to be the relics of an old monas-
tery built for conventual Franciscans on the site of a former
religious house; from one or other of which establishments
the town (and from it the county) took the name of Monag-
han or Muinechan, ‘the monks’ town.’ There is also an
earthen mound marking the site of a castle or fort erected
here early in the seventeenth century, by Sir Edward
Blayney, who had the military command of the county.

Monaghan is a rich and fertile county, and is
noted for its agricultural produce of the surrounding
districts, which is brought to market here; and in linen, for
which it is a considerable mart. The market-days are Monday for linen
and for pigs, of which great numbers are slaughtered and
sent to Belfast to be cured for exportation; Tuesday for
corn, except oats, for which there is a market on Wednes-
day; and Saturday for oats and potatoes. The corn and
potato markets are held in Diamond-square; the meat
market in Shanillaghagh, and the hay, wool, yarn, butter, and provisions of all kinds are sold. There is
a fair on the first Monday in each month. The Ulster canal,
when completed, will pass close to the town. The poor in-
habitants are engaged in occasional labour about the town,
but wages are very low, and the earnings of a labourer, if
counted, would amount only to a trifle in the week. The condi-
tion of the poor has been deteriorating for the last
fifteen years: they subsist on potatoes, with sometimes a
little milk. The tradesmen are better fed. There is a sav-
ings' bank, to which the principal contributors are farmers,
tradesmen and servants.
The corporation was created by a charter of 11 James I.
(A.D. 1613), and consists of a provost, twelve free burgesses,
and an indefinite number of freemen. The borough sent
two members to the Irish parliament, and the Univer-
sity of Derry obtained, under a charter of Henry VIII.,
received 15,000l. as a compensation on its disestablish-
ment. The borough court of record has long fallen into disuse.
The quarter-seions for the division and the assizes for the county are held here; and
there are petty sessions held by the county magistrates every
week. The town is watched and lighted; and is the chief
station of the county constabulary. The living is a rectory
and vicarage, in the diocese of Clogher; the tithe composi-
tion rent is estimated at 553l. 16s. 1ld. per annum; there
is a glebe of 38 statute acres, valued at 15l. per annum,
and a neat glebe-house. The Catholics form about two-
thirds of the population. There are ten public schools, with
about 1400 children; and seven private schools, in which
there are about 300 children. There is a dispensary, a medici-
ity society, and a jury for the county.
Carickmacross is in the barony of Parney, in the south
part of the county, 51 miles from Dublin on the London-
derry mail-road. It consists of one principal street along
the road, and of several smaller streets leading from it.
There are 412 houses in the town, in 1831, were 624
inhabited (by 555 families), 34 uninhabited, and 4 building;
the population was 2979, one-fourth agricultural: the rest
of the parish of Carickmacross contained 1771 houses,
inhabited by 1777 families; and 966 uninhabited houses, and 12,600 inhabitants. Many
of the houses are of respectable appearance. There is a
church, a neat but small building stone, with a tower and
spire; a Catholic chapel, and a Presbyterian meeting-house.
There are also two national schools, with about 600 children
of different parishes in the parish. Melting, brewing, and distilling are carried on
in the town; coarse hats, soap, and candles are manufac-
tured; and a considerable retail business is done. There are
corn-markets on Wednesday and Saturday, and a general
market on Monday, at which many pigs are sold. There
are quarries of freestone and limestone in the parish, and
several lime-kilns near the town. A portion of the county
constabulary is stationed here; there are a browell, a
dispensary, and a medicaity society. There are two schools,
one for boys, and one for girls, connected with the National
Education, and nine other schools, in which the children
are taught gratuitously; in these schools from
1400 to 1500 children are instructed. There are besides a
number of private schools and hedge schools. The children
are ranked on the roll of the two national schools, as stated, by Mr.
Carlile's statement in the Report of the Irish Education
Board, July, 1837, to 538 boys and girls. There is a dis-
pensary. The living is a vicarage, the gross yearly revenues
of which are 646£., 3d. on composition tithe; and 225£.,
estimated value of the glebe, which comprehends above 181
statute acres. There is a glebe-house. The inhabitants are
almost entirely Catholics.
Castle Blayney is in Muckno parish, in the barony of
Carickmacross, 11 miles from Dublin on the Londonderry
road. The town lies near the western shore of Lough
Muckno, and comprehended in 1831, 307 houses, inhabited
by 350 families, 2 houses building, and 32 unoccupied: the
population was 1828, about one-fourth agricultural. The rest
of the parish contained 1470 houses, inhabited by 1477 families,
3 houses building, and 89 uninhabited; with a population of
7888: the total population of the parish was
9716. The town derived its origin and name from a fort
built here early in the seventeenth century by Sir Edward
Blayney; and there is a Catholic chapel. The linen
manufacture was flourishing here formerly. There
is a market on Wednesday for yarn and flax, and a fair once
a month for live stock; there are markets for corn and but-
ter on Tuesday and Friday. Sessions for the division are
held here in a neat sessions-house once a quarter; and petty
sessions every fortnight; and a small gaol is here. There
is a small bridewell.
The mansion and demesne of Castle Blayney, the seat of
Lord Blayney, are near the town. There are a parochial school
and a girls' school, supported by Lady Blayney. Besides the
large town house of Castle Blayney, there are several
in the parish, and at different places in the parish there are
four meeting-houses for Presbyterians and one for Meth-
ods. The Catholics form half the population, and the Pres-
byterians above a third. The living of Muckno is a rectory
and vicarage, in the diocese of Clogher; the tithes are above
436l. of which rises from tithe composition, the rest
from a glebe of more than 32 statute acres. There is a
glebe-house.
Ballybay, or Ballibay, is in Cremorne barony, 64 miles
from Dublin, on a road branching from the Londonderry
rail-road at Carrickmacross, and rejoining it at Monaghan.
The town comprehended in 1831, 382 houses, inhabited by
354 families; and 19 houses uninhabited: the population
was 1457: the remainder of the parish comprehended
714 houses, inhabited by 911 families, forming a total
population of 4738; or for the whole parish 6685; a small part of the
extent of the town extends into the barony of Monaghan. The town
rose to importance through the linen manufacture, and now
contains many respectable and comfortable houses. There
are ten public schools, with about 2000 children, besides
a Catholic chapel-of-ease, and a handsome Presbyterian meeting-house.
The linen manufacture is carried on, and there are markets
on Saturday for butter and flax, and on Tuesday and Friday
for cattle, fairs being held three times in the year, in addition to
a weekly fair, at which large sales of cattle, horses, and pigs
are made. Petty sessions are held at irregular intervals, and
at parties. The county constabulary is stationed at the
town. There is a reading society with a library of 1600
volumes, and a weekly newspaper. There are three large churches, two Presbyterians
(Ballybay, or Blennistrugh) and two Presbyterian meeting-houses, besides
those in the town of Ballybay. The Catholics form not quite
half of the population of the parish: the Presbyterians less
than a third. There are a dispensary, four public schools, with
about 200 children, besides two Sunday-schools.
Clones is in the barony of Darrage, in the western part of
the county, 79 miles from Dublin through Navan (Meath)
and Kingscourt and Coochill (Cavan). The town
comprehended in 1831, 266 houses, inhabited by
483 families; and 14 houses uninhabited: the popula-
tion was 1894: the remainder of the parish comprehended
a small town house, or the mansion. The town
is in the county of Fermanagh, comprehended 2905 houses, inhabited
by 3291 families, forming a total population of
20,203. Clones was, in ancient times, nearly sur-
rounded by water, and an abbey was founded early in the
sixth century: from these circumstances the place obtained
its name, Clusan Limis, 'the island of retreat': from whence,
by corruption, the name has been formed. There are
more recently Clones. The abbey continued till the
dissolution under Henry VIII.: there are still some re-
 mains of the ancient monastic buildings. The more modern
houses in the town are large, and the older ones are cov-
ered with thatch. The church was rebuilt in 1821, and
is capable of holding 700 persons. There are a large Catholic
and a Wesleyan Methodist meeting-house. The
market-place is of triangular form, and has in it a market-
house, two public houses, one small brewery, and a school.
In the town are extensive iron-works for the manufacture of agricultural
implements, and several flour-mills. Limestone and good
freestone for building are quarried. A market is held
weekly, on Wednesday, and two fairs or market-days are held monthly, one in the town for pigs and live stock, and one at Roslea,
in that part of the parish which is in the county of Fermanagh. Petty sessions are held every
night, as a coroner's court once a month for the recovery
of small debts: a portion of the county constabulary is
stationed in the town.
Beside the places of worship mentioned above, there are
in the parish two chapels-of-ease, three Roman Catholics
chapels, two Presbyterian meeting-houses, and one Wes-
leyan Methodist meeting-house. There are also schools in the parish, aided, if not wholly supported, by sub-
scriptions, and affording instruction to about 1000 children.
Some of them are in connection with the National Board. Nearly 300 children are under instruction in private schools. There is a dispensary. The living is a rectory and vicarage, of the gross yearly value of 200l. 6s. 8d., of which 950l. arises from tithe composition, and the rest from a glebe of about 12 acres. There is a glebe-house. By the Romanish church the parish is divided into two districts: Clones East and Clones West; each part has two chapels. Near the ruins of the abbey is one of the antient round towers. The internal diameter is 10 feet; and there are repositories for the jars. Strathbrough, the canal, is one way about 4 feet from the ground; and at the top of the tower are large embrasures. There is another round tower in the parish.

Newbliss is in Killeen parish, in the barony of Dartree, about 14 miles N.E. of Monaghan. It is a small place, containing in 1831 only 85 houses, inhabited by 105 families, making up a population of 497; there were 9 houses unoccupied, and 1 building. The number of houses in the rest of the parish, which extends into the barony of Monaghan, was 1393, inhabited by 1538 families, making up a population of 7764; or, with the town, of 8261. The town consists of a single street of good width: the houses are of respectable appearance. The parish church of Killeen is nearly mid-way between Newbliss and Clones: but there is a neat Presbyterian school, and a small market-house: the market is on Saturday, chiefly for pigs and fowl; and there is a monthly fair, chiefly for pigs and live stock. There are in the town a dispensary and a school which is maintained by the London Hibernian Society.

There are in other parts of the parish a grammar school, six public and four private schools, in which (taken together) above 900 children are taught. The church and Catholic chapels are neat buildings. The living is a rectory and vicarage, which (at Monaghan) is valued at 21l., of which 8l. 15s. 6d. is tithe composition; the rest arises from a glebe of about 110 acres: there is a glebe-house. Emnvale is in the parish of Donagh, in the barony of Trough, in the northern part of the county; it is 91 miles from the diocesan court, and 8 miles from the post-office, and 1 mile from the main-road. It contained in 1831, 112 houses, inhabited by 122 families, besides 10 unoccupied, and 1 building: the population was 571. The town consists chiefly of one street, and is on the north bank of a small stream running into the Blackwater. On the banks of the stream is a large flour-mill, and in its bed is a quarry of greenstone. A body of the county constabulary is stationed here.

Glaoagh, or Glasslough, is also in the parish of Donagh and barony of Trough, six or seven miles north-east of Monaghan. The church is a neat edifice, roofed with slate, and containing a number of good houses with slate chimneys, a large flour-mill for spitting flour, and a linen factory have been erected; and a weekly market on Friday for corn and flax established. There is a monthly fair for stock and agricultural produce. There is a dispensary.

A castle and demesne, the property of Mrs. Leslie, are near the town. The parish church of Donagh, built half a century ago, and capable of containing 400 persons, is in the town. The parish of Donagh is large, and has a gross population of 11,068. It has two Catholic chapels, a Presbyterian and a Wesleyan meeting-house. The living is a vicarage, with a gross yearly value of 22l. 14s., viz. 15s. 5d. tithe composition, and the rest the produce of a glebe of about 71 acres.

The villages are all small. Balllytrain, or Belltrrain (in Auchentibber and Parson) is in the barony of, and in 1831, 48 houses, inhabited by as many families, making a population of 220. It is the station of a body of the constabulary force, and has eight yearly fairs for cattle, sheep, and pigs. It has a small Catholic chapel and a dispensary. In the neighbourhood there are two other Catholic chapels, one being to a person of the name of Smith, who established monthly fairs in the latter part of the last century. It is in Clones parish, and in the barony of Monaghan. In 1831 it had 48 houses, inhabited by 50 families, making a population of 240. There is a body of the county constabulary stationed there, and a dispensary. All the fairs except one in the year have been given up. There is a body of the constabulary stationed here. Tydavnet, or Tadavnet, and Scotstown, are in the parish of Tydavnet, in the barony of Monaghan; both are stations of the constabulary, and Scotstown has a dispensary. Tydavnet has five yearly fairs, and Scotstown one every month. Scotstown is in the parish of Currin, in the barony of Dartree. The parish church, capable of holding 400 persons, is in the village; and a body of the county constabulary is posted there. Drum is also in Currin parish, and in the barony of Clones West. It is near a small lake, Lough Long. It has a monthly fair, a small chapel-of-ease, two Presbyterian meeting-houses, a school, and a dispensary. The population in and about Drum contains a larger proportion than usual of the members of the Established church. Rockerry, though classed by our authorities among villages, is really a small market-town; it consists of a wide street, with a neat market-house, and has many houses of respectable appearance. It has a market on Wednesday, and a monthly fair held. Presbyterian bodies are here, and a party of police is stationed here. There are next meeting-houses for Presbyterians and Wesleyan Methodists; and there are an infant-school, a sewing-school, and a dispensary. Magheraconloe, or Magheraconly, is in the barony of Farney, a short distance from Carrickmacross.

It has a new modern church.

**Divisions for Ecclesiastical and Legal Purposes.** The county is wholly included in the diocese of Clogher, and contains the whole or part of twenty-three parishes, of which only two are united with another in forming a single parish; the number of the other twenty-two benefices, fourteen are rectories and vicarages united, two rectories, and six vicarages. With respect to value, one is of 2000l. a year, one 1015l., one 969l., two from 800l. to 900l., one from 700l. to 800l., one from 653l., six from 400l. to 500l., two from of 300l. to 400l., two from of 200l. to 300l., and one of 118l. There are twenty-two parish-churches and five chapels-of-ease. The churches are smaller than the generality of English churches; one is in the town, and eleven in the country; and 1100 persons: many of them have been erected within the last twenty years. Divine service is commonly performed twice on the Sunday, beside services on holidays. In winter the second service is sometimes discontinued. The communion is given at Clogher is held at Monaghan, where is also the diocesan school.

In the territorial arrangements of the Catholic church the county is included in the Catholic diocese of Clogher, the bishop of which has the cure of the parish of Carrickmacross. There are forty-six Catholic chapels, and twenty-four house-churches for Presbyterians (of various classes) and eight for Methodists. The population of the parishes which are wholly or partly in this county is about 206,000, which may be 208,000 distributed: by hundreds the Scotch parish of Clogher, 32,000; Catholics 151,000; Presbyterians, or other Protestant dissenters, 25,000. (Reports of Commissioners of Public Instruction.)

For judicial purposes the county is included in the 6th north-east circuit, comprehends the diocesan jurisdiction of a vicar of Ulster. The county court-house and county-gaol are at Monaghan, where the assizes are held. Quarter-sessions are held at Monaghan and at Castle Blayney. Petty sessions are held at Monaghan, Clones, Castle Blayney, Ballybay, and Rockerry. There are bridewells at Castle Blayney and Carrickmacross. The county-gaol is well managed; its good order, economy, and regularity are highly creditable to those who direct it; and there is sufficient accommodation in cells and day-rooms for all the purposes of classification and reform. The prisoners are employed, chiefly at stone-breaking; and there is a treadmill for those who are sentenced to hard labour. There is an excellent school, and the females are attended to under a qualified matron. The bridewells are small, and the prisoners, in consequence of the number of those who are convicted, and 72 acquittances, are not conducted with the greatest regularity. (Reports of Inspectors of Prisons—Fifteenth Report.) The number of persons committed for trial or bailed, in 1836, was 369; of these 158 were for crimes against the person, and 211 for theft or property committed with violence; 63 for offences against property without violence; 50 for malicious offences against property, 2 for uttering base coin, and 50 for other offences. Of the whole number, 298 were convicted, and 72 acquitted, and 4 committed to the House of Correction took place in the year. Of those committed or bailed, 302 were males (14 under sixteen years), and 58 females (1 under sixteen years); 156 could read and write, 116 could read only, and 88 could neither read nor write. The proportion of the number of offenders to the whole population...
The number of the constabulary force in employment on the 1st of January, 1836, was 4 chief constables or sub-in-
spcctors of the first class, 20 constables, and 11 sub-const-
ables, with 5 horses. The expense of this force for the
year 1835 was 3110L. 17s. 1d., of which 2411L. 9s. 11d. was
chargeable against the county. The amount of grand-jury
presentments, in 1835, was £7,072, 18s. 4d. for fees of
the county; &c. £7,045. 17s. 6d. for repairing roads,
brides, &c. 1535L. 5s. 9d. prisoners, 2537L. 10s. 3d.
police establishment, 2367L. 1s. 5d. salaries of county
officers, 1676L. 12s. 2d. repayment of government advances,
4636L. 19s. 7d. public charities, &c. 6236L. 2s. 6d. miscel-
lanous expenses.

The county is in the district of the Armagh Lunatic Asy-
lum. The county infirmary or hospital is at Monaghan,
and there are dispensaries at Ballytrain, Farney, Scotstown,
Castleham, Smithborough, Ballylough, Clones, Newbawn,
Drum, Rockcorry, Monaghan, Carrickmacross, and Glas-
slough. There were, according to the Return of the Rev.
James Carlile (May 3, 1837), in the county 43 schools in
connection with the National Board of Education, on the
roll of the county; 10,000 children, in attendance 4348; of
those whose religious sentiments (or those of their friends)
were known, 484 were Protestants and 1689 Catholics.

History and Antiquities.—In the invasion of Ireland by
the Anglo-Normans, Henry II., having advanced all Ulster
on the 18th of October, in which he could not close it, that
chiefman overran various parts (a.d. 1177), and built castles to secure
his conquests. Among others he built two in the district
now the barony of Farney in this county,* and gave them in charge to MacMahon, a man of Irish birth who had long been connected with himself.

MacMahon demolished these castles, upon which De Courcy made an inroad into the
territory of the chiefman, and drove away a great number of

This is not to be assumed that the limits of the earliest district and the
modern county exactly coincided.

Drum, &c. 1871L. 1s. 6d. for military purposes, 1825L. 1s. 3d.

The English dominion in this part of Ireland was very
incomplete. In the reign of Henry IV. we find that the
district of Ferney was still held by a chiefman of the race
of MacMahon, to whom Thomas of Lancaster, son of Henry,
granted or confirmed it at a certain rent. The English re-
tained however a castle in the district.

In the reign of Henry V. the MacMahons seem to have
risen in arms, for they are noticed among the septs whom
Taglot, Lord Furnival, the lord-lieutenant, brought into the
king's peace. All he was able to do appears to have been to
prevent open resistance, without however improving the
sovereignty of the English government. Little is
known of the subsequent condition of the district, or the
events that occurred in it, until the reign of Elizabeth,
under whom great progress was made in reducing the
enemies and subjects of the Irish Parliament assembled at Dublin passed an act for
dividing into shires that part of the kingdom which had
not yet been so arranged, and Monaghan was one of the
shires constituted at this time. The country however
still remained in an unsettled state, for Sir Henry Sidney,
when lord-deputy for the last time, received the submission
of MacMahon (a.d. 1575 or 1576). But shortly after,
on occasion of a murder committed by MacMahon, the lord-
deputy marched into MacMahon's country, and burned and
other villages in the county. In 1578 a submission was
received from the lord-deputy, Sir John Perrot, who either
divided Ulster into counties, or rendered effectual the division
which had been before made, and placed sheriffs, justices
of the peace, and other officers in the country. The propriety
of this step is still contended for by the landowners in the
lands of the chief-

* On the correspondence of Bane and re*, see Gibson's "Donegal and

the Map of Ireland and Memoir; Second Report of the Irish Railway
Commissioners; Reports of Commissioners for Inquiring into the state of the Poor in Ireland;
and other Parliamentary Papers; Lewis's Topographical Dictionary of Ireland; Wakefield's Account of Ireland; Co's Dictionary of Ireland.

MONARCHY, from the Greek σευραρχία, a word com-
pounded of μοι, a man, and αρχή, a beginning, and
signifying the "government of a single person." The
word monarchy is properly applied to the government
of a polity by a single man, one person exercising the
sovereign power. (Sovereignty, 3.) But in many
such cases alone, the government is properly styled a
monarchy, and the supreme ruler is properly styled a
monarch. Examples of monarchy, properly so called, are afforded by
the history of the ancient Roman monarchy, the
Roman Republic, by the governments of France and Spain in the last
century, and the existing governments of Russia, Austria, and
the several states of Italy.

But since monarchs have in many cases borne the home-
rious title of sovereign, or even sovereigns, and some
persons so styled have, in many states not monarchal,
held the highest rank in the government, and derived that
rank by inheritance, governments presided over by a
person bearing one of the titles just mentioned have us-
ually been called monarchal.

The name monarchy is however incorrectly applied to
a government, unless the king (or person bearing the equiva-

tent title) possesses the entire sovereign power; as was the
case with the king of Persia (whom the Greeks called the
great king, or simply the king), and in more recent
times with King Louis XIV., called by his contemporaries
the Grand Monarque.

Now a king does not necessarily possess the entire
sovereign power. Thus the king has never been either
among the following cases:

1. He is not a monarch at all, the

2. The state is not a

3. The state is not a

4. The state is not a

5. The state is not a


In Sparta there was a double line of hereditary kings
who shared the sovereign power with some other magi-

trates and an assembly of citizens. The government of
Sparta has usually been termed a republic, but some an-
dvocates of monarchy have called it a modified monarchy
under the two-headed kings; and Polybius applies the same epithet to the
Republic, on account of its two consuls. (Philological

Musum, vol. ii., p. 49, 57.)

State in Sparta, for one time governed by kings pos-
sessing the entire sovereign power, and in which the king
has subsequently been compelled to share the sovereign power
with a popular body, are usually styled "republicanized" or limited monarchies. These expressions mean that the

had a fort at Monaghan. In the settlement of Ulster (a.d.
1609), on the forfeiture of the estates of such as had been
engaged in the rebellion of Sir Cahar O'Doherty, Monaghan
does not appear to have been included, though the adjacent
counties were. The corporation of Monaghan was however
one of those erected about this time to strengthen the
Protestant and English interests.

In the great rebellion of 1641 Monaghan was one of the
counties where the corporation was erected. The county,
and in the course of the subsequent struggle was included
in the seat of war; but no events of particular interest
occurred within it. In the war of the Revolution of 1649 a
sharp conflict took place at Glaslough, in which the Pro-
testants were defeated. The present town of Monaghan
is the old town of Mr. Anketel, a gentleman of property in the

neighborhood. In the rebellion of 1798 the county appears to have been
scarcely if at all disturbed.
person invested with the kingly office, having once been a monarch, is no longer a monarch, and may be regarded with such expressions as vicissitudes, which occur in the Greek poets.

Governments are divided into monarchies and republics; and therefore all governments which are not monarchies are republics. As we have already stated, a monarchy is a government in which the sovereign lord is the source of the executive power; a republic is a government in which the sovereign power is shared between several persons. [Republics] These definitions of monarchy and republic however do not agree with existing usage; according to them, the pope was of royal governments of England and France, for example, are monarchies (viz. mixed or limited monarchies), not republics.

The popular usage of the terms in question, to which we have adverted, is mainly owing to three causes. 1. Kings not possessing the entire sovereign power have in many cases succeeded kings who did possess the entire sovereign power; in other words, kings not monarchs in many cases succeeded kings who were monarchs. 2. Both in royal monarchies and in royal republics, the crown or regal title usually descends by inheritance instead of being conferred by election. 3. Kings who are monarchs usually affect the state of monarchs properly so called; they intermarry only with persons of monarchical or royal blood, and refuse to intermarry with persons of an inferior kind.

Governments such as those of England and France are included by popular usage, together with republics, in the term 'free or constitutional governments,' as distinguished from pure monarchies, absolute monarchies, or despotisms. The actual facts were these: therefore, the use of the two terms in question is as follows:

Monarchies are of two sorts, viz. first, pure, absolute, or unlimited monarchies, that is, monarchies properly so called; and, secondly, limited, mixed, or constitutional monarchies. Properly so called, that is, republics presided over by a king, or kingly governments where the king is not sovereign.

Monarchies are states in which several persons share the sovereign power, and in which the person at the head of the government is the most powerful. At various periods, Holland with a stadtholder, Venice with a doge, and England with a protector, are called republics, not monarchies. If the head of the Venetian aristocracy had been styled king instead of doge, and if his office had descended by inheritance instead of being conferred by election, Venice would have been called a monarchy, and not a republic. The only exception to this usage of which we are aware occurs in the case of Sparta, which is commonly called a republic and not a monarchy, although this is not the popular usage.

The reason of this exception probably is, that there being two lines of kings at Sparta, it was thought too gross an inaccuracy to call its government monarchical; though its government would have been called monarchical, if it had descended from one line of kings, and if of the narrow powers which that king might have possessed.

The comparative advantages of a popular or republic government and of an absolute or monarchical government have been stated, with greater or less completeness and candour, by many writers. The best statement of the advantages of monarchy (properly so called), with which we are acquainted, is in Hobbes's 'Leviathan,' part ii., c. 19.

MONAS. [Microzoaria]

MONASSA. Vieillot's name for a genus of Birds (Her- monassa, birds of Swainson and others). [KINGSMAN, vol. xiii., p. 227.]

MONASTEREVEN. [Kildare]

MONASTERY. [Monarchium; Monk]

MONDOVI. James Burnet, styled LORD (in his quality of one of the Court of Session), was born in 1714, at the family seat of Monboddo, in Kirkcudbrightshire, and after studying at Aberdeen, was sent to the university of Groningen, according to a custom then current in Scotland. In 1739, a Dr. or French university was considered indispensable for young men intended either for the profession of law or for that of physic. Lord Monboddo has himself mentioned that his father, whose eldest son he was, sold part of his estate in order to pay for his education. He was called to the bar in 1738, and from that time practised as an advocate at the Scotch bar, till his elevation to the bench in 1767. He is known in the literary world by two learned but paradoxical works: the first entitled 'A Dissertation on the Origin and Progress of Language,' in 6 vols. 8vo., 1774-92; the second entitled 'Antient Metaphysics,' in 6 vols. 4to., 1778, &c. An exclusive and somewhat intolerant admission of the language, literature, and philosophy of the antient Greeks, some singular notions about men being only a civilised species of monkeys, a preference for the virtues and happiness of the savage state, and a general credulity in favour of the marvellous. In addition, the description of his person and conversation has been given by Boswell in his 'Tour to the Hebrides,' in an account of a visit paid to him by Dr. Johnson at Monboddo (pp. 73-83). In a note Boswell says, 'There were several points of similarity between them; lasting deafness of head, profound silence, and a love of research on many subjects which people in general do not investigate. Poite paid Lord Monboddo the compliment of saying that he was an Ericean edition of Johnson.' Some further account of him may be found in Karr's 'Monboddo,' the Edinburgh printer (vol. i., pp. 499-515). Smellie, we are told, used to be a frequent visitor at what his lordship called his learned supper. 'In imitation of the antients,' says Smellie's biographer, 'for which he professed an enthusiastic admiration, Lord Monboddo always made a regular meal, and his regular time of entertaining his friends. These learned suppers used to take place once a fortnight during the sitting of the courts; and among the usual guests were Dr. Black, Dr. Hope, Dr. Walker, Mr. Smellie, and other men of science and learning, of whom Edinburgh at that time furnished an ample store.' Lord Monboddo died at Edinburgh, in consequence of a paralytic stroke, on the 26th of May, 1799.

MONDVI. A province of the Sardinian territories, on the north side of the Ligurian Apennines, which separate it from the Western Riviera of Genoa, is bounded on the east by the province of Acqui, on the west by that of Cuneo, and on the south by the province of Saluzzo and Alba. The province of Mondovi consists mainly of the basin of the upper Tanaro, which river has its source near Orma, at the foot of the Ligurian Apennines, and flows northward by Ceva; it receives the Eliceto and Pesto on its left bank, and farther down the Stura and enter the province of Alba; the Tanaro then enters the province of Alba, and continues its course towards the Po. The length of the province of Mondovi, from south to north, from the source of the upper Tanaro to Ceschia, is 47 miles; and the Tanaro, near 40 miles; and its breadth, from the ridge of hills which divide the valley of the Tanaro from that of the Bormida, or province of Acqui, to the limits of the province of Coni, is about 15 miles. The population of the province of Mondovi, with the villages and towns in the province of Ceschia (Candolido Sarde.) Mondovi is a bishop's see, has a clerical seminary and a royal college, and manufactures of silks, woollens, cottons, paper, and hats. The country around is rich in corn, vines, mulberry-trees, and cattle. C. Cherasco, a regularly built town, at the confluence of the Stura and the Tanaro, a fortified town with a castle, has several churches and convents, a college, two hospitals, and 8300 inhabitants. Silk is the principal produce of its territory. Cherasco has a paper-mill, and the town of Mondovi is at the head of the noble family Salumaris, and that of Gotti. Several of the churches and private houses are adorned with paintings by Tarico, a native artist. The district of Cherasco is well known for its white truffles, which are reckoned the best in Piedmont, a glass, and a linen manufacture. Dr. Ceva, at the foot of the Apennines, has a castle, two churches, a college, silk manufactories and iron-forges, and 3300 inhabitants. 4. Garesco, near the sources of the Tanaro, has 200 inhabitants, on the right bank of the Tanaro, to Cherasco, has a castle, some good buildings, and 5000 inhabitants. 6. Dogliano, on the road from Ceva to Cherasco, has a college and 4000 inhabitants. It was by Mondovi and the valley of the Tanaro that Bonaparte first penetrated into Italy, in April, 1796.'
MONEY is metal coined for the purposes of commerce, usually stamped with the name and arms of the prince or state that directs it to pass current. In a more enlarged sense, money means any representation of property, whether as coins or in the form of paper—the circulating medium. For money in this latter sense, and for our monetary system, the reader may refer to the articles BANK; BILL OF EXCHANGE; CURRENCY; EXCHANGE; and TRENCHER.

The earliest currency of metal has been already treated of under COIN, together with the denominations, as far as they are known, or of the different moneys current among the chief nations of antiquity, as well as in our own country. In this particular account of one or two moneys of the latter was omitted; the FARTHING for instance, and the Groat, both of which have been referred to the present article.

Although FARTINGS are asserted to have been round coins in the time of some of the later Saxon kings, they usually at that period consisted of the fractions or parts of the penny broken into four. Instances of pennies neatly and accurately cut into halves and quarters occur almost wherever Saxon coins have been discovered. The people and church, as money, is twice mentioned in the Anglo-Saxon version of the gospels (Matt. v. 26; Luke xxii. 1).

Guinea. The unite, as it was called, or twenty-shilling piece, was first coined by King James I. It was continued under Charles I., and under Queen Henrietta, of the Gold Coin and Coinage of England, p. 29), speaking of Charles II.'s coinage of 1665, says, the term twenty-shilling piece is still kept in the indentures; the appellation of Guinea, given to it, was because great quantities of them were brought from Guinea, or Guinea Coast, a name derived from the Royal African Company, which are distinguished by an elephant under the head, some a castle, others without, which was continued under each reign until George I., though, but a few to be seen in pursuance, either of his or of Queen Anne. The guineas of Charles II. had not been long in currency before common consent had raised it to twenty-one shillings. About the year of the Revolution, James II.'s guinea was paid and received at twenty-one shillings and sixpence. In the reign immediately subsequent, the gold money remaining without alteration in weight and fineness, and the silver money growing daily of less value by clipping and counterfeiting, occasioned twenty-five shillings, then twenty-eight shillings, and at last thirty shillings being given for a guinea; but no sooner was the silver money restored to its first value by the grand recoining, than the guinea was again reduced, first to twenty-eight shillings, then to twenty-six, and finally to twenty-two shillings, and soon after common consent was come to the standard as before, and continued at that price for twenty years after. In 1717 the guinea was reduced to twenty-one shillings, at which it continued till the latter part of the reign of George III., when the coinage of 1797, and twenty-eight shillings piece were again coined under the name of sovereigns.

Several other coins, ancient and modern, have been already disposed of under ANGEL; AS; AUREUS; BEZANT; BILLON; CROWNS OF THE SUN; DARIUS; DENARIUS; DINES; DRACHM; Livre, and Louis d'Or.

We shall now lay before our readers as concise an account as possible of the money which forms the present or has formed the recently existing metallic currency of modern nations, taking them alphabetically:

Abbas, or Persian coin of the value of 5d. Anglic, or Abguneul, or Albuguelp, see Griscio.

Albert's Dollar is a coin known in Holland, with its half and quarter, at 50, 35, and 12½ shillings. The term is used also as a money of account at Lubeck and Reggio. The intrinsic value of a metallic Albert's Dollar is 4s. 4d. Albos, a small coin and money of account, at Cassel, Cologne, and other places in Germany; the value of the albus was then less than 4d.

Alpasa, in the silver coin of 60 para, value 3a. Arper, a very small Turkish coin and money of account.

120 paras = 1 piastre.

August 1, or August 1st, a gold coin of Saxony, double, single, and half, reckoned at 10, 5, and 2½ rix-dollars. The august of 1727, when 150, 100, and 75, was of 164, 128, and 96, and that of 1729, 128, 96, and 72. Bagattino, a Venetian copper coin, a half solido.

Bajoche, or Soldo, a copper coin at Rome, Bologna, &c., divided into 12 denari, or 5 gratuiani; worth a trifle more than a halfpenny; there are also double and single bajocchi, at 4 and 2 bajocchi.

Bajoile, a silver coin of Switzerland, of 3 livres 15 sols current.

Barbone, a silver coin in Lucua, of 12 soldi, half and quarter in proportion. The barbone is worth rather more than 4s. Basarucco, a small tin coin current at Goa on the Malabar coast. These are called bad basarocoos; there are others called bad basarees, or new basarees, of common the coin of Goa are of the same two descriptions and denominations.

Batzen, a base silver coin in Switzerland, and also in some parts of Germany, as at Augsburg. At Basle, a good deal of copper and silver coin is current, but a Swiss base coin has not been discovered. Each batzen contains 10 rappen. Silver pieces of 40 and 20 batzen, and base silver pieces of 10 and 5 batzen, were published under the Helvetian republic between 1793 and 1803. The Swiss batzen is nearly 1½d. English.

Bendy, a gold coin of Morocco, worth of 4a. Beslich, a Turkish silver coin worth about 3. 2½d. Bit, or Bitt, a small coin in the West Indies, worth 5d. Blaffert, a small coin at Cologne, worth 4 abaces.

Blankets, or Blanquello, a small coin and money of account in Morocco. It is sometimes called an ansa.

Bolognino, a copper coin at Bologna and its neighbourhood, the same with the bajoccho.

Borbis, or Barbi, a coin in Egypt, of copper, eight of which go to a medinio. Borbies are also current at Tunis.

Borjoine, or Borjine, the name for the glass-beads which pass as small money in Abyssinia.

Cagiarrocco, a copper coin in Sardinia.

Cahau, see Courtes.

Cairc, a small coin and money of account in the kingdom of Naples in Italy; it contains 10 grani, worth 4½d. In Piedmont the carlino is a gold coin; coined before 1727, it was of the assayed value of 5½. 18d. ; subsequent to that year, 5½. 12½d. The half, 5c. in proportion.

Caro, or Carlino, a small silver coin of Barra, Hesse-Darmstadt, and Wurttemberg, value 20s. 5d.

Cash, a small coin in China, and India beyond the Ganges. It is the only coin used in China. It is not coined but cast. It is composed of 6 parts of copper and 4 of brass; round, marked on one side, and rather round, with a square hole in the middle. These pieces are commonly carried like beads on a string or wire. A tale in account of fine silver should be worth 1000 cash, or about 6s. 8d.; but on account of their convenience for common use, their price is sometimes so much raised that only 750 cash are given for the tale. Cash is sometimes called Cuza. In Sumatra cash are small pieces of tin or lead, 2000 of which go to a mace.

Cents, or Centime, a money of account in the new system of coinage in France, and also in the United States of North America. In France the centime is the hundredth part of the franc. In the money of the United States the cent is the hundredth part of a dollar, and contains 205 grains of copper. Half cents are coined the same proportion. Copper, small silver coin of Persia, of the value of 2a.

Comassea, a small copper coin, containing a little silver, made use of at Betelfast, and Betsafeckee, in Arabia.

Copage, or Coban. The old copages weigh 37½ Dutch morgen, or 275 English grains, and the gold is said to be 92 grains fine; this would give 3½. 4d. 7d. sterling for the value of the old copages; but it must be observed that the Japanese coins are reckoned at Madras only 17½ touch, which is 192 grains, and this reduces the value of the old copage to 3½. 16½d. sterling. The new copages weigh 180 English grains, and the gold is about 16 cars fine, which gives their value 2½. 3d. sterling.

Copech, see Kopnch.

Copita, or 1 enten de Oro, a Spanish coin of gold, of the value of 3a.

Coutes, Kelly, under 'Calcutta in Bengal,' says, 'Accounts are sometimes kept in the inferior departments of business in cowries, a species of small sea shells, which, as they are unbroken, are used as money in small payments; and 2400 cowries generally reckoned for a current rupee; but they have intermediate divisions, thus 4 cowries make 1 gunda; 20 guendas, 1 punt; 4 punts, 1 anna; 4 annas, 1 cahauan; and 4 cahauans, 1 current rupee: but the cowries are not current money for money at Scindy on the Malabar coast, at Siam on the farther peninsula, and in Greece, where 2000 of these shells are called a maccuta.'
Coz, a small Persian coin, in copper • 10 cobzubuqes or cos make a shahpee.

Crónica, a small silver coin in Tuscany.

Crossed, the old coin in the West India Islands, called also Istle du Vent Bits, which pass for 7½d. currency.

Crown. In England, Henry VIII was the first king who coined a crown in gold. He afterwards, as has been already noticed, struck some patterns for a crown in silver; but Edward VI. was the first who coined the silver crown and half-crown for currency. From Elizabeth to William IV., the silver crown and half-crown have been struck in every reign. The crown, or crowned, was formerly a coin of the Netherlands; those after 1735 were estimated at 2 florins 11½ cents, and if florins 3½ cents current. It was also a coin of Denmark; double, single, and half-crowns were reckoned at 8, 4, and 2 marks crown money, or 8 marks 8½ spadins, 4 marks 4½ spadins, and 2 marks 2½ spadins current.

Dukaar, the mark in Portugal, both in gold and silver.

Of the gold cruzados there are two kinds, the old cruzado coined at 400 rees, the new cruzado at 480 rees; the silver cruzado, also of 480 rees, has its half, quarter, and eighth. The value of the old cruzado was 2s. 6d.; of the new, both gold and silver, 2s. 8d.

Dudder, a Dutch silver coin, or 30-siver piece, worth in sterling 2s. 6d.

Dzuxaj, a silver coin of Persia, of the value of 3 ma-

marks, worth about 6½d. in India.

Ducato, a key of account and coin in the Revolutionary system of France. Ten décimes make the franc, or 100 centimes. Copper pieces of one and two décimes are still current.

Ducato, a money of account in most parts of Italy.

Ducato, [Ducatti.] It was the 240th part of the livre, or French pound.

Druwuck, a Russian copper coin, half a kopek.

Dime, a money of account and silver coin in America, is the tenth part of a dollar. There are also half-dimes; both coin in 1796, worth 5½d. and 2½d.

Diddobol, a copper coin in the Ionian Islands, the double of the obolo or cent. The cent is worth 4d. nearly.

Doit, or Para, a money of Abyssinia.

Doortal, or Doortal, a Dutch guilder coin. Kelly says the old doorta coin before 1727 at 20,000 rees has since become worth 24,000; the doorta struck since 1727 is of 12,800 rees. There is also a half-dobra of 6400 rees, likewise called a Joannese. The silver value of the latter dollars, according to the mint price of gold in England at 3l. 17s. 10½d. per ounce, is 3½l. 11s. 4d.

Dog, a small coin of 1½d. Leeward currency, used in the French West India Islands, called also the moir.

Doit, or Dugui, a small Dutch copper coin, the eighth part of a stuiver.

Dollar. The dollar of the United States of North America, weighing 416 grains of standard silver, is valued at 4s. 4d. English. It has on the edge ‘one dollar or unit hundred cents’ and has its divisions of half and quarter.

By equalizing the worth of silver dollars of the United States, it is required to contain 412½ grains of standard silver of which one-tenth is alloy; which is now the proportion in all coins of the United States, whether of silver or gold. The Spanish dollar of the old sort, before a new coinage took place in 1772, was of the silver value of 4s. 4d. Then there were dollars of two denominations, the Mexican and the Sevillian dollar. That is at present generally circulated as the Spanish dollar is really the standard value of 4s. 3½d. It passes in Spain for 20 reals vellon. The Mexican piece, or used in Europe, is termed Thaler by the Germans; Pezza is the Italian and Piatre the Turkish dollar. See Rix-dollar.

Dooder and Half Dooder, copper pieces of 10 and 5 cash, current in Bombay, but struck in England.

Doppia, or Pintole, an Italian gold coin of which the value varies in different states. Kelly says, among the prices current at Genoa, July 20, 1807, the Roman doppia was at 20 lire 14 soldi; Parma, ditto, 26 lire 14 soldi; Piedmont, ditto, old, 35 lire 8 soldi; ditto, new, 34 lire 15 soldi. At Milan the value of the doppia was fixed by an imperial edict in 1786 at 25 lire 3 soli current. Its English value about 15s. 7¾d. sterling. In the Piedmontese territory the older doppia has been long out of currency. The new piece of the old Piedmontese doppia of 1741 to 1785 was of the value of 1l. 3s. 9d. sterling; that after 1785, 1l. 2s. 7½d. The Parma doppia of 1787 was worth 17s. 2½d.; that of 1796, 16s. 10d.

Doppetta, or gold scudo, a coin of Sardinia of 5 lire.

Doreeaa, a coin and money of account in Bombay; the coin is of copper with a mixture of tin or lead.

Doublt, a silver coin of Tunis, valued at 24 aspers.

Doulbloum, a Spanish gold coin, the antient value of which was changed in the coinage which took place in 1772, when the former piece was called in. The old doulbloum was of the value of 3l. 6s. 5½d.; that of 1772, 3l. 5s. 10d. The double and the half of each in proportion.

Dout, Dutch, a gold coin, of the value of 5 guilders 2½ florins.

Duto, Dutch, or English, one of the old silver coins.

Ducat, German, also a gold coin, the rate of coinage of which, although each state has its own ducats, is nearly the same all over Germany. Kelly says, according to the mint price of gold in England, as already stated, the ducat of Prussia was worth 2s. 6½d. of silver, 8s. 2d. of Cologne, 9s. 3½d. of Denmark, 9s. 3½d. of Frankfort, 9s. 4½d. of Hamburg, 9s. 4½d. of Hanover, 9s. 5½d. of Hesse-Darmstadt, 9s. 5½d. of Mannheim, 9s. 4½d. of Nurnberg, 9s. 3½d. of Prussia of 1748, 9s. 4½d.; of 1757, 9s. 3½d.; of Treves, 9s. 3½d.; Wurtemberg, 9s. 3½d.; Usingen, 9s. 6½d.

Ducat, Russian, originally worth 2½ rubles; the double 4½; but in 1764 their value was raised, the double ducat to 5 rubles 60 kopeks, and the single to 2 rubles 80 kopeks. Kelly rates the silver value of the Russian ducat of 1751 at 3l. 17s. 10½d. of silver, and of 1796 at 3l. 16s. 9½d. This also had its double and half. According to the table of Russian moneys given in Leigh’s ‘Guide to Moscow,’ 12mo, London, 1835, the gold ducat of Russia at present goes for £8. 4d.

Ducat, Swedish, of gold, of the value of one rix-dollar 46 skilling, of the silver value of 9s. 2½d.

Ducat, Swiss, of gold, of the value of one rix-dollar 46 skilling, of the silver value of 9s. 2½d.

Ducat, the Italian, is a silver coin and money of account at Naples, Venice, and other places, value in sterling nearly 3s. 6d. The Venetian silver ducats of a former time varied in value and fineness. In weight from 13 dwt. 18 gr. to 14 dwt. 19 gr.

Ducello, an Egyptian silver coin, current at Alexandria, for 10 medini.

Ducetter, or Giustina, a silver coin of Venice, of 11 lire, worth 4s. 6½d.

Ducetoone, a Dutch silver coin, at 63 stivers, or a little more; English value 5s. 6½d.

Duda, called by the English Dube, a copper coin in use in the Mysore country about at Pondicherry; in the latter place 20 of them are reckoned to a ranyon.

Eagle, an American gold coin, of the value of 10 dollars, or units. Its intrinsic value in English gold was nearly 2l. 5s. 6d. None however have been coined at the American mint for many years. But as in 1796 the eagle was worth to be of the standard weight of 270 gr., viz. 2.714 gr. of fine metal and 22½ gr. alloy. By an act of 1837, when coined it is to be of 250 gr. standard weight, viz. 23·¾ gr. fine metal and 23½ gr. alloy. The half and quarter eagles in proportion.

Ecu, a silver coin, in the old system of France, and also at Geneva and other places in Switzerland. In France it was of 6 livres; and the Petit Ecu, or half-euron, of 3 livres. The ecu, or patagon, of Geneva was worth 3 livres or 10 florins. Those coined in 1766 were of the English value of 6s. 8d.

Escafrin, the scali, or shilling, was formerly a base silver coin in the Netherlands, at 6 sivers of exchange, or 7 sivers current. Of the English value of 6d., and its double in proportion.

Escudo, a Spanish gold coin, of 40 reals vellon.

Faram, a small coin in the East Indies, both of gold and silver. The gold ones are only of 7½ carats fine, and are alloyed chiefly with silver; 24 of these are reckoned for an old Megeupam pagoda, which is of 7½. The silver stan- num of Bombay is valued at 3l. 1½d.; that of Pondicherry 3½d.

Faruti, a gold coin of Mysores, struck by Tippero Sat, of the value sterling of 7s. 11d. A variety of the pagoda.

Filippo, or Philip, an old silver coin of Milan, worth about 4s. 4½d.

Florin, a money of account and silver coin in Holland, Belgium, and Germany, called also gulden and gulden, and, by corruption, gilder or guildor. The florin of Holland and Bavaria is worth about 1s. 6d.; the heavy (or müns) gulden of Austria is worth about 2s. 3d.

Florin is also a gold coin at Hanover and in other parts
of Germany, though chiefly current in the countries on the banks of the Rhine; passing generally for 2 rix-dollars current. Assay value about 6s. 11d.

Forti, a small copper coin of Egypt.

Foung, a silver coin of Siam, estimated at 800 cowries.

France, a money of account and silver coin in the new system of France, and still more recently introduced into Belgium, with its double, quintuple, and lower proportions.

Of the value of rather more than 9d. It weighs 77.17 grains, and contains 69.453 grains of pure silver. The French franc and livre were formerly synonymous, but in the coinage of 1795 the franc was made too heavy, and its value was accordingly raised 1½d. per cent; thus 80 francs = 81 livres. A Swiss franc, containing 10 batzen, is equal to 1 French franc, nearly 1s. 2d.

Frankfort coin, a silver orthon in Austria formerly, of 10 paoli or 61 lire; its value in sterling was 4s. 6d.

Frederich, or Frederick D'Or, a gold coin in Prussia, worth 16s. 3d. There are also double and half Fredericks.

Gulde, a money of account and copper coin in Denmark; the half skilling.

Gall, the only coin of Cambodia, a small piece of silver, with characters on one side only; worth about 4d. sterling.

Ganja, a small coin in some parts of India beyond the Ganges, of mixed copper, lead, and tin; worth usually about 1½d. sterling.

Genovia, a coin of Genoa, both in gold and silver. Before the year 1790 the Genovino d’oro were coined at 100 lire; halves, quarters, and eighths in proportion. The Genovino of silver was worth 9 lire 10 soldi; light Genovino, weighing 32½ denari, were at 9 lire. In 1790 a new coinage took place, consisting of gold Genovino at 96 lire; halves, quarters, and eighths, at 4s., 24, and 12 lire; and silver scudi or Genovino at 8 lire; halves, quarters, and eighths, at 6d., 3s., and 1s. 6d. The Genovino became the standard coin in France in 1804. The French coins were introduced there, but the Genoese coins were still allowed to circulate, and the coinage of them is to continue. The assay value of the Genovino of 1790 was 2s. 6d. 2½d. sterling; that of the Genovino of 1790, 3s. 4d.

George d'Or, of Hanover, at 4½ rix-dollars in cash, or 5 rix-dollars gold value. Of the value of 16s. 4½d.

Gilder, or Guilder, see Florin.

Giustina, see Ducatone.

Gourde, the coin given to the Spanish dollar in the islands of Martinique, St. Lucia, Guadaloupe, &c.

Gros, or Greser, a small Russian silver coin, worth about 8d.

Grisco, or Albuguel, an Egyptian silver coin, of 30 Medini.

Groat. [Coin]

Groschen, Good (Gut), a small coin and money of account in the state of Hanover, and other parts of Germany. A good groschen is 3 mattheuer; a marenigroshen 2 mattheuer: the former worth 14d. English, the latter 1½d.

Grossetti, coins of Ragusa, of base silver, reckoned of the same value as the paras of Constantinople.

Gruss, or Gros, a small coin and money of account at Bremen: 24 grotes made into a specie rix-dollar.

Guilder, see Florin.

Gulden, see Florin.

Hammer coin, a silver coin of Persia, of 10 mannasia.

Imperial, a Russian gold coin, of 40 rubles; it has its half. The English mint value of the imperial coin before 1763 has been given at 2l. 9s. 6d.; the imperials of 1763 and 1772, at 1l. 13s. 4d.; the half-imperial of 1780, at 1s. 8d.; in 1790, at 1s. 7½d. The present value is 33s. 4d., and of the half 16s. 8d.

Joanni, John, or Jo, a Portuguese gold coin, of 6,000 rees, of the value of 1l. 15s. 11d.

Ichicho, or Ijicho, the smallest of gold coins of Japan, value about 15 at our rates.

Kaisergröschen, a money of account and base silver coin in Bohemia and some parts of Germany. In Bohemia the kaisergröschen is sometimes called böhmien. In Bavaria it is the value of 3 and sometimes 4 kreuzers.

Kolama, a little gold spherical piece of silver, bearing the figure of a Japanese deity, with several letters.

Kopek, or Copeck, a money of account and copper coin in Russia; answering to a penny English. There are pieces of 10, 5, 2, 1, ½, and ñ kopeks; likewise of 20, 22, 15, 10, 5, and 3 kopeks in silver, answering to 10d., 8d., 6d., 4d., and 2d.

Kreutzer, Creutzer, or Crudezer, a small copper coin and money of account in many parts of Germany, worth ½ of a penny. 60 kreuters go to a silver florin of Holland or Bavaria.

Larin, an old coin and money of account in Persia and Arabia, of 34 mannasis. It consists of a silver wire, about half an inch in length, doubled up, and flattened on one side to receive the impressions of some characters.

Lepoldorne, a silver coin of Tuscany, similar to the francobene; that of 1795 was of the assay value of 4s. 3d. sterling.

Lart, a silver coin of Austria, in the old system of France, of the value of 5 deniers.

Lira, a silver coin of Italy, particularly at Milan and Venice. At Milan it was worth 4 denari, or 1½ of an ounce. Pieces of 1½, 1, and ¾ lira were coined at Venice in 1802, passing in Austria at 10½, 18, and 30 kreuters, which contained only ½ of fine silver. This money was called moneta di nuovo stampo. The lira of Milan is stated by Kelly to be of the assay value of 17d.; the lira of Venice, 22½d.

Lirazza, base silver pieces, current at Venice, of 30, 20, 15, 10, and 5 soldi.

Livornina, an old silver coin of Leghorn, value 4s. 3d.

Livre, a gold coin of Malta, double, single, and half, coined by order of the governor. In 1802, this coin was current in Austria at 20, 18, and 16 kreuters, which contained only ½ of fine silver. The money was called moneta di nuovo stampo. The lira of Milan is stated by Kelly to be of the assay value of 17d.; the lira of Venice, 22½d.

Louis, a gold coin of Malta, double, single, and half, coined by order of the governor. In 1802, this coin was current in Austria at 20, 18, and 16 kreuters, which contained only ½ of fine silver. The money was called moneta di nuovo stampo. The lira of Milan is stated by Kelly to be of the assay value of 17d.; the lira of Venice, 22½d.

Luoens Dollar, or Lyon Dollar, an old Dutch silver coin at 42 silver or a little more. It was ½ of the ducatoon.

Mare, a small gold coin in Sumatra, weighing 9 grains, and worth 2½d. sterling, of the value of 1s. 4½d. The mao, or gold coin, the only one which is struck at Tunis, called also sultanin, valued at 4 pistarets, with half and quarter.

Mamoodi, or Mamoudi, a money of account and silver coin of Persia. The mamoudi of Gombroon contains ½ silver and ½ copper; and is worth nearly 3d. The mamoudi of Bassora is worth about 2½d. Mark. [Coin]

Mark, a silver coin in Hamburg. There is also a double mark, or 3½-schillings piece. The mark is worth 1½d.

Matthias, a copper coin of Brunswick, equal to 4 pence or 8 hillers.

Fax D'Or, or Maximilian, a gold coin of Bavaria, value 13s. 7d.

Medin, or Medino, a coin and money of account in Egypt. Kelly says, at Cairo 40 medini are valued at 1½d.

Mirition, an old French gold coin.

Moco, a small silver coin in the West Indies, which consists of a round piece cut out of the centre of the Spanish dollar. It is sometimes ½ and sometimes ½ of the dollar.

Mohur, a coin of gold in the East Indies. The mohur or gold rupee of the emperor Shah Alum, 1778, was of the value of 11s. 6d.; the mohur of the same, 1787, 12s. 4½d.; the sieca gold mohur of Bengal, of 1795, 1l. 1s. 7½d.; the Bombay mohur, 11s. 10d.; and the mohur of the latest coinage, 11s. 2½d.; Tippoo's gold rupee, 11s. 1½d.; mohur of the Dutch East India Company, 1783, 11s. 1½d.; ditto, 1797, 11s. 10d. Some of these had halves and quarters in proportion.

Moolam, or Mula, a silver coin in Cochin, an old gold coin of Portugal, of the value of 1l. 6½d. sterling. It had its half, &c. in proportion.

Murajo, a small silver coin used at Bologna, double and single, of 4 and 2 soldi.

Napoleon, a coin in the new system of France, the successor of the louis d’or, of the value of 20 francs. The value is 15s. 10d.; and of its double, or 40-franc piece, 11s. 8d. The napoleon weighs 99.564 grains, and contains 99.9% grains of pure gold.

Noble. [Coin]

Noir, see Dog.

Oban, the largest gold coin of Japan, three times the value of the copang.

Ozaz, a Sicilian coin of the value of 30 tari, each tari being subdivided into 20 grani. Its value is about 16s. 3d.
Ore, a money of account and copper coin in Sweden. Oella, a silver medal rather than a coin of Venice, formerly distributed by the government. Kelly says however they have been circulated at 3 lire 18 soldi. He gives the value in sterling at 1s. 7d.

Dollar examines the Coromandel coast, in the East Indies. Kelly enumerates several kinds, with the assay value of each annexed, viz. the star pagoda of the value of 7d.; old Arcot pagoda, 7s. 8d.; new Arcot pagoda, 5s. 8d.; Onore pagoda, 7s. 10d.; Mangalore pagoda, 7s. 10d.; Camampy pagoda, 7s. 6d.; pagoda of Pondicherry, 6s. 5d.; Hyderoon, or pagoda, 7s. 8d.; Sultannee hoon, or pagoda, 8s. 5d.; Tippo’s farufee, 7s. 11d.

Pulo, a small silver coin at Florence, Rome, and other places in Italy, was divided into two double, half, and quarter. The value of the pulo is 3½.

Papetta, a small silver coin of Rome, value 10½d. Para, a small Turkish coin, of the value of three aspers.

40 para, 1 piastre. Purdo, or Purdoo, a silver coin and money of account at Goa; as a coin it is worth four good tangoons, equal to 3½. 6d. sterling. There are pardo-xeraphins of five good tangoons: a xeraphin is worth 3½d.

Paisa, a silver coin of Brazil, 600 and 640 reess, current only in that country. Kelly gives the sterling value of two or three sorts: the old pataca of Brazil of 600 reess, 3s. 1½d.; pataca of 600 reess, 1755, 2s. 10½d.; ditto of 640 reess, 1768, 2s. 10½d.; ditto of 640 reess, 1801 (half, quarter, &c.) 2s. 4d. 6th.

Patan, or Patacon, called also Ecu, a silver coin in Switzerland, and also at Liege. In Switzerland its value is 3 Livres 6 sous, or 33 batzen. At Liege it is worth 4e. 4d.; at Berno, 4½d.

Pundruck, or Pundruck, the Spanish silver coin: the old Mexican pecuta of two Mexican reals, 1736, was of the value of sterling of 1s. 1d.; the pecuta of two reals of plate, 1721, and the pecuta of two reals of new plate, 1775, 10d.; Mexican pecuta, 1s. 6d. Pentaquarto. [Coz.]

Perpero, a silver coin of Ragusa, of 12 grossetti.

Pfennig, a Prussian coin, worth one-tenth of an English penny.

Piastra, a money of account and a silver coin in Turkey and the Levant; it is in fact the Turkish dollar. The piastre of Mustapha III., 1757, was of the sterling value of 1s. 10½d.; the piastre of Abdul-Hamed, 1773, 8s. 8d.; and another of the same period, 1s. 10½d.; the piastre of Selim, 1801, 1s. 1½d.; the piastre of Cim Turry, 1778, 8s. 6d.; piastre of Murat, 1773, 1s. 1½d.; the piastre of Smyrna, of 1808, 1½d.

Pice, a money of account and a copper coin in the East Indies, the latter a mixture of tin and lead, current at Bombay.

Piece of Eight, the Spanish dollar; also a money of account in what was used to be the Danish West India Islands. Pitteraren, or Piastraire, the name given in the West Indies to the Spanish pecutas. Kelly says pitterareens, or two-bit-pieces, which are Spanish pecetas, pass for 1½d. currency, and are worth 10½d. sterling. He adds, English shillings and sixpences occasionally pass here for pitterareens and bits.

Pistole, German. Under this name are included the old Saxan, August d’Or, Prussian Frederick d’Or, Brunswick Carl d’Or, Hanoverian George d’Or, Danish Holstein Christian d’Or, and the pistoles of Hesse, the palatinate, Hildesheim, and Mecklenburg, all reckoned at 5 rix-dollars current. Kelly says 32 pieces of each of these sorts of money were to weigh a Cologne mark of fine silver. An allowance is however generally made for deficiency in weight and fineness, and they are current in most places as long as 35 pieces weigh a Cologne mark of good silver, 2½ carats fine; they are thus called passier pistoles.

Pistole, Italian, Puistole. [Dogga.

Pistole, Spanish, see Doubloon.

Pistole, Swiss. The old pistole of Geneva was of 11 livres 10 sous; the later pistole, coined after 1752, 16 livres currant or 35 florins, with double and triple pistoles in proportion. By a law of the diet of the Helvetic Confederacy of 1804, such of the cantsons as wished to have them were to regulate the coinage in such a manner that the franc might contain 8½ Swiss grains of fine gold. The sterling value of the old pistole of Geneva, according to Kelly, was 18s. 4½d.; of the new or later pistole, 14s. 3d. The pistole of Lucerne, as well as that of the Helvetic Republic of 1800, was worth 18s. 9d.; that of Solothurn, 18s. 10½d.

Pitges, small coins in the Isle of Java, the only money of the natives, containing four parts of lead and one of tin: 25 of these pass for two duits, or duya.

Plokk, or Plokker, a silver coin in the Netherlands, of 3½ stivers current. Old pieces of this denomination pass for 2¼ stivers. Value in sterling 2½d.

Plates, the denomination given to certain large copper coins, formerly used in Sweden. Kelly says, 'The large copper coins of Sweden, as well as in France, 4s. 2½d. and 3½ silver daller, or 12, 9, 6, 3, 2, and 1½ kopper daller, weighing 7½, 5½, 3½, 2½, 1½, and ½ of the valutacie or common weight, are no longer considered as a legal coin, but as a sort of merchandise, which is considered as one to be sold or export after paying the duty on importation. There is something in Germany, and more particularly the 2-daller pieces, are called plates.'

Plot, a silver coin formerly used in Sweden, of the value of 1½d. sterling.

Poltern, Polotta, Poutilin, a Russian silver coin, of 50 and 25 kopeks, the half and quarter rouble. The poltin of the empress Anne was of the value of 1½d.; that of Elizabeth, 1½d.; of Catharine II., 1½d.; of Paul, 1½d.; of Alexander, 1½d. The halves in proportion.

Poluntary, or Pottentai, a copper coin, of which, in Hongkong and Pinneng, sometimes contains a little silver, and sometimes consists entirely of copper.

Polushka, a copper coin of Russia, a quarter kopek.

Quadruple, the doublebou of 2 escudos, or quadruple pistole of Spain. Its value in English gold coin has been stated to be 3l. 4s. 9d.

Quattrino, a copper coin in Italy, of 4 denari d’ira. At Rome 3 quattrini make 1 psalo.

Ragunor, see Gourde.

Rathspræsneringer, a silver coin of Aix-la-Chapelle, double, single, and half, of 32, 16, and 8 marks, value 1s. 4d., 8d., and 4d.

Ree, a Portuguese money of account. The gold mirth (piece of 1000 reess) which was coined for the African colonies in 1755 was of the value of 3s. 2½d.; but the mirth is generally valued at about 5s.

Real. There are three small Spanish silver coins called reals, namely, the real of Mexican plate, the real of provincial plate, and the real vellon; the two former are worth about 4d., the real vellon 2½d. sterling.

Rix-dollar (a corruption of the German Reichsthaler), a money of account and silver coin in Holland, Germany, Denmark, and Sweden. At Amsterdam a rix-dollar is divided into 24 groskels, or £2 4s. sterling, weight, 2½d. Flemish. In Germany the rix-dollar is worth 2 florins. The assay varies, but the general value, English, is 4s. 2½d. In 1813 a new monetary system was introduced into Denmark. Two of the rix-dollars, or gold bullion dollars, were equal one of the old specie dollars; and the new dollar is divided into 6 marks of 16 skilling each; its value is about 2s. 3½d.

Roubite, a Turkish gold coin, the third of the sequin, which is called mehlabue.

Roup, a Turkish silver coin of 10 paras.

Ruble, or Rouble, a money of account, and a platinum and silver coin in Russia. The platinum coins are a six-rouble piece, value 18s. 6d., and a three-rouble piece, of 9s. 3d. Of the silver roubles, there is the old rouble, before 1763, with 3½ d.; the new rouble, since 1763, worth 3½d.; with the halves of each in the same proportions.

Randstjek, a Swedish money of account and copper coin, of 1 ore koppar; there are also half-randstjekers.

Reput, a money of account, and a copper coin in the East Indies. The coins, which were formerly struck at the Calcutta mint, were sieca rupees, also called silver rupees, and gold mohurs, sometimes called gold rupees; 16 of the former, by regulation, were to pass for one of the latter. The silver rupee was worth ½d. Kelly says, 'The old Bombay rupee was the same as that formerly coined at Surat under the Mogul: it weighed 178½14 English grains, and contained 1.24 per cent of alloy. By an agreement of the English government with the nabobs of Surat, the rupees coined by both were to circulate at equal rates, and they mutually pledged themselves to keep up the coin to its exact standard of weight and fineness. The nabob's rupees however were soon after found to contain 10, 12, and even 15 per cent of alloy, in consequence of which, most of the Bombay rupees were melted down and re-coined.
at Surat: the coinage of silver in the Bombay mint was suspended for twenty years, and the Surat rupees were the only ones seen in circulation. At length, in 1600, the Company ordered the Surat rupee to be struck at Bombay, and since that period the rupees of both places have been kept at an equal value, weighing 179 English grains, and valued at 2s. 3d. In the Company's financial accounts submitted to parliament, the Bombay rupee is reckoned at this value, and figures of 12½ per cent. against current rupees.' Kelly, 'Universal Cambist,' 2nd edit., 4to. 1821, vol. i., p. 178, gives a large list of rupees, with their assay and value in sterling, varying from 1s. 10d. to 2s. 0½d. The rupee of Persia is a piece of 19 mohurs. Roman moneys are of two kinds, one of Tunscany, a piece of 3 sequins, weighing 8 denari 21 grani, Florence weight, and passing for 40 lire or 60 paoli. Value in sterling, 1s. 5½d. Ryder, or Ryder, called also Stanpenny, a gold coin of Spain, of the value of 1749, its value was fixed at 1¼ florins. Value, 1s. 4½d.

Trico, a Danish silver coin at 24 skillingis.

Schilling, or Shilling, also called shilling and escalin, a money of account and copper or base silver coin in several parts of Germany, at 12 pfennigs.

Schult, a silver ingot used as money in Japan. It is of the value of 1½. 3½d.

Scudo, a gold coin of Moderna, of 9 lire. Scudo, a money of account and a silver coin in many parts of Italy, at Sicily, and Malta. The scudo of Rome is worth 4½. 4d.

Sceltan, a copper coin of Hamburg, of 6 pfennings.

Semi, or Cashes, are small pieces of iron, copper, or brass, having a square hole in the middle, through which, as it is strung on a wire or thread in various numbers, 600 of the smallest being reckoned for a hank. Sequin, or Zecchin, Italian, called also Gigliato, a gold coin of Venice, Genoa, Rome, Milan, Piedmont, and Tuscany, of the average value of 3½d.

Rialto, or Chiavona, Turkish; the gold coins of Turkey are the sequin funducii, with halves and quarters; the double sequin, or yermeehebishe, the miller, and the rubuch. There are other sequins beside the above, which bear different names, and their values also vary according to the periods of their coinage.

Sesthal, or 34½ silver piece, a base silver coin in Holland, or base shilling; value 5½d.

Shaler, or Shatree, a Persian silver coin, the half of the term ams.

Shilling, English silver coin, weighs 87½ grains, and contains 80½ grains of pure silver.

Shoe of gold, an ingot used as money in China. The name is English. Kelly, speaking of China (vol. i., p. 67), says that the Chinese considered as mercantile coin; it is sold in regular ingots of a determined weight, which the English call shoes of gold; the largest of these weigh 10 tales each, and the gold is reckoned 94 1/2, though it may be only 93 or 93½. Shoes in English silver coin, half a shilling.

Shilling, see Shilling.

Slant, a copper coin of Sweden, single and double, of 1 and 2 ore silver, or 3 and 6 ore kopper.

Solido, a small copper coin of Italy. There are half soldi, and quartari, the 5th part of a soldo.

Sol, or Solid, a money of account and copper coin in France and Switzerland. Everywhere of 12 deniers.

Souverain or Sevens, a gold coin, chiefly coined in the Netherlands when subject to Austria. Its value was 15½ florins.

Sovereign, English gold coin, weighs 123·474 grains, and contains 113·001 grains of pure gold.

Stannably, a Constantinopolitan coin, current at Bassora for 6½ mohurs.

Silver, a money of account and copper coin in Holland and the Netherlands, containing 2 grotts Flemish, or 8 ducats, or doits.

Soeter, a small Dutch silver coin, at 21 silvers.

Soveret or Soere, a money of account and copper coin of the Netherlands. The smallest piece there current.

Sury, or Sury, a copper coin of Embden, at 3 wittens; 108 to the rix-dollar.

Taloru, a silver coin of Tuscany, Ragusa, and Venice; at Ragusa it is twice the highest silver coin, worth 13½ florins; at Tuscany it had also the names of vialino and Raguina.

Talor, a money of account and copper coin of Naples, Sicily, and Malta, of the value of 4d.; 12 go to the secco, or Sicilian dollar. There are pieces of 4 and 2 taurs.

Tars or Testone, a small Portuguese coin current of 6 vintem or 120 realis. At Rio de Janeiro Brazil there are vintens of copper also current for 20 reis, with half and quarter vintens, and two-vinten pieces.

Thaler, the ordinary name in Germany for the rix-dollar.

Vinzenz de Oro, see Cornitilla.

Vintem or Taler, a small Portuguese coin current of 6 vintem or 120 realis. At Rio de Janeiro Brazil there are vintens of copper also current for 20 reis, with half and quarter vintens, and two-vinten pieces.

Xeraphin, see Pardo.

Zloty, or Zolotta, a Turkish silver coin, of 30 paras.

In the above enumeration moneys of account have been only noticed where they were represented by real coins. For many of the precious metals and of the base metals used as money in different countries, it is found that so many numbers, or coins, are necessary that it has been deemed expedient to bring them under the same name, and that the same denomination of coins is divided into parts which are used for particular purposes. For this purpose we shall use the following names, and we shall designate the value of each coin by the number of denomina-
MONFERRATO is the old name of a large district of northern Italy, which extends from the southern bank of the Po, in the nether ranges of the Apennines. It was a distinct principality, with the title of Marquisate, but is now merged in the territories of the Sardinian monarchy. Many parallel offsets branch off in a northern direction, from the Ligurian Apennines to the southern banks of the river, in order to learn the communications by numerous streams, the Stura, the Gesso, the Borbío, the Pesio, the Ellero, the Tanaro, the Belbo, the two Bormide, the Erro, and the Orba, all of which join the Tanaro above Alessandria, below which town the Tanaro enters the Po. The Tanaro is another range of hills, par Sal with the course of the Po, runs from the mount of Supergia, opposite to Turin, to the town of Casale, and divides the valley of the Upper Po from that of the Tanaro. The greater part of this lofty region, on both sides of the Tanaro, was for a long time under construction for Montferrat, and Monferrato, south of the Tanaro, towards the Ligurian Apennines, and Lower Monferrato, extending from the Tanaro to the banks of the Po. The principal towns of Lower Monferrato are Alessandria, Asti, Casale, and Valenza; those of Upper Monferrato were Mondovi, Acqui, and Alba. It is altogether a favoured region, rich in corn, wine, fruit, silk, and cattle. The wines of Monferrato are the best in northern Italy; the muscat of Asti is particularly famous, and however much the character of being high-spirited, lively, and industrious; their national dance, which is called Monferratina, and by corruption Monfedrina, is well known all over Italy, and is a favourite in large and especially rural dancing parties.

Cicero, his uilex, and his pupils associated the celebration of Mons Merax, a fertile mountain or range of hills. (Alberi, Descrizione di tutta Italia.) The house of Monferrato is said to have descended from the imperial family of Saxony in the tenth or eleventh century, when they obtained for the leaders of the chief of Marquisate of Monferrato and governed it till the time of Charles V., when, their male line becoming extinct, it was succeeded by the Gonzaga of Mantua, who were the next heirs in the male line. At the death of Francesco Gonzaga, who left no male issue, the duke of Savoy advanced a claim to the inheritance of Monferrato, on the plea of former intermarriages between his ancestors and the former Palmolivi dynasty of Monferrato. This was the cause of long and tedious war between the brother of the late duke of Mantua and the duke of Savoy, which quarrel spilled over into France and interfered, and afterwards became principal. At last, by the peace of Cherasco, in 1650, part of Monferrato was given to the duke of Savoy, and the remainder with the duke of Mantua. During the war of the Spanish succession, when the last duke Gonzaga was deprived of Mantua, the whole of Monferrato was given to the duke of Savoy. [GONZAGA.]

It is now divided into the administrative provinces of Acqui, Asti, and Belbe, and the marquisate of Monferrato is still used however in Piedmont to designate the whole tract of country.

MONGAUT, NICOLAS HUBERT DE, born at Paris in 1674, studied under the fathers of the congregation of the Oratorians, and in 1692 was sent to Chartres, son of the duke of Orleans the regent, by whose interest he obtained several offices under government. He became a member of the French Academy in 1718. Mongaut died at Paris in 1746. He made a French translation of Heron's (Paris, 1745), and also a very good translation of Cicero's letters to Atticus (Paris, 1758), with numerous and useful notes. Both these works, and the last especially, are among the best translations from the classics which the French language possesses.

MONGE, GASPARD, born at Beaune, in 1746, died at Paris, July 28, 1818. Being one of the members expelled from the Institute at the Restoration, no hope of him appearing in the memoirs* of that body. Immediately however after his death, two accounts, if not more, were published, one by M. Brison, 'Notice Historique sur Gaspard Monge,' Paris, 1818; the other by M. Charles Dupin, 'Essai Historique sur le Génie de Mons,' Paris, 1819. We have drawn the materials of the following account from the latter.

The father of Monge was, we suppose, a thriving inn or coach keeper, 'possesseur d'une opulente hôtellerie,' and Madame Romain's style 'macaron de facon.' Education little is said, nor much to be expected, when we find him 'employed at the age of sixteen, in the college of Lyon, to teach the natural philosophy which he had come to learn.' The clergy who superintended the establishment used all means of having him give his young pupil to enter the church, but the construction of a plan of his native town brought him at this time under the notice of a colonel of engineers, who procured for him and persuaded him to accept an appointment in the college of engineers at Mezières, where he remained till 1780, when he was appointed professor-adjunct with Bosut, in teaching hydrodynamics at the Lourve. During his stay at Mezières, observing that all the operations connected with his propositions of fortification were worked out (appelé, qu'on appelle the construction of a plan of his native town brought him at this time under the notice of a colonel of engineers, who procured for him and persuaded him to accept an appointment in the college of engineers at Mezières, where he remained till 1780, when he was appointed professor-adjunct with Bosut, in teaching hydrodynamics at the Lourve. During his stay at Mezières, observing that all the operations connected with his propositions of fortification were worked out (appelé, qu'on appelle...
simply states the appointment, touches on the misfortunes which happened at sea during his administration, commencing the whole with an indignant denial of Monge having

architecture, fortification, &c. &c., in a length, but not with much profit.

[Geographer vol. 5, p. 156.] Of

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tile valleys and mountains, partly wooded, as far west as the place where the Hoang-ho river turns southward: this fact is known to Chinese provinces of Pe-teh-li and Shan-Si. But the tract farther west, which is surrounded by the great northern bend of the Hoang-ho, par-
takes strongly of the features of the Gobi, and forms part of Mongolia: it is called the country of the Ordes, taking its name from the ancient, now extinct, division of the Tacahkah Mongols. This whole tract is cov-
ered with hills composed of loose sand, mostly without water, and entirely destitute of trees. But the numerous depressions contain extensive meadows, with rich grass and bushes. These parts of Mongolia have never been proved successful, and accordingly it is abandoned to the Mongols and their herd; but in order to prevent them from plundering the adjacent agricultural districts of the
neighbouring provinces of Shen-si and Kao-si, the great Chinese wall was built across the peninsula from east to west from Pao-tehshou to Nin-gia.

That part of Mongolia which is to the east of the Khiing-khan Oida, and extends nearly to the shores of Hoang Hai, or the Yellow Sea, from which it is divided by a narrow territe tract belonging to the province of Leao-tong, is called Kortshin. This name is properly only applied to the tract north of the river Sira Muren, or Leao-lo, which resembles the country of the Ordes, except that it is less intersected by the European roads, and contains little fertility; but south of the river Sira Muren the country contains numerous meadows clothed with rich grass, and agriculture has been introduced here by the Chinese, who send to this country their criminals who are condemned to traverse this tract of several months as pasture-ground. This was the condition of the country above a hundred years ago, when it was visited by Eu-
ropians. It would seem however that agriculture must have been introduced in the latter part of the 19th division, as it is a known fact that great quantities of grain, especially wheat, are exported from the province of Leao-tong to Peking and Shanghage.

The most southern district of this country is traversed by an offset of the Khiing-khan Mountains, which offset branches off from the principal range near the peaks of Potsha, and extends in a south-eastern direction to the Hoang-hai, where it forms the high, rocky, and mountainous shores along the western side of the gulf of Leao-tong north of the mouth of the river Lan-ho. The declivities of this range are abundant with timber, but the northern side is bare and destitute of wood; whilst the southern is over-
grown with pine, fir, oak, lime, walnut, and other trees, and is the haunt of numerous wild animals, among which are tigers. Here is the chief hunting-ground of the Chinese emperor, and contains the royal palace of Ichol, which was visited by Lord Macartney and described by Sir George Staunton. The tract on both sides of the Lan-ho is an agricultural country of great fer-
tility; it extends gradually towards the east, and on the boundary of Mongolia, it is inhabited by Chinese, and is very populous. Besides several small towns, it contains the large town of Quan-taingh.

The country which extends along the north-western side of the Ta-Gobi is nearly unknown, with the exception of the eastern part, which is traversed by the caravans from Kirachia in Siberia to Khalgan in China. Here too the surface of the country is frequently broken by hills and isolated ridges; but the intervening levels contain rich pasture-ground. It is mostly well watered, but wood is scarce. In advancing northward the hills grow higher, and the valleys or intervening level tracts become narrower, till near the boundary-line between Mongolia and Siberia the country becomes into mountains, which run in a continuous chain, and are that portion of the Altai Mountains which is known under the name of Khiing-khan Oida. [ALTAI MOUNTAINS.] The width of this mountainous and uneven country, which lies between Siberia and the Chinese empire, seems about 200 miles. In it originate the river Selenga and its numerous upper branches, of which a short account is given in ALTAI MOUNTAINS, vol. i. p. 399. Here also rise the Kerlon and the Oon, two large rivers, which by their union form the river Lena, and which runs into the

or hian-vang, as well as the lieutenant, called amban, reside in the town of Urga, or Oergo. This town is built in a small plain; but though sheltered by mountains against the north and west winds, the climate is not healthy. The chief common vegetables to be raised, which are accordingly brought to it from Mai-mat-shin, a place two degrees farther north. Its population does not exceed 7000, of whom 5000 are Tungusians, or the inhabitants of the ecclesiastical establishment of the Kootokkutu; but it is a place of considerable traffic, being a depot for the goods inten-
ded for the trade with Siberia, and also for those Chinese productions and manufactures which are consumed in the interior districts of China. The most westerly part of the Mongo-
liprinces, whose tribes wander about in the Ta-Gobi and the adjacent countries, are obliged to reside in this town, in order that their views may be known to the Chinese govern-
ner, who is a Mandshoo, and commonly a relation of the em-
peror. Here also is the supreme court, called Yamnoum, for the administration of justice in this part of Mongolia which is inhabited by the Khalkas. This place may in fact be called the capital of Eastern Mongolia. The small town of Mai-mat-shin is on the very boundary-line of Siberia, and less than a mile from Khiachi. [KIACHIA, vol. xiii., p. 299.]

The western portion of Mongolia, extending from 84° to 96° E. long. between Siberia and the most western extre-
mity of the province of Kan-su, has never been visited by Europeans, although a long range of mountains stretches from the geography of the Chinese empire, the Tay-taing-
hoi-tien, and the maps annexed to it. Though a great number of localities are indicated on it, we are unable to form any idea of the surrounding countries as to their extent, appearance, or its fitness for sustaining a population. Its western side is traversed by a mountain range, which near its western extre-
mity is connected with the Altai mountains, not far from the eastern banks of the Irfsh river, a great branch of the Ooroongoo. This range, the Tag-shun, includes a tract of land near our maps the Great Altai. It seems to rise to a considerable elevation, but to disappear about 94° E. long.; for farther east only isolated mountain masses or short ranges occur in the desert. That portion of Mongolia which lies south of this range seems to partake largely of the nature of the Ta-
Gobi, extending mostly in extensive sterile plains. The great number of rivers which, descendling from the southern declivity of the Ektag Oola, join the Irshis before it reaches the lake of Zaizan, seem to divide the tract of land which our country extends along the northern banks of that river. The Irsh is the largest river in this country, and probably runs 160 miles before it falls into lake Zaizan. Another large river, the Oorongoo, falls into lake Kisibash, which is about an hundred miles above the sea.

In this part Mongolia extends to the north of the Altai mountains, comprehending the country in which the upper branches of the Yenesi have their origin and course. The mountain range which divides the last-mentioned tract from the lake Upa Nor and the river Tes is called the Tsangnoo-Oola.

This part of Mongolia is divided into two governments, the government of Kobdo and that of Uliassuati, the bound-
dary between them running near 99° E. long. The capital of the latter is named Tes, seated in the middle of the great extremity of lake Yeke Aral Nor: the capital of the latter is Uliassuati, situated on the river Iris, an affluent of the Djabekan. The latter is placed to contain 2000 houses, and to be regularly served by the post-office and a small branch of its commerce seems to be considerable. Nothing is known of Kobdo. A general, appointed by the Chinese emperor, resides in each town, a Mandshoo by birth, who has under his inspection the Mongol inhabitants of the country; he unites in his person the military and civil authority.

VOl. XV.—2 U
As the whole surface of Mongolia, with the exception of the deep depression of the Ta-Gobi, is more than 3000 feet elevated above the sea-level, and as it stretches out in vast plains, to which the comparatively low ranges of mountains along its northern border cannot afford shelter against the northern and north-eastern winds, the climate is much colder than in that part of Siberia which extends along the base of the Altai range west of lake Baikal. No month in the year is free from snow, and even frost, though the heat in the summer is frequently oppressive. On the lower part of the plains the cotton-grass, tare, and rushes abound; while on the higher grounds we meet with trees and the sandy surface of the country. Sudden and great changes in the temperature are of frequent occurrence. It is however remarkable that the numerous herds which pass the winter on the hills have generally, even after all the snow of the grass is seen above it, and serves to nourish the animals. This evidently shows that the quantity of snow which falls is comparatively small, and much less than that which annually covers the northern continent of Europe or of North America. This fact is a proof of the great dryness of the air; and to this want of moisture the unfitness of the soil for agricultural purposes, even where it is not composed of sand or stones, is mainly to be attributed. A little millet is grown in a few sheltered places among the hills, which supplies the needs of the month. Rain is rare, except near the great ranges of mountains, especially about Unga. Timkowski observed that in the months of October and November the thermometer descended to $+10^\circ\,F.,$ and $-10^\circ,$ and in Unga, in January, it varied between $-20^\circ,$ and $-70^\circ$. Gates of wind are frequent, and, especially in the Gobi, blow with great force, and frequently for many days together.

The wealth of the Mongols consists in their numerous herds of camels, horses, and sheep. Cattle are only numerous in very few tracts, especially in the hereditary country of China; there none in the Gobi. Asses and mules are only found in the vicinity of China. Wild animals are numerous, especially hares, antelopes, daghisgaitis or wild sausages, and tigers. Fish and game are plentiful. The fowl are plentiful on the numerous lakes and swampy tracts. In some places the desert is covered with small stones, among which several kinds of precious stones occur, as chalcedony, agate, onyx, jade, carnelian, &c., which are collected by the Chinese.

Inhabitants.—The inhabitants are called Mongols, and constitute the principal stock of a nation which is widely diffused over the extensive table-lands of central Asia. This nation is divided into two great divisions, the Eastern or Chinese Mongols, and the Western or Calmucks. Of the latter an account is given under Calmucks. All the tribes belonging to this nation have, from time immemorial, led a nomadic life, and subsisted on the produce of their herds, without attempting to cultivate the ground; a circumstance which must be attributed to the fact, that they inhabit being entirely unfit for agriculture, with the exception of very small tracts.

The Proper Mongols inhabit that portion of Central Asia which is bounded on the north most by the great northern extremity of lake Baikal, and thence extending west-south-west to the northern extremity of lake Balasch, and thence running east-south-east to the banks of the river Hoang-ho, where the range of the Alahan rises near the town of Ning-hia. From this place it follows the great wall of the Chinese empire, almost in all its extent, and from its eastern extremity it runs north-eastward to the junction of the rivers Nonni and Songri in Mandschuria, whence it returns to the northern extremity of lake Baikal. The whole country is composed of a vast extent of pasture land, and the possession of which is the direct object of all Mongol emigration. There are however Mongols also in other parts of Asia, especially in the country about the sources of the Hoang-ho, and at Li-fan-yuen, in the Tungusian, and in the country where they are called Khor-Katashi Mongols. But our information about these last-named branches of the great nation is extremely scanty, as those countries have never been sufficiently explored. Among the Proper Mongols all speak the same language, and admit that they all belong to the same nation, and have a common origin.

The Proper Mongols are divided into three great nations, the Tabakhar, Khalkhas, and Sunni. The Tabakhar inhabit the best part of Mongolia, being in possession of the tract which skirts the great Chinese wall on the north, and extends to the Ta-Gobi, a distance of from 150 to 200 miles from the wall. They obtained the full confidence of the court of Peking by yielding to the sway of the Mandaboo, before they had made any considerable progress in the conquest of China. The Khalkhas or Khalkhas Mongols occupy the northern part of Mongolia, along the southern boundary of Siberia. They voluntarily submitted to the Chinese emperor, to avoid destruction in their unsuccessful war with the Oeloth Kalmucks in 1668. The Sunni0 occupy the country between the Tabakhar and Khalkhas, or that part of Mongolia which extends along the southern boundary of China; they are numerous, and powerful than their neighbours, and least esteemed by the Chinese. They submitted to the Mandaboo, when the Tabakhar joined them in 1634. They have consequently no literature; indeed their mode of life prevents them from having one that has originated with themselves. The Arabs and Mongols however have a literature, and they owe it to having conquered nations who had advanced much further in civilization than themselves; the Arabs to the Persians, and the Mongols to the Chinese. But as the Arabs preserved their dominions over the conquered nations for many centuries, their literature acquired a great degree of originality and extent, while that of the Mongols, who were masters of China only for a few years, have left us only a few narrative books, and a few original historical works, especially the history of their great hero, Genghis Khan. We are however very imperfectly acquainted with their literary compositions.

The court of Peking takes great care to maintain a levée for the transmission of the Mandaboo, and the best of the most serious means of diverting the thoughts of their princes from ambitious enterprises and from disturbing the peace of the country.

The whole nation is divided into twenty-six tribes, called ainak. Each of these divisions has an hereditary prince, except the Khalkhas, who constitute one ainak, but are governed by four hereditary princes, called khans. All four claim a descent from Genghis Khan. Each ainak has its territory in which it is governed by its ainak and its tribes. The order of society resembles the feudal system, and the men are called taidishe. The Mandaboo have introduced among them a military division, according to which the whole nation forms 133 banners, each of which is subdivided into a regiment, and each regiment is assigned to a company, and is to serve as a horseman from his eighteenth to his sixteenth year. The Mongols are governed by the decrees of the Li-fan-yuen, or Tribunal of Foreign Affairs, which has instituted for them a civil government, resident at Unga, and in which the military and civil functions are united. All their princes are obliged to pay a fixed tribute as a token of their dependency, but it is small, and they receive ten times its amount back in presents, given to them as a remuneration for their services and fidelity. A few receive even a pension, and the richer princes look upon the Mandaboo as a marriage to a princess of the imperial blood, and thus are more closely attached to the interests of the emperor. By these means the court of Peking keeps the unruly and tempest of most nations in subjection, in which it is powerful, but by the relapse of the Mongols bear to the Chinese. It is therefore probable that the Chinese should rise in rebellion against the Mandaboo, their present masters, the latter would be supported by the Mongols in maintaining their present ground.

According to a rough estimate, it is thought that this nation, after having lived in peace for more than a century, can bring to the field 500,000 warriors; and as each male is a warrior, it is presumed that the whole population does not much exceed 400,000. (Timkowski, Voyage à Peking, &c.; Pallis's Travels through Russia; Klapproth's Asia Polyglotta; Staunton's Account of an Embassy to China; M'Lodd's Narrative of a Voyage to the Yellow Sea; Ritter's Erdhron von Asien. I. 3.)

MONGOLS and TARTARS have been so constantly confounded by former writers, that even in modern times, although the vague denominations of Great Mongols and Tartary have disappeared from our maps, much confusion still prevails about these two nations, who are however distinguished from each other by a strongly-marked physical and moral character. The vast plateaus and plains of Central Asia are occupied by four great branches of the human species, by the Tungus and Tibetan races, and the Mongol and Tartar, and more properly speaking, Turk.
tribes. The last-mentioned people, whose number may be estimated at nearly three millions, are widely scattered, from the shores of the Caspian Sea to the Russian provinces of Kasan and Astrachan, and to the inhospitable tracts of Siberia, and even beyond that mountain range, the southern declivities of which are principally inhabited by the Turkmans, or those Turki tribes from whom the European Turks, or Osmanlis, are descended. Some of the northern clans, and particularly those which are subject to the Russian government, have settled in towns and villages, and have engaged in trade, cattle-breeding, and agriculture. On the south side of Mount Caucasus numerous Tartar tribes, who trace their descent from the Huns, as well as those with their flocks to the warmer regions of the plains, live alternately in tents and moveable habitations; but the greatest part of them resemble in many respects the Arabian Beduins, have no fixed residence, wander over an immense extent of country, and lead a roving pastoral life, being occasionally engaged in hostile excursions and predatory quarrels. Personally they are a noble and intrepid race, and though animated by fierce passions and addicted to plunder and robbery, they are nevertheless careful observers of the duties of hospitality, and rarely shed blood, unless strongly provoked. (Leyden's learned Introduction to the Memoirs of Baber, London, 1828.) With the exception of the religion of Mohammed, there is no common tie among the numerous independent clans, which are distinguished by the Turkish denomination of hordes or encampments, such as the Nogai, Usbek, Kirgise, and Turkoman hordes. But they are all distinguished by the same striking features of the finely-formed and light-coloured Tartar tribes, whether white or brown, by which the Thirteen Tartars and the Mongols are characterised by a short stature, dark yellow colour, flat nose, strong cheek-bones, large and prominent ears, and by the almost complete absence of beard. The Mongol race, which is far more numerous, with the Tartars, has inhabited almost all the eastern countries of Asia; but it is to the restless hordes of middle Asia, and to the Buriats, Bashkirs, Kalmucks, and other roving tribes, that the name of Mongols is chiefly restricted. Adhering to no fixed life, and in general equally fond of horse and cattle breeding with the Tartars, the Mongols wander in quest of pasturage over their boundless plains, carrying with them their whole stock of property, and even their houses, which are placed upon wheels and drawn by oxen. They thus leave scarcely a trace of their former residence in the places where they abandon. Contending for temporary pasture-grounds, or propelled by urgent necessity, those innumerable crowds of Mongols, though naturally faithless and cowardly, have often invaded the neighbouring countries.

The Scythians of old, who dwelt in the sixth century before Christ, the provinces of Media and Persia, even as far as the frontiers of Palestine, were undoubtedly Mongols (Herodot., i. 102; iv. 23; Jeron. cap. 15; vi. 3), who afterwards, under the name of Huns and under the command of the fierce Attila, made considerable progress into Europe, ravaging the country like a host of hungry locusts, and conquering rather by their overwhelming numbers than by any regular warfare. (Ammianus Marcell., xxxi. 2; Jornandes, De Rebus Goth., 35.) The Huns appear even on an antient Indian inscription (Asiatic Researches, i. 131); but the 'White Huns' mentioned by Cosmas Indicopleustes are probably Turki tribes, or those Scythians (Sinae) whom King Vardan expelled from India in the fifty-sixth year before our era. The distinctive names of Mongols and Tartars did not become known until after the conquests of Genghis Khan, who honoured his Mongols with the pompous title of Khagan Monghola, or 'celestial people,' whereas the conquered Tartar hordes were called tributaries, or Tatara, as the word should be more correctly written. Although the main body of the soldiers, as well as the immediate successors of Genghis Khan, were decidedly Mongols, it is from that time that the name of the more courageous and spirited Tartars has been indiscriminately and arbitrarily applied to those Asiatic conquerors. (P. F. Schmidt, Forschungen im Gebiete der Geschichte der Mongolen, pp. 5, 39, 56.) Genghis Khan, born in 1165, became the head of the Mongol clan in the thirteenth year of his age, and having first overcome the neighbouring hordes, he soon united the numerous wandering tribes into a conquering nation, and successively subdued the greatest part of Asia. His son Oktai followed him under the title of Great Khan, and was equally successful. In their expeditions to the west the Mongol armies, or, properly speaking, their hosts of robbers, advanced even to Hungary and Silesia; so that after the dreadful battle of Wahlstadt (A.D. 1241) the Mongol empire extended from the northern provinces of China to the frontiers of Poland and Germany. The Mongols (Khalkhas), under their khan Kublai, conquered all China, and remained in possession of that country for a century. In the course of the thirteenth century this vast empire gradually split into several independent sovereignties, till it was once more united, and even considerably enlarged in the direction of Hindustan, by that bloody conqueror of the Dzungari Turki race, the famous Timur Begh, or Tamerlan, after whose brilliant career (1335-1405), the Mongol empire slowly dissolved. In the year 1519 a lineal descendant of Timur, Zhebireddin Mohammed Baber, founded a new monarchy in Hindustan, erroneously called the Mogul empire. Being himself of Turki origin, Baber not only wrote his interesting 'Memoirs' in the purest Turki dialect, but often censures in the strongest terms the depravity, perfidy, vileness, character, and cowardice of the Mongols.

For the further history of the Mongol and Tartar tribes, see Abulghasi Behadurkhan, Historia Mongolorum et Tutorum, Causa, 1825; Hüllmann, Geschichte der Mongolen, Berlin, 1796. MONGOOSE, or MONGOZ, one of the names of a species of Macauco, Lemur Mongoz, Linn.

MONIMIA/CHE.E constitute a little-known natural order of plants, whose most striking distinction consists in the flowers being naked and collected together into involucre, some male and some female; the male involucres having their inner surface thickly covered with numerous stamens; the female including several carpels, each of which has a single ovule in its interior. The species are very few in number, and in all cases are South American woody plants, shrubs, or trees, with fragrant aromatic secretions. Their real affinity is unsettled; if the prevailing opinion as to their structure is correct, they must be regarded as near allies of Urticaceae; but if what is now called the involucres should be shown to be a case, as it was considered, till Brown suggested the contrary, they will take their station near Lauraceae, with which their aromatic qualities assimilate them.
of the vicinity of crocodiles. The warning of these Monitory Lizards was said to be a hissing or whistling; but the better opinion is, that they obtained credit for this monition solely from the accident of their haunts, which are for the most part in the neighbourhood of the waters, and consequently bring them sometimes into company with the destructive and gigantic reptiles above mentioned. The Monitors have teeth in both jaws, but none on the palate. Cuvier divides them into two groups [Lacerta, ad.]; and Fitzinger into three, under the names of Tupinambis, Varanus, and Paaomamusurus. Mr. Gray makes the Monitoridae the second section of his Leptoglossus, or Slender-tongued Lizards. (Zool. Proc., 1837.) The true Monitors are protected by small and numerous scales on the head, the limbs, under the belly, and round the tail, which is carinated above, the keel being formed by a double row of projecting scales. Thighs without any row of pores.

Geographical Distribution.—The Old Continent.

e. skull of Monitor Niloticus, seen from above; f. underjaw of same.

The Monitor of the Nile (Lacerta Nilotica, Linn., Tupinamis Niloticus, Geoff., Osauren of the Arabs) will serve as an example of these Lizards.

Description.—The teeth of this species are conical and strong, and the posterior ones become rounded with age. The colour is brown, with paler and deeper dots, forming occluded compartments, which become rings on the tail and obscure stripes on the limbs. The tail, which is rounded at its base, is carinated above, though not strongly, nearly throughout. Length from five to six feet.

Monitor Niloticus.

Locality.—Egypt; where the modern Egyptians have a fable that the animal is a young crocodile which has been hatched on dry land—as indeed all young crocodiles are—but they mean, we suppose, to convey the idea that it is a dwindled and neglected offspring. The species is to be found on the monuments of the ancient Egyptians, probably on account of its devouring the eggs of crocodiles.

The great fossil Lizard [Megalosaurus] appears to have partaken of the structure of the Monitors and the Crocodiles. The Monotarous was also very nearly allied to the Monitory Lizards [Megalosaurus]. An account of the dissection, by Mr. Martin, of a Monitor that died at the Gardens of the Zoological Society in the Regent's Park, in 1831, will be found in the Proceedings of the Society for that year.

MONK. In England, before the Reformation, a person who entered and professed in religion, as the phrase was, from that time was considered, for all legal purposes, to be dead. Littleton (§ 200) says, 'When a man enthrall into religion and is professed, he is dead in the law, and his son or next cousin (consanguineus) incontinent shall abate him, as well as though he were dead indeed. And when he enthrall into religion, he may make his testament and his executors; and they may act an action of debt due to him before his entry into religion, or any other action that executors may have, as if he were dead indeed. And if that he make no executors when he enthrall into religion, then the ordinary may commit the administration of his goods to others, as if he were dead indeed. The title of this legal notion of a civil death, that if a lease was made to a man for the life of another person, and thus other person professed in religion, the lease determined; and this reason such a lease was always made for the natural life of any person, the continuance of the lease was to depend; and this phraseology is still maintained in legal instruments. (Co. 2, Rep. 48.) All Regulars, that is, those who vowed obedience, chastity, and poverty, entered some house of religion, where they professed. Bare admission into such a house was an entry into religion; but the person was not professed till the year of probation was expired, and he had taken the habit of his order and made the vows above mentioned.

The 27 Hen. VIII., c. 24, all monasteries, priories, and other religious houses of monks, canons, and nuns, of whatever habit, rule, or order, not having lands, rents, or other hereditaments above the value of 200l. per annum, and all their manors and lands, were given to the king and his heirs for ever. It was therefore considered that the tenant should not enjoy, according to the act, the actual and real possession of such religious houses as were comprehended within it, and might give, grant, or dispose of them at his will and pleasure. The new 27 Hen. VIII., however, determined; if not come within the provisions of the act, they should be suppressed. (1 Hen. VIII., c. 13, is still more comprehensive. By the 1st Ed. VI., c. 1 (which receives the 37th Hen. VIII., c. 4), all colleges, free chapels, and chantries, and all manors, lands, or hereditaments belonging to them, or which had been given for the finding of any priest, or of any anniversary or obit, or any light or lamp, to have continuance for ever, were given to the king and his heirs and successors. It should be observed that these acts did not affect ecclesiastical buildings, privileges, or endowments that did not affect the secular clergy, such as archbishops, bishops, deanesses, and chapters, prebendaries, archdeaconies, parsonies, and vicars; but only the regular clergy. It was decided in the archbishop of Canterbury's case (Co. 2, Rep. 48), that no beneficed house, unless it was entirely endowed within the act of 31 Henry VIII. These acts however completely put an end to all the houses of regular clergy within the realm; and on the occasion of carrying into effect the statute of 31 Henry VI., a great many grammar-schools and other charities which did not come within the provisions of the act were also suppressed. 'This act,' says Strype, 'was soon after grossly abused, as the act in the former king's reign for dissolving religious houses was. For though the public good was pretended thereby, and I hope yet private men, in truth, had most of the benefit, and the king and the commonwealth, the state of learning, and the condition of the poor, left as they were before or worse.' (Strype's Ecclesiastical Memoirs, ii. 101-103, 423, and 461, where there is a catalogue of King Edward's free grammar-schools, which were endowed for the most part out of the charity lands given to the king by the said act for this and other like purposes.)

MONK, N. Duke of Albemarle, second son of Sir Thomas, Monk of Potheride, in the parish of Morten, in Devonshire, was born on the 6th of December, 1669. His father's estate was much encumbered, and his circumstances so distressed, that when Charles I. visited Plymouth to inspect the equipment of a Spanish expedition, he was afraid of joining the gentlemen of the county who were desirous of assembling round the king, or account of the menaces of a creditor who threatened to arrest him. George Monk was despatched to offer the under-sheriff money to stay that expedition, and receipted the money; but he accepted the money, promised what was asked, and a few days after, paid doublets on the other side, caused Sir Thomas to be publicly arrested in the midst of the gentlemen assembled on the king's way. (Memoirs of Monk, by M. Guizot, p. 120.) The circumstances had an immediate influence on young Monk's life: he dealt so violently with the treacherous under-sheriff, that it became prudent for him to leave England. Sir Richard Greenville
his relative, was on the point of sailing on a cruise before Ceziz, and he embarked with him as a volunteer. Upon the failure of this expedition, he enlisted during the following year in the equally unsuccessful attempt on the Isle of Rhé. Soon after his return from the Isle of Rhé he entered the service of Holland: 'Germany and the Low Countries were at this period the resort of those young Englishmen whose taste or the state of whose fortune drew them to the profession of arms. He returned to England about the thirtieth year of his age, when the first Scotch war began, enlisted in the king's army, and obtained the rank of lieutenant-colonel in Lord Newport's regiment.' (Skinner's Life.) The expedition of taxes, however, which was the subject of which it was concluded, made him discontented and inclined to emigrate to Madagascar; but he abandoned the scheme, and was appointed colonel of Lord Leicester's troops sent to quell the Irish rebellion (1642). In the irregular warfare that followed he had considerable success, his power being augmented by the devoted attachment of his troops: there was not, it was said, a soldier ever so sick or ill shod, who would not make an effort to follow George Monk. When the civil war began, the troops were recalled, and Monk, being suspected of favoring the parliament, was sent under a strong military guard to Bristol. Lord Hawley, the governor of the town, passed him on parole to the king; and the king, satisfied with his professions, permitted him to return home, and in the autumn of 1645 one of his regiments shivered in the siege of Nantwich. At Nantwich he was defeated by Fairfax (January, 1644), was taken prisoner, and, after some delay, confined in the Tower of London. During the two years that he suffered the miseries of imprisonment aggra-

vated by the belief that the cord he had promised to the king became a prisoner, and the civil war ceased. His known abilities made him now desirable as a partisan. The parliament actively strove to gain him, and at length, over-

coming the opposition of the king's ministers, he was permitted to forsook his party, which was no longer in a condition in which he could serve it, and 'quitted his prison to serve the parliament, leaving in the Tower the royalists, his compa-
nions in adversity, who never ceased to flatter themselves that they would prove one day useful to the king in England.' (Guizot, 39.)

Monk was now sent to Ireland to command in Ulster, where he served his new masters greatly to their satisfaction, leaving only one cause for censure, a league with the rebel O'Neill. He had gained the confidence of the crown, who determined, on account of his military talents, to make him general of the ordnance, and to provide him a regiment with which he might accompany him in the meditated Scotch campaign. At this service Monk distinguished himself at Dunbar and was left by Cromwell with 6000 men to complete the reduction of Scotland. It is in this campaign that he is accused of having in cold blood put to death the governor of Dundee and 800 of the garrison. After a short respite for safety; and thereupon began the advance to Scotland (1652) with other commissioners to promote the union of the two nations. Fresh and novel services were soon required of him. He was associated with Blake and Dean in the command of the fleet which was engaged in the war against Holland. Two engagements took place, in both of which the English were victorious: Van Tromp, the Dutch admiral, was killed, and his fleet damaged and dispersed. After being rewarded with many honours at the hands of Cromwell and the parliament, he resumed his command in Scotland, where fresh troubles had broken out.

Before we proceed further with the account of Monk's public acts we must mention some occurrences in his private history, by which his condition was immediately affected. These are, the death of his father, which occurred before his imprisonment; the subsequent death of his elder brother without male heirs; his succession to the family estates, which he soon relieved from their embarrassments; his marriage to a young lady, the daughter of Sir Richard Corbet of Sledmere, who, however correct it is to assert that the marriage was not acknowledged until 1653, though asserted to have been previously solemnised. His wife was Anne Clarges, the sister of Dr. Thomas Clarges, a physician, a vulgar imprudent woman with him, 'He was a woman,' says Lord Claren-
don (who must however be pointed out as Monk's assiduous detractor), 'Nihil muliebre praeter corpus gerens; a person of the lowest extraction, without either wit or beauty.' (Hist. Rebel, vii. 383.) The pressing solicitations of the lady, and the probable or actual birth of a child, gained Monk's consent to the union.

It was in April, 1654, after all these circumstances connected with his private history had taken place, that Monk, under the orders of the Protector, marched northwards with the most restless and fanatical portion of the army. He had to contend with Lord Middleton, with whom the royalists had joined in the Highlands, and the people generally, who were discontented and ready for rebellion. His vigour and activity were remarkable.

'The country submitted; the army did not quit it, till it had, by means of a certain number of garrisons, secured the towns and the command of the Highlands. By these expedients they could refuse with impunity; and order was established in those sanctuaries of plunder, with such effect, that the owner of a strayed horse, it is said, recovered it in the country by means of a crier.' (Guizot, p. 86.) In the autumn he returned to Edinburgh. For five years his residence was at Dalkeith, where he was 'ever engaged in business, or in his planting, which he loved as an amusement and occupation; he gave access to every one; listened to everything; had a language for all conditions, all ranks, and all parties; kept himself well informed on all subjects; and ascertaining what he might have to fear or to promote, directed by his own personal knowledge the numerous spies whose reports never missed his ears or hands.' Monk, who had been described by the Scotch MP as 'a man of no common understanding, a great man in Scotland, now stood in a very curious position: though he was the agent and confidant of Cromwell, he was also the hope and favourite of the royalists. It was always his care in advocating the cause of one party to give as little offence as possible to the other. He was open to reproach, but might not commit himself, he was silent when speaking was not absolutely necessary; when he was forced to speak, he did so with caution and artful duplicity. A letter which the king wrote to him expressed his concern for the advancement of Monk; but notwithstanding this apparent devotion, the Protector feared him, and used various expedients for neutralising his power.' (Guizot, translator's note, p. 91.)

After Oliver Cromwell's death, when Richard Cromwell was proclaimed Protector, Monk declared his attachment to Monk, 'Why not rather "Old George?"' but Monk would neither assume the power nor attach himself to any party. The new Protector's friends offered him 20,000L. a year for his support; but, avaricious as he was, he would make no engagement; his policy was to render himself an object of importance to all parties, and through his duplicity he succeeded in being treated with by all. When at length circumstances compelled him to act, he declared for the parliament against the army, and joined the forces marching to London, which was voted, even at the time when he thus declared himself, who altogether discredited his sincerity, and believed him to be at heart a royalist, seeking to restore the king as soon as it might be done with advantage. His policy was determined to promote the Restoration. We give Mr. Hal-

lum's opinion on this point. (Const. Hist., ii. 384.)

'Insatiable, upon the whole, to believe that Monk, not ac-
customed to respect the Rump parliament, and incapable, both by his temperament and by the course of his life, of any enthusiasm for the name of liberty, had satisfied him-
self to as the expediency of the king's restoration from the time that the Cromwells had sunk below his power to assist them; though his projects were still centred on himself, he was resolved not to foist by any pre-

arature declaration or unsuccessful enterprise.' The power of Lambert and the army was now rapidly demolished. Fairfax, the city of London, the fleet, and the governor of Portsmouth, all declared against them, and Monk's party gained the ascendency in Ireland. Every office and every command Monk filled with friends whom he could trust; it was observed that many of these persons were royalists, yet Monk still persevered in protesting to the contrary. The respect of the Restoration was somewhat general, but, if there were any, the number was small who suspected through whose agency it would be brought to pass.

When Monk arrived in London he was lodged in the apartments of the prince of Wales. He addressed the par-

liament, was invited to occupy his place there, was made a member of the council of state, and charged with the ex-

ecutive power. With his usual address, he continued to use the power of his army as a means of swing parliament,
and the ascription of duty owed to the parliament as a means of controlling his army. At length the 'Rump' became so unpopular, and the cries for a free parliament so loud, that the city of London refused the payment of taxes. Monk obeyed an order from the parliament to march to the city and subdue it: but his subservience to them did not last long. He sent them a letter, 'probably the harthest ever received by that parliament, so used to insults' (Guizot, 293), ordering them immediately to fill up the vacant seats, allowing the dissolution of that assembly by the 6th of May, and in the election of a new and free parliament. The restored monarchs appointed him general of the forces of England, Scotland, and Ireland; and the republicans, as a last resource, listened to his continued protestations against the king, and he forthwith allied himself to them. Every day his personal power increased; he was offered the protectorate, which he declined; continuing the line of conduct he had always followed, 'that is to say, steadfast in varying his language according to the individual—he gave no handle to any definite opinions with respect to himself.' The expectation of the Restoration daily increased, and some indications in the conduct of Monk, who was gradually dismissing persons and removing objects that might oppose the king, showed plainly that the event was not far distant.

At length the force was brought to a close. Monk received Sir John Greenville, the king's messenger, and having read the despatches, and agreed to his return, directed the court to be held. A warrant was drawn to seize on his estate, and address to the king, by monk's advice, went from Breda to Halle, and Sir John Greenville, on the 1st of May, returned with letters to the new parliament drawn up as monk desired, and, according to his own dictate, to the council of state. On the 23rd of May, Monk received him on the beach at Dover, was embraced by him, and addressed with great affection. He had a grant of money, together with many offices and titles, of which the principal was the duke of Almeida (293).

After the restoration Monk resided principally in London, with his wife, who was the laughing-stock of the court, and gave general disgust. (Pepys, i., 75, &c.) In 1664 Monk presided at the Admiralty. In 1665, when, on account of the plague, the court had left London, he was named the bravest of all the brave and, as far as he was able, provided for all exigencies and quelled all confusion. In 1666 he commanded the fleet with Prince Rupert, engaged the Dutch, and gained credit for his courage. On his return his health failed, and he retired from public life on 31st January, 1669. He was buried in Westminster Abbey, in Henry VII's chapel: the king attended the funeral. He was succeeded in his titles by Christopher his son, who married Lady Elizabeth, the daughter and granddaughter of the duke of Newcastle, and died childless.

Monk had considerable capacity for civil as well as military government: the former he proved in Scotland, the latter in all his campaigns. He had the faculty of gaining the good will and confidence of the troops and sailors that he commanded, with whom no man was more popular than 'Old George.' He had a remarkable power of advancing his fortunes with the prevailing party, without giving offence to those that might supplant them. He was silent and cautious, shrewd and phlegmatic: he was profoundly skilled in dissimulation, ever dissembling, treacherous, and false. 'He was a man capable of great things,' says M. Guizot, 'though he had no greatness of soul.'

Guizot, Histoire de Montes, 1st ed. by Mr. Stuart Wortley; Skinner's Life of Monk; Massey's Tracts; Pepys and Evelyn's Memoirs; Hallam's Const. Hist.)

MONKEY, the name usually applied to those forms among the Simiadae which possess a tail.

MONMOUTH, Duke of. [See above; see above.]

MONMOUTH, the capital town of the county of the same name, is situated at the confluence of the Wye and Monnow, in the hundred of Skenfrith, about 129 miles west-westnorth of London. The population amounted in 1831 to 6,367.

The town is comprehended in the parish of St. Mary's, from which a portion called St. Thomas's has of late years been separated for ecclesiastical purposes, and appropriated to the ancient chapel of that name.

From the coins and inscriptions of Monmouth with that called 'Biestium' in the ancient Itineraries, it is generally supposed to be the site of that station.
In extent of surface Monmouthshire is exceeded by thirty-five English and seven Welsh counties; in amount of population by thirty-six counties in England and none in Wales.

Surface.—With the exception of the southern portion, Monmouthshire is generally a hilly country. In the hundred of Wentloog a long chain, commencing with Bedweety mountain, runs nearly unbroken to the Curfa mountain in the parish of Machen. In the same hundred is Mynddy-Llan, and a second range of hills immediately to the west of the river Ebbw. In the hundred of Abergayvenny are the Blouenge, the picturesque Skyrried and Sugar-loaf, a portion of the Black Monk Hill, and detached tracts of Aberystwyth and Llanbiloc, and to the west and of Pontypool. The Graig forms the principal height in the hundred of Skenfrith. These are the chief though by no means the only elevations; as we have before said, a large portion of the county is irregularly hilly; the southern district must be excepted. In Caldicot and Wentloog are large tracts of land called the 'Levels' of the hundreds in which they are situated, varying from place to place in appearance and production. Alluvial banks, protected from the inroads of the sea by mounds or stone walls of many miles in length. From Caldicot Level rises the hill of Goldcliff, for an account of which we refer to the *Archaeologia*, vol. v., p. 61. The length of the coast-line from the mouth of the Wye to the channel is about 210 miles; a part of one mile of this length bounds the estuary of the Severn, and the rest the Bristol Channel.

Rivers.—The principal rivers in this county are the Wye, the Usk, the Rumney, the Ebbw, and the Monnow.

The Wye flows south from a detached portion, the parish of Welsh Bicknor, of which it forms the western and southern boundary; thence it flows a circuitous course between the counties of Hereford and Gloucester, until it reaches Hadnock Wood, in the parish of English Newton, where it takes an easterly direction, runs through the counties of Hereford, Monmouth, and Monmouthshire; it then enters the latter county, and flowing close to the town of Monmouth, at Redbrook it again becomes the boundary of the county, and continues to be so for a portion of its length. The Wye is navigable for barges, and sea-going vessels of considerable size work their way up the bridge at Chepstow, whence steam-packeters also ply to Bristol. The tide, which rushes with great impetuosity through the narrows, seems to be generated by its depth, as the spring-tides rise at Chepstow-bridge more fifty feet. It is the portion of this river bordering Monmouthshire that is most frequently visited by tourists; and the whole extent from Monmouth to Chepstow, whether seen from the water itself, or from the turnpike-road which follows the banks of the river, is a landscape of very remarkable beauty. The abbey of Tintern, the view from the Windcliff, and the approach to Chepstow, are the most striking features; the last is seen only from the river, the north side, for this side leaves the river at some distance from the town.

The Usk enters Monmouthshire about three miles west of Abergavenny, flows in the vicinity of that town, thence through the middle of the county by the towns of Usk, Caerleon, and Newport, where is the lowest bridge, until it reaches the Bristol Channel.

The Rumney first reaches Monmouthshire at its most western point, and flowing in a south-south-east direction, forms its boundary with Glamorganshire, until it falls into the River Usk.

The Ebbw enters the county on the west-north-west, follows a course nearly parallel to the Rumney, and falls into the estuary of the Usk below Newport.

The Monnow becomes the boundary of this county about a mile above the town of Chepstow, in Herefordshire, separates it from that county for a considerable distance, then enters Monmouthshire about three miles north-north-west of Monmouth, passes that borough, and falls into the Wye. In addition to the above, there are the Sirhowy, which falls into the Ebbw, the Trothy, and the Hondu, which join the Monnow, and Afon Llyw, which falls into the Usk near Caerleon. There is good fishing in all these streams.

The Usk, a navigable river in the western and north-western parts of Monmouthshire, where extensive coal and iron works are carried on, has led to the formation of two important canals, communicating with the Usk at Newport. The principal canal runs north-west from Newport, has a branch to the neighbourhood of Pontypool, which it leaves to the west, runs in a north direction within a mile and a half of Abergavenny, whence it is continued to Brecknock by the vale of Usk; the whole length is between 45 and 50 miles. The second important canal is the 'Crumlin Canal,' which branches from the former between Newport and Malpas, and unites with the village from which it is named, so that the mining district west-south-west of Pontypool is connected with the Monmouth-Pontypool roads—some private, and some formed by companies—having several inclined planes and tunnels of great length, on which iron and coal are conveyed from the various works.

The principal roads are, that from Chepstow to Caerwent to Newport, and thence to Cardiff, which is travelled by the Bristol and Cardiff mail; that from Chepstow to Monmouth, and so to Hereford, which is travelled by the Bristol and Hereford mail; and that from Ross through Monmouth, Raglan, and Abergavenny, to Brecon and Caermarthen, which is travelled by the Caermarthen and Gloucester and London mail.

Climate.—The climate of Monmouthshire varies greatly according to the elevation of the surface. In the valleys of the Wye and Usk, and many of the southern parishes, the crops are much earlier than in the northern and western portions of the county, where the narrow unsheltered valleys are swept by the winds; but frequent rain, which is attracted by the neighbouring mountains, makes the population generally healthy, and the average duration of life is longer than in most parts of the island.

Geology.—That part of Monmouthshire which lies east of a line drawn from Raglan to Newport, and thence to Chepstow to the Bristol Channel, is composed of the old red-sandstone formation, which is largely developed in the neighbouring counties of Hereford and Brecknock. At Chepstow, a tongue of carboniferous limestone, from the coal-measures of the forest of Dean, runs down the valley of the Wye, which, as it is bordered on the south by a strip of new red-sandstone, which forms the shore of the Severn. Close to Usk the strata of the old red-sandstone have been pierced by the unbroken sandstone of Murchison. These are the rocks of the Usk valley, skirited by a narrow band of carboniferous limestone.

The geology of this county is generally described in the recent splendid work of Mr. Murchison, entitled 'The Silurian System,' London, 1839, 2 vols. 4to. (See chap. 12, 13, 14, and 15, and, particularly, vol. ii., p. 210). For a description of the carboniferous system of Monmouthshire, see also a memoir by Dr. Buckland and Mr. Conybeare, in the *Geological Transactions*, second series, vol. i., p. 210-316.

Agriculture.—The agriculture of this county varies according to the districts. In the mountainous portion on the north-west little wheat is grown; oats and barley form the principal grain crops. The Glamorganshire breed of cattle and small hill sheep prevail, the system of farming being very similar to that generally practised in the hills of South Wales. In the fertile vale of Usk, the vale of Wye, and the northern and eastern districts generally, the agriculture is very similar to that of Herefordshire. Short-horned cattle have been introduced at the instigation of Sir Charles Wray, and have not extended widely, and the Herefordshire breed is prevalent. Orchards are seen in favourable situations; the hills are also frequently covered with oak-coppice. The southern district, bordering the Bristol Channel, consists of an alluvial soil, in which the surface of the soil is formed, a black and sterile pest, and a light and a heavier clayey loam; the lightest of these soils is productive either as pasture or meadow or under tillage.

Political Division.—It is divided into the six following hundreds: Abergavenny, Caldicot, Raglan, Skenfrith, Usk, and Wentloog; which contain 123 parishes, and eight market-towns. 1. Abergavenny is situated in the hundred of the same name, near the banks of the Usk, in the northern part of the county, it is 14 miles from London, 145 miles from Monmouth 16, and from Hereford 24. The market, which is considerable on account of the neighbouring iron and coal works, is held on Tuesday and Saturday. [Abergavenny.] 2. Caerleon, in the south
of the hundred of Usk, stands upon the right bank of the river, from which that hundred takes its name, about five miles north-east of Newport. In consequence of its neighbourliness to the thriving port of Newport, its trade has diminished, and the place become of little importance. The market, which is inconsiderable, is held on Thursday. 3. Chepstow is beautifully situated in the hundred of Caldecot, near the mouth of the Usk. It is distant from London 133 miles, from Newport 16, and from Monmouth 16. [Chepstow.] 4. Monmouth. 5. Newport holds an important situation near the mouth of the Usk, in the hundred of Wentloog. In association with the boroughs of Monmouth and Newport it forms one municipal corporation. The governing charter was granted in the twenty-first year of James I.; the mayor and thirteen aldermen form the governing body; of the aldermen, who are elected for life, the two oldest are magistrates for the borough. The limits of the borough, which formerly did not comprise the whole mass of the population, were extended at the time of the Reform Act. The town is well lighted and supplied with water, but indifferently paved and cleansed. It was once surrounded by walls, of which no vestiges remain. Three gates are mentioned by Leland to have existed in his time; the sites of two of these may still be traced. The castle, the remains of which have been converted into a brewery, was probably built by Robert, Earl of Gloucester and Bristol, and by the gift of Henry II. (Monmouthshire, p. 50.) During the present century this town has progressively and rapidly increased in wealth and population. The population of Newport and St. Wooloo was, in 1831, 5,562; in 1832, 5,662; in 1833 amounted to 78,339. The port of Newport comprises the whole of the river Usk between Carleon and a line drawn from Redwick Pill on the Severn, to the mouth of the Rumney river. The port dues are, for every sloop under 20 tons, 4d.; for every vessel of 20 to 150 tons, 5d.; for a schooner or brig, 9d.; for a ship or bark, 3s.

The exports consist principally of coal, iron, bark, and oak timber; the imports, of foreign timber and Irish provisions. The number of vessels engaged in foreign trade was, in 1832, 114, and in 1833, 119, and the amount engaged in the coasting trade. The export of coals, which in 1809 was 18,373 tons, in 1833 amounted to 470,339 tons. The following table shows the amount of trade carried on in this port.

<table>
<thead>
<tr>
<th>Year</th>
<th>Vessels cleared in</th>
<th>Vessels cleared out</th>
</tr>
</thead>
<tbody>
<tr>
<td>1825</td>
<td>910</td>
<td>6855</td>
</tr>
<tr>
<td>1832</td>
<td>1300</td>
<td>1278</td>
</tr>
<tr>
<td>1839</td>
<td>1134</td>
<td>7369</td>
</tr>
<tr>
<td>1842</td>
<td>1183</td>
<td>11982</td>
</tr>
</tbody>
</table>

The gross amount of customs-duty received in 1834 was 55,754s.; in 1835, 67,092s.; in 1836, 11,187s.

Much inconvenience has hitherto been experienced on account of the insufficient accommodation of this port; vessels having to be laid up in the mud. A continued increase in lately (1838) been made for the purpose of building docks, which will tend to facilitate and increase trade. Newport is distant from London 149 miles, from Chepstow 16, from Cardiff 12. Markets are held on Wednesday and Saturday.

6. Pontypool, a thriving town on the southern border of the hundred of Abergavenny, stands upon the Afon Llwyd, immediately to the east of the wild mountainous district in which many of the principal collieries and iron-works are situated. Pontypool is distant from Usk 7 miles, from Newport 17 miles, and from London 151 miles. Pontypool market is held on Saturday.

7. Tredgar is situated in the parish of Bedwellty, in the upper division of the hundred of Wentloog. The activity of the neighbouring mining district has caused so rapid an increase of the population, that it has been found desirable to erect a market-house here, and to hold a market every Saturday. Many houses have lately been built, and a town formed here; there is a church, and places of worship for Wesleyans and Baptists. Tredgar is 21 miles from Newport, 14 from Monmouth, and 151 from London. Usk is situated in the hundred and on the river of the same name; it is a borough, contributing to Monmouth and Newport to the election of a member of parliament. The lord of the manor, present tenant of the borough, in which capacity he will be appoint the recorder. There are within the borough a poorhouse (nominated and elected annually by the burgesses), a recorder, two bailiffs, and an indefinite number of burgesses. Usk is distant from Monmouth 12 miles, and from London 141 miles.

Cerwent, a Roman station of considerable importance, and afterwards a town, has now become an insignificant village. The amount of such of its antiquities as are worth of notice is given in the Archæologia, and in Cosmo's Monmouthshire, vol. i. p. 34.

Minerals and Mining Industry.—The important minerals in this county are coal, limestone, and iron-stone. The coal enters largely into trade, and is generally called, occupies a western portion of this county.

There are 12 beds of coal, varying from three to nine feet thick, and whose aggregate thickness is about 95 feet, the principal strata lie at a considerable depth, but as the coal is in good bedded strata, it is generally worked with considerable ease. The cost of working a coal shaft is avoided, levels being driven into the side of the hills. These levels form the ingress and egress to the mines, and are furnished with iron-roads for greater facility of transit. The coal may be divided into two kinds, furnace coal and stone-coal. For an analysis of these minerals, and further information respecting this coal-field, see Coal. Limestone, which skirts the coal-field, and is likewise found, as we have stated in our remarks on the geology of this county, in the neighbourhood of Chepstow and Usk, is extensively used for building purposes and manure, and is used in large quantities in the manufacture of iron. Being broken into small pieces, that it may mix more intimately with the mine and coke, it becomes a flux, combines with the clayey portion of the ore, and forms the so-called ironstone, or steel-sand, obtained in a slag or cinder. In the selection of limestone for this purpose, those beds are preferred which contain the smallest proportion of magnesia. It is reckoned that about a ton of limestone is used for each ton of iron. The iron-stone of this district is an argillaceous rock, occurring sometimes in strata, sometimes in detached lumps or balls; the proportion of iron contained in it varies from 16 to 25 per cent.: from 30 to 35 per cent. may be considered as not a bad average throughout a work. Carbonaceous and clay enter largely into the composition of the ore; and water, sulphur, siles, and perhaps a little arsenic, complete the list of ingredients. The iron-works of Monmouthshire and South Wales are comprised in a range of country of 80 miles along the Usk from Monmouth to Chepstow, and 12 miles in breadth, intersected by the Usk, Uskbridge, Howey, and Brecon. Analyses of the ores, with details of each mine, are given in a Work of Useful Knowledge, entitled 'Manufacture of Iron,' from which these remarks have been extracted. See also a prose Essay on the Mineral Basin of South Wales, by Mr. Bonser (London, and Cardiff.)

Political and Ecclesiastical Divisions.—Monmouthshire is divided into four deaneries, Abergavenny, Chepstow, Usk, and Newport. Abergavenny is in the province of Canterbury, and, with the exception of four parishes, in the diocese of Llandaff. The paroch of St. Mary's, Monmouth, is in the diocese of Hereford; those of Craven, Oldcastle, and Llanthony, in the diocese of St. David's. The benefices are generally of very small value, the greater proportion producing annually less than 120l.; the principal are—

- Abergavenny, Vicarage... 451. C. K. Tye, Esq.
- Langbury, Rectory... 477. W. A. Williams, Esq.
- Llanover with Mandeville, Trewhelen... 591. Chapter of Llandaff, chapellies
- Llanvair-Kilgidin, Rectory... 395. Sir Charles Marmion.
- Michel Troy with... 398. Duke of Beaufort.
- Cowbridge... 380. Lord Petre.
- Portishead with St... 407. Charles Lewis, Esq.
- Trellech with... 430. The King as Duke of
- Vicarage... 430. Penallalt of Cornwall.
The churches are generally very small and frequently of Norman architecture, of which Malpas offers a good specimen. Two members of parliament are returned for the county; the polling-places are, Monmouth, Abergavenny, Usk, Newport, and the Rock Inn in the Parish of Bedwyllt; Hereford is returned by election. The assizes are held at Monmouth by the judge on the Oxford circuit, their route from Hereford to Gloucester. The quarter-sessions are held alternately at Monmouth and at Usk. Poor-law unions have been formed, and workhouses altered or erected at Abergavenny, Chepstow, Monmouth, Usk, Newport, and Pontypool. The principal gentlemen’s residences are, Tredegr, Llanover, Troy, Pontypool Park, Piercefield, Llanthio Cressenny, Clytha, Llanwern, Coldbrook, and Llanvihangel Crucowy, a gloomy but beautiful place, having one brook a avenue of old Scotch firs in front, and a second of very fine Spanish chestnuts at the back, with the Skyriddy, whence the prospect is magnificent, rising, as it were, out of the grounds.

HISTORY AND ANTIQUITIES.—Monmouthshire at the time of the Roman invasion was occupied by the Silures, who made the then important town of Caerwent their capital. The Silures remained unmolested by the Romans until England was subdued, and successfully resisted their armies under the leadership of a British king, when they were conquered by Julius Flaccus; from this time the Romans occupied the country until A.D. 409, a period of 330 years. The history of this district during a period immediately subsequent to the departure of the Romans is uncertain and obscure; in the records that have come down to us from these obscurantious times, Cerdic and his successors are mentioned as a place of great splendour and importance. During the establishment of the Heptarchy, the Saxons and the Welsh princes were content to live in a state of peace; the Saxons drove back their adversaries and confined them within the narrower limits which now form the boundaries of Wales and Monmouthshire, and compelled them to pay tribute. Wales was now divided into three principalities; that of Gwent, as the modern name of Monmouthshire, once within the limits of Deheubarth, afterwards formed at some time a separate district under the name of Gwent, at others was comprehended in Morganwg, or the kingdom of Glamorgan. The petty princes who shared Monmouthshire were generally tributary to the kings of Glamorgan, but withheld their tribute whenever these kings were not in a condition to enforce the payment. Occasionally they aimed at independence: a savage attempt to obtain freedom is recorded to have been made in 983. Their attempts to establish an independent kingdom under Alfred, we find, were defeated and subjected by Canute. Monmouthshire, and Canute entered Gwent in 1034, and defeated the prince of South Wales. It was a subject of dispute whether Monmouthshire was conquered by Harold or not, but in 954, they occupied Monmouth, Chepstow, Caerleon, and Harold built a castle at Portscottum, it may be conceived that, if the whole district was not actually in their power, it could not have failed to have been speedily overthrown. The Normans, after their invasion of England, could spare no troops for the conquest of Wales; they therefore invited the barons to make incursions on their own expense, and rewarded them with the gift of the lands which they subdued. They held these lands by feudal tenure under the emblems of a castle and baron. The abbey remains the oldest baronial property in the county. The writs of ordinary justices out of the king’s courts were not current among them. But in case of strife between the two barons’ marches, concerning their territories or confines, for want of a superior they had recourse to the king, their answers were directed to the Exchequer, divided by two shires, and annexed to Monmouthshire to England. Monmouthshire however was not wholly freed from the dominion of the Welsh until a later period of our history; it was not annexed to the Oxford circuit until the reign of Charles II., and remained partly under the authority of the lords marches’ court, which was not closed until 1661.

The following are among the most important historical events which took place in the county of which we treat. Henry II. seized and garrisoned the town and castle of Caerleon, in his progress to Ireland, in 1171. In a subsequent year it was wrested from him by Jorwerth ap Owain. Henry III. made two expeditions against the castle of Grosnont, which had in earlier times belonged to the families of Broes and Cantulipe: having taken it, he conveyed it to Hubert de Burgh, but again seized it, and afterwards annexed it to the duchy of Glamorgan. The battle of Glehndwr was fought at Usk and at Grosnont in 1405. There is a tradition that this chieftain, after he was subdued, disguised himself as a shepherd, assumed the name of John of Kent, resided with his daughter, married into the ancient family of Scudamore of Kentchurch, about a mile distant from Grosnont, that he did here, and was buried in Grosnont church. Usk Castle was frequently an object of attack, and the town and country surrounding it were many times laid waste. Of such was Chepstow Castle was considered an important fortress during the Rebellion: the king retained it till 1645; it was then taken and retaken; afterwards Cromwell marched against it in person, and compelled a surrender. Martin the regicide, after a onement of two hundred days, was there, and after having been rigorously treated. Raglan Castle, after a long resistance, was surrendered to Sir Thomas Fairfax, who besieged it in person in 1646.

The importance of the position of Monmouthshire has caused its occupation at early periods to fortify it to the best of our power. We find consequently many Roman encampments, and castles of different dates of architecture. The encampments, which are very numerous, have been laid down by Mr. Cane on the map published with his history: they are dispersed generally over the country, but are more frequent in the neighbourhood of Newport than in other parts. Two Roman roads traversed this county: the Via Julia, extending from the mouth of the Severn to Caerleon, and continued to Beaufort; and the Akeman Street, running eastwards from Caerwent over the rivers Wye and Severn to Cirencester. The stations which antiquaries have acknowledged to be Roman are, Isca Silurum (Caerleon), Venta Silurum (Caerwent), and Gobanrium (Abergavenny). The relics of Roman road are in Caerleon and Bestium at Usk and Monmouth, but the correctness of his assertion cannot be ascertained. The following is an alphabetical list of the principal castles; in some instances great portion of the original building remains, in others have been too much altered to be of any great importance. The following is a list of the principal castles:


The principal ecclesiastical antiquities of this country are Tintern and Llandony abbey. The well-known ruins of Tintern Abbey are situated on the right bank of the Wye, about nine miles below Monmouth. The roof and tower of the building have fallen, but the greater part of the rest of the abbey remains. The decay have been extensive or complete:—Abergavenny, Cardin, Caldeecot, Castell Gils, Chepstow, Dinham, Grosnont, Llanfair, Liangibby, Llanvaches, Llanvair, Monmouth, Newport, Pencoed, Penhow, Raglan, Skenfrith, Usk, and Pencoed. Very ancient dwelling-houses are seen at St. Pierre, Moin’s Court, Pencoed, Machen, Werndee, and Treowen. St. Julians, now altered, was formerly the residence of Lord Herbert of Cherbury.
ing remains; and unless increased care is taken of it, it will not be long before this portion falls to the ground. An account of the foundation and history of Llanthony, written in Latin by a monk of the abbey, may be found in Dugdale's 'Monasticon.' It is translated by Atkyns in the 'History of Gloucestershire.' The site was granted to Richard Arnold at the dissolution of monasteries, and by a purchase of Auditor Harley became a part of the possessions of the earls of Oxford.

In addition to Tintern and Llanthony, Tanner mentions the following religious houses (Mommouthsh., in Notit. Monast.):

- Abergavenny: A priory, which remained until the general suppression.
- Basaltes: A Benedictine priory.
- Caerleon: A Cistercian abbey and monks.
- Goldcliff: A priory, founded in 1113, and afterwards united to Tewkesbury. It was granted to Rion College in the 29th of Henry VI. The college was deprived of it, but subsequently regained possession.
- Gracelieu: A small Cistercian abbey.
- St. Kymer: A priory, in existence before A.D. 1291.
- Llankywan, of Llangwn: Near Grosmont, a cell of Black Monks, subordinate to the abbey of Lura, in Normandy.
- Llantarnam: A Cistercian abbey.
- Malpas: Near Caerleon, a cell of Clunie Monks, to the priory of Montacute, in Somersetshire.
- Monmouth: A priory of Black Monks, who came from Anjou in the reign of Henry I.; also two hospitals, one dedicated to St. John, the other to the Holy Trinity.
- Newport: Situated 'by the low beneath the bridge' was a house, probably of Friars Preachers, for such was granted in the 35th of Henry VIII.
- Strigil: An alien priory of Benedictines to the abbey of Corneln, in Normandy.
- Usk: An old hospital and a priory.

About two miles south of Chepstow may be seen the remains of Mathern, formerly the episcopal residence of bishops of Llandaff. The palace, now converted into a farm-house, was built by different bishops in the fifteenth and sixteenth centuries. The last bishop who resided here was declared to be standing near the village of Trellech, and several may be seen in that vicinity.

**Statistics.**

**Population.** Monmouthshire is chiefly a mining county and the extensive workings carried on for obtaining valuable products of iron and coal have produced a remarkable increase of population in the south-west part of it. They since the commencement of the present century.

The parishes of Abertyswill, St. Woolos Newport, Monmouth, Bedwas, which contained less than two inhabitants in 1801, were, in 1831, reckoned to contain 21,609; of these the male inhabitants are chiefly employed in the pits and mines, and in removing the coal and ore. The process of forging the iron and preparing it for further purposes had, in 1831, created manufacturers to the number of 2000 at Trehorth and Pontypool; at Upper Laptop, 300, at Abertyswill 250, at Llanrethyn, 218, and 30 or 60 on other places. The preparation of tin employs 500 men at Panteague, Lower Llanrethyn, and Portergate. Iron-wire is manufactured at Cashe Hill by 50 men; the preparation of colours from lead and sugar and the burning of lead 75 men at Brymddifan, and the manufacturing of jannep is not quite extinct at Usk.

Of 26,910 males twenty years of age and upwards, 3,131 are employed in the manufactures specified above; 7,615 are engaged in agricultural pursuits, and 3,175 are employed as labourers in labour not agricultural. In 1811 Monmouthshire ranked the nineteenth in the list of agricultural counties, but in 1831 it was as low down as the thirty-first in the list.

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

<table>
<thead>
<tr>
<th>Hundreds,</th>
<th>Houses.</th>
<th>Occupations.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inhabited</td>
<td>Families</td>
</tr>
<tr>
<td></td>
<td></td>
<td>employed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>in agriculture</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aberavenny</td>
<td>5,915</td>
<td>6,057</td>
</tr>
<tr>
<td>Caldroy</td>
<td>2,222</td>
<td>2,393</td>
</tr>
<tr>
<td>Ragland</td>
<td>1,575</td>
<td>1,652</td>
</tr>
<tr>
<td>Skewerst</td>
<td>815</td>
<td>877</td>
</tr>
<tr>
<td>Usk</td>
<td>1,964</td>
<td>2,094</td>
</tr>
<tr>
<td>Wentloog</td>
<td>5,427</td>
<td>5,764</td>
</tr>
<tr>
<td>Monmouth</td>
<td>894</td>
<td>1,164</td>
</tr>
<tr>
<td>Totals</td>
<td>8,612</td>
<td>9,911</td>
</tr>
</tbody>
</table>

The population of Monmouthshire, at each of the four following periods, was—

<table>
<thead>
<tr>
<th>Period</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
<th>Total Inc. per cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1801</td>
<td>25,179</td>
<td>23,409</td>
<td>45,592</td>
<td></td>
</tr>
<tr>
<td>1811</td>
<td>35,987</td>
<td>31,165</td>
<td>62,137</td>
<td>3629</td>
</tr>
<tr>
<td>1821</td>
<td>37,287</td>
<td>35,555</td>
<td>71,833</td>
<td>1502</td>
</tr>
<tr>
<td>1831</td>
<td>51,095</td>
<td>47,033</td>
<td>98,130</td>
<td>3600</td>
</tr>
</tbody>
</table>

showing an increase between the first and last periods of 25,238, or more than 135 per cent. on the whole population, being 59 per cent. beyond the whole rate of increase throughout England.

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

<table>
<thead>
<tr>
<th>Period</th>
<th>Total</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>1801</td>
<td>18,283</td>
<td>80</td>
<td>0</td>
</tr>
<tr>
<td>1811</td>
<td>26,247</td>
<td>91</td>
<td></td>
</tr>
<tr>
<td>1821</td>
<td>26,640</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>1831</td>
<td>26,613</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

The sum expended for the same purpose for the year ending March, 1838, was 18,302; and assuming that the population had increased from 1811 to 1836 in the same rate of progression as in the ten years preceding 1831, the above sum gives an average of 3s. for each inhabitant. These averages are below those for the whole of England and Wales.

The sum raised in this county for poor-rate, county-rate, and other local purposes for the year ending 25th March, 1838.
The number of persons charged with criminal offences in the three septennial periods ending with 1820, 1827, and 1834, were 292, 412, and 741 respectively, making an average of 40 annually in the first period, 59 in the second period, and of 106 in the third number. 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 60, 43, and 48 respectively. Among the persons charged with offences there were committed for—

| Felonies | 51 |
| Misdeemners | 9 |

The number of committals in each of the same years was 64, 56, and 52 respectively.

The saving effected in the sum expended in 1837, as compared with that expended in 1834, was therefore 93555l. 15s., or about 23 per cent.; and the sum expended for the relief of the poor in 1838 was less than that in 1834 by 9324l., or about 39 per cent.

The number of turnpike trusts in Monmouthshire, as ascertained in 1835, under the acts 3rd and 4th Wm. IV., chap. 80, was 11; the number of miles of road under their charge was 315. The annual income arising from tolls and parish compositions in lieu of statute-duty in 1835 was 13,962l. 7s., and the annual expenditure in the same year was as follows:—

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount (£ s. d.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual labour</td>
<td>3,113 15 0</td>
</tr>
<tr>
<td>Team labour and carriage of materials</td>
<td>760 16 0</td>
</tr>
<tr>
<td>Materials for surface repairs</td>
<td>1,530 7 0</td>
</tr>
<tr>
<td>Land purchased</td>
<td>157 0 0</td>
</tr>
<tr>
<td>Damages done in obtaining materials</td>
<td>69 8 0</td>
</tr>
<tr>
<td>Tradescant's bills</td>
<td>885 2 0</td>
</tr>
<tr>
<td>Salaries of treasurer, clerk, andsurveyor</td>
<td>1,919 3 0</td>
</tr>
<tr>
<td>Law charges</td>
<td>341 15 0</td>
</tr>
<tr>
<td>Interest of debt</td>
<td>3,363 3 0</td>
</tr>
<tr>
<td>Improvements</td>
<td>2,908 11 0</td>
</tr>
<tr>
<td>Debt paid off</td>
<td>685 16 0</td>
</tr>
<tr>
<td>Incidental expenses</td>
<td>262 17 0</td>
</tr>
<tr>
<td>Estimated value of statute duty performed</td>
<td>599 10 0</td>
</tr>
</tbody>
</table>

Total expenditure £16,572 3 0

The county expenditure in 1834, exclusive of that for the relief of the poor, was 4940l. 17s., disbursed as follows:—

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount (£ s. d.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridges, building, repairs, &amp;c.</td>
<td>263 14 0</td>
</tr>
<tr>
<td>Gaols, houses of correction, &amp;c., and maintaining prisoners, &amp;c</td>
<td>1,794 10 0</td>
</tr>
<tr>
<td>Shire-halls and courts ofjustice, building, repairing, &amp;c.</td>
<td>66 16 0</td>
</tr>
<tr>
<td>Prosecutions</td>
<td>1,129 19 0</td>
</tr>
<tr>
<td>Clerk of the peace</td>
<td>319 17 0</td>
</tr>
<tr>
<td>Conveyance of prisoners before trial</td>
<td>211 14 0</td>
</tr>
<tr>
<td>Charges of transports</td>
<td>118 15 0</td>
</tr>
<tr>
<td>Vagrants, apprehending and conveying</td>
<td>49 18 0</td>
</tr>
<tr>
<td>Constables, high and special</td>
<td>44 19 0</td>
</tr>
<tr>
<td>Coroner</td>
<td>147 8 0</td>
</tr>
<tr>
<td>Debts, payment of, principal and interest</td>
<td>475 12 0</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>318 7 0</td>
</tr>
</tbody>
</table>

Total expenditure £4,940 17 0

The various sums placed in the savings' banks in 1836, 1837, and 1838, were distributed as under:—

<table>
<thead>
<tr>
<th>Bank</th>
<th>Depos. &amp;c., £</th>
<th>Depos. &amp;c., £</th>
<th>Depos. &amp;c., £</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not exceeding £20</td>
<td>1,189</td>
<td>6,069</td>
<td>1,258</td>
</tr>
<tr>
<td>20 to 40</td>
<td>665</td>
<td>19,406</td>
<td>706</td>
</tr>
<tr>
<td>40 to 60</td>
<td>150</td>
<td>19,349</td>
<td>1,521</td>
</tr>
<tr>
<td>60 to 80</td>
<td>55</td>
<td>16,241</td>
<td>556</td>
</tr>
<tr>
<td>Above</td>
<td>10</td>
<td>7,992</td>
<td>76</td>
</tr>
</tbody>
</table>

The following summary is taken from the Parliamentary Returns on Education made in the session of 1835.

<table>
<thead>
<tr>
<th>Description</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant schools</td>
<td>9</td>
</tr>
<tr>
<td>Number of children at such schools; ages from 2 to 7 years:</td>
<td>196</td>
</tr>
<tr>
<td>Males</td>
<td>64</td>
</tr>
<tr>
<td>Females</td>
<td>78</td>
</tr>
<tr>
<td>Sex not specified</td>
<td>46</td>
</tr>
<tr>
<td>Daily schools</td>
<td>196</td>
</tr>
<tr>
<td>Number of children at such schools; ages from 4 to 14 years:</td>
<td>2,689</td>
</tr>
<tr>
<td>Males</td>
<td>775</td>
</tr>
<tr>
<td>Females</td>
<td>914</td>
</tr>
<tr>
<td>Sex not specified</td>
<td>1,114</td>
</tr>
</tbody>
</table>
Number of children at such schools:
ages from 4 to 16 years:—

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
<th>Sex not specified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant</td>
<td>722</td>
<td>155</td>
<td>15</td>
</tr>
<tr>
<td>Sunday</td>
<td>176</td>
<td>118</td>
<td>34</td>
</tr>
<tr>
<td>Total</td>
<td>898</td>
<td>273</td>
<td>49</td>
</tr>
</tbody>
</table>

Assuming that the population between the ages of 2 and 15 years has increased in the same proportion as the whole of the population since 1821, and that the whole population has increased in the same ratio since 1831 as in the ten years preceding that time, the aggregate number of children between the ages of 2 and 15 thus found residing in Monmouthshire in 1833 was about 33,000. Seventeen Sunday-schools are returned from places where no other school exists, and the children (695 in number) who are instructed therein cannot be supposed to attend any other school; at all other places Sunday-school children have opportunity of resorting to other schools also, but in what number, or in what proportion duplicate entry of the same children is thus produced, must remain uncertain. Eleven schools, containing 547 children, which are both daily and Sunday schools, are returned from various places, and duplicate entry is therefore known to have been thus far created; at several of the Sunday-schools a few are receiving instruction who are upwards of 20 years of age. Making allowance for these two causes therefore, we may perhaps fairly estimate that little more than one-third of the children between the ages of 2 and 15 years are under instruction in this county.

**Maintenance of Schools.**

<table>
<thead>
<tr>
<th>Description of Schools</th>
<th>Infant Schools</th>
<th>Daily Schools</th>
<th>Sunday-schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedle</td>
<td>Schedle</td>
<td>Schedle</td>
<td>Schedle</td>
</tr>
<tr>
<td>Numbers</td>
<td>2,162</td>
<td>4,338</td>
<td>9,337</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Infant schools</th>
<th>6</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily schools</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Sunday-schools</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

Sixteen boarding-schools are included in the number of daily schools given above. No school in this county appears to be confined to the children 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 the Wesleyan Methodists.

Lending libraries of books are attached to 8 schools in this county.

**MONOCEROS.** [Entomostomata, vol. ix., p. 458.]

**MONOCEROS** (the Unicorn), a constellation of Heaven, surrounded by Hydra, Canis Major, Orion, and Canis Minor. Its principal stars are as follows:

<table>
<thead>
<tr>
<th>Character</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnitude</td>
<td>731</td>
<td>744</td>
<td>781</td>
<td>6</td>
</tr>
</tbody>
</table>

**MONOCHORD** (plough, one, and yoke, a string), an instrument of one string, used by the ancient Greeks for the purpose of ascertaining and demonstrating the relative proportions of musical sounds. It is composed of a board, or rule, divided and subdivided into various parts and of a string stretched between two bridges, one of which is placed at each end of the rule. There should also be a movable bridge applicable to the graduated line, in order to stop the string at the distances required, and lead both hands of the operator at liberty; but this is not indispensable. The invention of the Monochord, ascribed to Pythagoras, and Puleomy measured and proved his intervals by it. Guido also, in his Micrologus, states recommends the use of this instrument, and gives an explication of its mode of use, according to his system, a translation of which we refer the reader to the History of Music, i. 449. In Dr. Crotch's Elements of Musical Copposition will be found a simple and clear method of constructing a Monochord, with plain rules for dividing the compass.

**MONOCONDYLA.** M. D'Oribigy's name for a genus of Unionoids which he describes as equilateral, sub-rotund or angulated with a hinge formed of a large oblong, oval, or quadrangular tooth in each valve, but without the incurved teeth. Example, *Monodonta Pesuansya*, D'Orbigy.

**MONOCOTYLEDONS** are plants which are more commonly called Endogens. **Endogens.** To derive their name from their seed generally consisting of one cotyledon; but there are exceptions, as *Pterocarya* which possesses a second cotyledon in a rudimentary sesamum. Usually the single cotyledon of these plants rolls up to the radicle and plumula, so that the embryo appears to be divided with no intersection to the continuation of its surface; but there are many deviations from this, the most striking of which are those of grasses and aquatic monocotyledons.

**MONOCULUS.** [Binoculus, vol. iv., p. 410.] The flower is erroneously placed of *Sarracenia*.

**MONODON** (or rather *Monodon*), Lamarc's name for a genus of Tracheidae, the columnella of which terminates abruptly in a tooth or notch. It is the *Odontia of Solomons* [Thomson].

**MONOGRAM,** a cipher or character formed by a tracing of letters, intended as an abbreviation of a name, or formerly used much. Monograms are of very antient date. They are not uncommon upon Greek coins, especially those of Macedonia and Sicily. The obverse occasionally bears the coins of the Seleucidae, and are found upon many of the family coins of Rome, though not upon those of the Roman emperors till a late period.

The name of Jesus Christ, Ι.Χ., upon the coins of Constantine the Great, is well known. It was continued frequently by his successors, even as low down as Alexander, Commes and Theodorus Lascaris, and was also placed one period upon the Roman labarum. Following, in his *Paleographus Graeci,* p. 145, he gives a small plate of monograms used on coins, and a few antient manuscripts, to represent the names of Greek and Roman inscriptions. Many of those of the Roman time will be found in Mercs' *Sigguria Romanum,* 4to., London, 1752. Pére Moreau has preserved those of many of the popes. Ducange, in his *Glossary,* has given tables of those of the popes, emperors, and kings of France. Monograms appear almost on all coins of the kings of France of the second race, that is, from a.d. 751 to 987. (Le Blanc, *Traité Historique des Monnaies de France*, pp. 67-144.) Each letter gives in a reason for Charlemagne's using a monogram upon coins, and he could not write; and one adds that a great many bishops did the same for the same reason, which is absurd, as at that period it was the fashion of...
Europe generally. They appear upon our own Saxons and especially upon those of Alfred.

Bartisch, in 'De origine &c.,' has given tables of the monograms used by the German and Italian engravers. The French artista rarely used monograms. The most extensive information however on this class of monograms will be found in the edition of Brillouin's 'Dictionnaire des Monogrammes, Marques figurées, Lettres initiales, Nomabréges, &c., avec lesquels les Peintres, Dessinateurs, Graveurs, et Sculpteurs ont désigné leurs Noms,' 2 tom., 4to., M. DCC. LIII.

MONOGCA, M. de Blainville's name for his second subclass of the class Pteropoda. [MALACOLOGY, vol. iv., p. 323.]

MONOPLEIS, a genus of macracous crustaceans intermediate between Porellana and Megalepis, established by Blainville.

MONOMANIA. [Insanity.]

MONOMYRIA,' Lamarck's name for his second order of Conchojfera, consisting of those conchiors which have only one principal muscular impression in each valve of the shell. [CONCHIPE, vol viii., pp. 431, 432; MALACOLOGY, vol. iv., p. 319.]

MONONGHELA. [Mississippi, River.]

MONOPHORUS. [Salpidae.]

MONOPHYLLA, or CHIPTHERIPE, vol. vii., p. 23.]

MONOPHYTES. [Ephedrce.]

MONOPLEUROBRANCHIATA, M. de Blainville's name for his third order of Pteropoda Monoclia. [MALACOLOGY, vol. iv., p. 323.]

MONPOLY. A Greek monopoli (μενοπολία), which occurs in Aristotle's Politic (b. 11), where it is used simply in the sense of a man buying up the whole of a commodity so as to be the sole holder of it, and to have the power of selling it at his own price. When the word monopoly was used by Thibetius in addressing the Roman senate (Suet., Tib., c. 71), he thought an apology necessary for introducing a new word. The word however soon came into common use. The term monopoly, which literally signifies single or sole selling, is used in a constitution of Zeno (Cic. de fin., ii., 54), and in the sense in which it is used by Aristotle, and in the sense of what our law understands by fore-stalling, engrossing, regrating; to which we may add combining to keep up prices. Zeno declares that no person shall exercise a monopoly of clothing, fish, or any other thing adapted for food or use. He gives no definition of monopoly. The term however must be explained from the context, from which it appears to signify any means by which a person gets or attempts to get the whole of any commodity, or use, or manufacture, and to sell it at the price. In the same Constitution he forbids all combination among dealers to raise the prices of any commodity. Zeno's punishment for monopoly was confiscation of the goods of the offender and perpetual exile.

MONopoly, in English law, is defined by Coke (3 Inst., 181, c. 85, 'against monopolists, &c.) to be an institution or allowance by the king, by his grant, commission, or otherwise, to any person or persons, bodies politic or corporate, or for the sole buying, selling, making, working or using of any thing, whereby any person or persons, bodies politic or corporate, are sought to be restrained of any freedom or liberty that they had before, or hindered in their lawful trade.' In Le Cas de Monopolcs (11 Co., p. 6), it is said that every monopoly has three inseparable incidents—the raising of the price, the deterioration of the commodity, and the impoverishment of artificers and others. It appears that these inseparable incidents were considered as tests by which a grant savouring of monopoly might be tried.

Every royal grant or letters patent tending to a monopoly as thus defined and explained, was void. The crown however could by letters patent grant and create exclusive privileges of buying and selling when such grant was of general advantage and the crown had need to introduce into the country something new and useful. This prerogative of the crown was often abused, and by more than by Elizabeth, who granted many patents of monopolies to the purveyors of the royal industry and the public service. In consequence of this, Elizabeth had granted to a certain person the sole making, importing, and selling of playing cards, which grant was declared void by the judges. (Le Cas de Monopolcs.)

It seems then that the word monopoly was never used in English law, except when there was a royal grant authorizing some one or more persons only to deal in or sell a certain commodity and article.

By the act of 21 Jac. I., c. 3, all monopolies and all commissions, grants, licences, charters, and letters patent to any person or body politic or corporate, or for the sole buying, selling, making, working, or using of any thing, of any other monopoly, who shall contravene the laws of the land, and utterly void and of none effect.

By the sixth section of the same statute the above provisions do not extend to letters patent and grants of privilege thereafter to be granted for fourteen years or under, of the making and working or selling of any commodity, article, or wares to the true and first inventor thereof, which others at the time of making such letters patent and grants shall not use, so as also such letters patent be not contrary to the law or mischievous to the state, or generally inconvenient. This section is the foundation of the present law as to patents for inventions. [Patents.]

Copyright and patents are now generally placed among monopolies by legal writers, but not correctly. The original legal sense of the term monopoly has been already explained; and the power of the crown to grant patents is now limited and defined, as well as the several formalities to be observed in obtaining them. Any patent not obtained in due form is void, and the term monopoly, as above explained, has legal restrictions to exist.

There is still a vulgar and common use of the term monopoly, which is incorrect, inasmuch as it has not the same meaning as it formerly had. At a noted, individuals were to unite for the purpose of producing any particular article or commodity, and if they should succeed in selling such article very extensively, and almost solely, such individuals in popular language would be said to have a monopoly. Now, as these individuals have no advantage over them by that act of monopoly, it is clear they can only sell more of their commodity than other persons by producing the commodity cheaper and better. Such so-called monopoly then is neither the old legal monopoly, nor does it rest on any legal privilege. There would however be no objection to calling it a monopoly in the antient sense of that term, if the word were not now used in a bad or unfavourable sense, which probably dates from the time when real monopolies were granted by the crown, and were very injurious to the nation. Between a monopoly as it once existed, and a monopoly as it is now vulgarly understood, there is this difference—the former was only derived from a crown of the grant, and was often injurious to all persons except the patentee; that is, that which is now vulgarly called a monopoly is a grant of power which an individual or a set of individuals acquire, by means of capital and skill, of offering something to everybody cheaper and better than they had it before, and it is therefore an advantage both to the so-called monopolist and to everybody. The case of a number of persons combining to produce and sell, or to buy and sell, a thing, has been taken, as being one which is the most striking and oppressive kind of monopoly, in the vulgar sense of that term. At individual however may, in this sense, become a monopolist: as if a man should buy up all the tallow in Russia, and so make candles as dear as he pleased; or (to take a case which would appear a still greater act of monopoly, as being more sensibly felt) as if a man should buy all the corn in a country, and so make bread as dear as he pleased. Without discussing the question as to the advantages and disadvantages to a nation of this kind of monopoly, it is enough to put it upon those who disapprove of such wholesale buying, to say how far, and to what amount, they will allow a man to use his capital and exercise his commercial skill; for it is incumbent on those who would deprive a man of such liberty to say exactly how far such liberty should go. Further, if such person might be exactly in that case, and could claim another word, he might have called the whole transaction a monopoly; or in a word, which had once a particular meaning, as above explained, and signified a different thing from that which they call a monopoly. And if they will apply this word monopoly to a person or persons who—by the judicious use of their capital, make and sell or buy and sell much more of a thing than anybody else, they should consider whether—inasmuch as buying and selling are free to all, and as all people wish

* At Athens there was a law which limited the amount of corn that a man could buy. (Lycur. kata tòν ἐπαθητον.)
to buy as cheap as they can and as good as they can—they will apply this word in an invidious sense to any person or persons who can only command customers because the customers like to go to them, or because the customers can get the thing nowhere else, owing to no other persons having provided themselves with the commodity for sale.

That kind of monopoly or sole-selling or dealing which is given by the law of copyright, and by patents, is in effect a kind of property acquired by a proprietor of an author or of his works, which he could not effectually acquire or secure without the aid of the law. It is not however a monopoly in any sense in which that term has ever been used. Whether it is profitable or injurious to the community is a question out of this book.

MONOSYLLABLE. [SYLLABLE]

MONOTHALAMIA, Lamarck's name for his second division of Cefalopodata, including one genus only, viz. Argonauta. [Cephalopoda, vol. vi., p. 246; MALACOLOGY, vol. x., p. 321.]

MONOTHERILITES. [ETYCHIANAs]

MONOTIGMA, Mr. Gray's name for a genus of turbinate shells allied to Turritella.

MONOTREMES, M. Geoffroy's name for certain edentate mammals which have but one external aperture for the passage of the semen, the uterus, and the other excretions.

The organs of generation of these extraordinary animals present, as might be anticipated, singular anomalies. The difference between the male and female, in the urethra, is that, in the latter, the sperms are discharged last into the cloaca. Their intromittant male organ lies hid, when in repose, in a sheath which opens by means of a hole towards the bottom of the cloaca. Their uterus merely consists of a thin membranous tube, open separately, at each of them by a double orifice into the urethra, which is large, and, in the male, has its exit in the cloaca. It was for a long time doubted whether these animals were oviparous or viviparous, but there is now every reason for believing that the young are extruded from the body of the parent alive. If, however, they have no pouch, they still possess the supernumerary berries which exist in the Marsupials, and are described in the article which treats of the last-named animals. In other parts of their osseous structure they are remarkable for possessing a sort of clavicle, placed more forward than the ordinary clavicle, and analogous to the os furcatorius, furceiform bone, or memory-thought in birds: the coracoid bone also reaches the sternum. The eyes are very small, and there is no external cornica to the eye. The ears are known, and Gastrocranium and Ornithorhynchus. [ECHIDNA; ORNITHORHYNCHUS.]

MONOTROPA CEE are a small natural order of monopetalous exogenous plants, parasitical upon the roots of other plants, and have leaves instead of flowers. They resemble Orobanche, from which they differ in their regular flowers and multilocular ovary. In natural classifications they are usually placed in the neighbourhood of Ericaceae, on account of their flowers being monopetalous with hypogynous stamens. Monotropae hypophysae, found in fit woods, is the only European species.

MONRO, ALEXANDER, M.D., was born in 1697. He was a pupil of Cheselden, and afterwards studied at Paris, and under Boerhaave at Leyden. In 1718 he returned to Edinburgh, where his father practised as a surgeon, and in the following year was appointed Professor of Anatomy to the Company of Surgeons. He soon after, in conjunction with Dr. Alston, commenced giving public lectures on anatomy, on the foundation of the School of Medicine in Edinburgh, which was soon after attached to the university. It was also at the suggestion and under the direction of Dr. Monro that the Royal Infirmary of Edinburgh was established, in which he delivered clinical lectures on surgery. Dr. Monro was never director of the Infirmary, and his long literary and medical practice was spent in medicine. In 1739 he resigned the lectureship on anatomy to his son, from whom it has since descended to his grandson; but he retained his clinical lectureship till within a short time of his death. He was a fellow of the Royal Society of London, and a member of the Royal Academy of Surgery in Paris; and it is chiefly to his talents as a lecturer that the Medical School of Edinburgh first owed the celebrity which it has since always enjoyed. The work of Mr. Monro's is contained in the Transactions of different scientific societies, especially in those published by a Society of which he was the founder, under the titles of 'Medical Essays and Observations,' and 'Essays Physical and Literary.' The work by which he is chiefly known is his 'Osteology,' which was first published in 1726, and which has been since reprinted in a great variety of forms, and with various additions, both in this country and on the Continent. His complete works were published by his son, in one volume 4to, in 1781.

MONROE, JAMES, was born in the county of Westmoreland, Virginia, on the 16th of March, 1751, of a Scotch family. Nothing is known of his early life, or of his beginnings in business, except that he is described as having entered the army as a volunteer at the age of sixteen. In 1777, in the retreat through the Jerseys, he was wounded at Trenton. He was then a lieutenant, and on his recovery was made a captain of the First Virginia Light Dragoons. Just before the close of the war, he was appointed colonel on the recommendation of General Washington. He then went to the college of William and Mary in Virginia, where he studied law; and soon after represented his native county in the legislature; and was also appointed, to the council of state. In 1788 he was a member of the Virginia Convention, and was opposed to the adoption of the constitution. After it came into operation, he became a candidate for a seat in the house of representatives, in opposition to Mr. Madison, but was defeated. He was, after chosen a senator of the United States by the state of Virginia, and after continuing in that body about three years, he was appointed General Washington minister to France in the place of Mr. Gouverneur Morris, and had the honour of being the first American minister that was accredited to the foreign court. It was thought that a well known member of the party friendly to the French revolution might be able to restore that confidence between the two countries which was already diminished by the supposed leaning of Hamilton and his party toward Britain. He accordingly endeavoured to fulfil this object of his mission, and, as some thought, at too great sacrifice of the rights and interests of his own country. Such was the importance, and the extent of the change of policy by France in consequence of Mr. Jay's treaty, and he was accordingly recalled in August, 1796. It was considered by the Opposition, French, or Democratic party, for it was called by all these names, that he had been Northward for his attachment to the change of policy by France. As the majority in Virginia belonged to this party, he was appointed governor of that state in 1798–9. He held the office for three years. In 1802 he was appointed minister to France, and, in conjunction with Mr. R. R. Livingston, who had already been appointed minister to England, and sent to seek the purchase of New Orleans, and much in consequence of the treaty by France, which had been received with so little respect, and that his return had been delayed by threats to refuse his command. As the French were assuming his competition with Mr. Madison for the presidency, he was accordingly supported by the opposition in Virginia, and great efforts were made to enlist the popular sympathies in his favour; but all these efforts failed, and he obtained no votes in his own state or elsewhere. By means of Mr. Jefferson a reconciliation was brought about, and Mr. Monroe was then made secretary of state, in which office he continued until he was chosen president in 1816, by 129 votes against 34. So prudent and conciliatory had he been hitherto, and so little had affairs interfered with his popularity, that he was elected unanimously, with the exception of a single vote. After his term of office expired, he lived a short time in Loudoun county, Virginia, and, in the meantime, he accepted the office of inspector of the peace. He was also a professor of the University of Virginia. Towards the close of his life he removed to New York, where he died on the 4th of July, 1831. He left two daughters, Mrs. Hay and Mrs. Gouverneur, who resided in New York, in which he had married while member of Congress in 1770. Mr. Monroe was not endowed with any shining qualities, but he had great prudence, united to great firmness, great regard to reputation, sound though slow judgment, and a firmness of purpose. He never could shed any of the dignity of the presidency independent of his intimate and political connection with Mr. Jefferson; but it is
small praise to have profited as he did by these favourable circumstances, and there has seldom been so striking an example of what steadiness of purpose and untiring perseverance can accomplish... Moreover, he was amiable, but, considering the society he had always kept, he was strangely awkward in almost all that he said and did: he used odd inapposite expressions, and often said what might have been better omitted. But all this was of no consequence, it was magnified, and the attacks were made seriously. He had unusual success in making friends, and though his kindness and courtesy would in most people have appeared insincere, it always seemed to come from the heart with him, and without doubt he really possessed many of his own captivities, and such a part was made in at least 1304, when there was even a worse manager of money matters than Mr. Jefferson. He was always in debt, and always in want of money; but by the grants which he obtained from Congress, and an inheritance derived from an uncle, he left to his descendants, competent fortune. (Communication from Virginia.)

MONROVIA. [Massurada, Capr.] MONS, the capital of the province of Hainault, is situated in 50° 27' N. lat. and 3° 59' E. long, on the river Dourche, with a population of 92. 1709, it is one of the strongest fortified towns in Belgium, the works having been greatly improved since 1818: its form is that of a polygon flanked with fourteen bastions. It is supported by the city of Mons, which is so bravely defended by Quintus Cicerio, brother of the orator, against the attacks of the Eburones, Nervii, and other Gallic tribes. Having fallen to ruin, it was fortified anew about the year 456, in the wars of Merovius, who, according to Procopius, made the country about it, was uninhabited for nearly two centuries. About the year 653 a hermitage, and then a chapel, dedicated to St. Peter, were built on the spot; and some time after, Alberic, count of Hainault, having rebuilt one of the towers, and surrounded it with a wall, made it his place of residence, a circumstance which attracted many other inhabitants. The town from this time went on increasing, and in 804 Charlemagne made it the capital of Hainault. Towards the end of the tenth century Mons surmounted Hugh Capet, and about fifty years later was again invested by Baldwin of Flanders. In 1092, and again in 1112, great part of the city was destroyed by fire; and towards the middle of the twelfth century it suffered greatly from the plague. Count Baldwin IV, who thus gained the well-merited title of the Restorer. Under his successor Baldwin V, the citizens, having repulsed the count of Brabant, obtained various privileges, among which was that of arming and defending the city, which it did in 1200. In 1290 the city was enlarged, and new walls, enclosing a greater area, were built. In the war which Jacqueline of Bavaria, countess of Hainault, sustained with the duke of Burgundy, Mons, after an obstinate resistance, fell into his hands. But the state of the woolen manufacture carried on, that at the hour when the workmen left their labour the streets were too narrow for the traffic, and the passing of carriages through them was forbidden. Manufactures of hand- woven stuffs were vigorously continued; and the towns of the county, wholly inhabited by goldsmiths. This state of prosperity was cut short by the exactions of the duke of Alva in 1569, which caused the inhabitants to revolt, and they for some time maintained themselves under Count Louis of Nassau. But the burden of the garrison, which had been tremendously given up to the duke of Alva, the count capitulated, against the wish of the people, who declared their readiness to fight to the last extremity, and to perish in the ruins of the city rather than surrender. A part of the garrison, and such of the inhabitants as desired it, were allowed to retire from the city. Of those who remained a great part were executed at the stake or on the scaffold. Mons was quiet under the rule of the archdukes of Austria, but its commerce, manufactures, and the loss of its workmen and artists. In 1678 Mons was invested by the French under mar...
The southern part of the Indian Ocean, or that which lies between the western coast of Australia and the island of Madagascar, has the regular south-east trade-wind, which extends southward to between 28° and 30° S. lat., but its northern border varies between 12° and 3° S. lat., approaching nearer to the equator when the sun is in the northern hemisphere. It is found, in February, between 15° and 12°; Basil Hall, in June, near 7°; Nicholson, in August, at 3°; and Carteret, in October, at some distance south of Java.

The monsoons do not begin immediately north of the northern border of the trade-wind, but are separated from it by a region which corresponds with the region of calms in the Atlantic. [ATLANTIC OCEAN, vol. iii, p. 26.] Though calms occur in this region of the Indian Ocean also, the monsoons are usually very regular, and, as we approach the southern limits of the region, it is quickly observed, as soon as both the monsoons cease, that the winds blow in the southern hemisphere, generally blow between south-west and north-west, and, in the other six months, between south-east and north-east. They are usually called the north-west and north-east monsoons of the coast of the sea, but they do not coincide with the proper monsoons in time, nor do they seem to be connected with them in any way.

The region of the proper monsoons lies to the north of this region, and they blow with the greatest force and with most frequency between the eastern coast of Africa and Hindustan. When the sun is in the southern hemisphere a north-east wind, and when it is in the northern hemisphere a south-west wind blows over the sea. When the sun passes the equator the winds are variable, and accompanied with gales and squalls, and thunder-storms, but it is observed, that as soon as one of the monsoons ceases, the clouds in the upper regions of the atmosphere take the direction of the opposite monsoon, though it is not till three or four weeks afterwards that this monsoon becomes prevalent over the sea.

The north-east monsoon blows from November to March. It extends one or two degrees south of the equator. It becomes regular near the coasts of Africa sooner than in the middle of the sea, and near the equator it is called the south-west monsoon of Arabia. It blows with most regularity and force in the month of January, and especially in the most northern angle of the sea, between the island of Socotra and Bombay. This monsoon is not accompanied with rain on the coasts of Arabia, but it brings rain to the eastern coast of Africa, where the rainy season falls between the beginning of November and the end of March. It may be laid down as a certain fact that neither of the monsoons brings rain by itself, but only when it reaches a coast after having passed over a wide extent of sea.

The south-west monsoon does not extend south of the equator, but usually begins a short distance north of it. It blows from the latter end of April to the middle of October. At Anjengo, when near the southern limit of the south, it appears at the end of March; but along the coast of Malabar, not before the middle of April: it ceases however sooner in the former than in the latter region. It is also observed that the south-west monsoon sets in sooner on the coast of Malabar than on that of Canara and Coromandel. At Anjengo (in 6° 30' N. lat.) it makes its appearance on the 12th of April, and at Bombay on the 15th of April, so that it proceeds a degree farther northward in the course of three days. It reaches the coast of Malabar in the month of May, in the form of moderate force; but when it approaches the coast of Hindustan, the atmosphere becomes overcharged with moisture, and the rain descends in torrents, but more abundantly on the southern than in the northern coast of Malabar, and it now descends on it in the amount of 116 inches, but at Bombay it does not exceed 63 inches. It was formerly supposed that the south-west monsoon was arrested by the Western Ghauts, but a better acquaintance with the table-land of Deccan has shown that the quantity of rain descending on it is but a small fraction of the south-west monsoon, and with a wind blowing from south-west. It has latterly been observed that its effects extend to the coast of Coromandel, where, during its prevalence, a few showers fall. But the farther this monsoon advances into the continent, the smaller is the quantity of rain which it causes. Northward its effects extend over the table-land of Malwa, the low country along the course of the Indus, and even to the coast of Beluchistan, as far as the Sutras of Ormuz.

Both monsoons occur in the Bay of Bengal, but there they are somewhat modified and less regular. The north-east monsoon does not set in regularly before the beginning of December, when it blows from north-east and east-north-east. In January and February it is irregular, and frequently turns to the south-east, and in March it ceases entirely in the centre of the sea, and blows faintly in the north-eastern parts, with long intervals of calms. Though the north-east monsoon only becomes regular in December, it is preceded by heavy squalls and winds in the southern parts, especially along the coast of Coromandel; and it is frequently interrupted by the sudden Hindustan monsoon, brought by abundant rains, which however are less plentiful than those brought to the coast of Malabar by the south-west monsoon. The mean annual quantity of rain at Madras does not exceed 60 inches, or more regular in its strength, but not in its direction, as it blows frequently from the south, and even from south-east, especially near the mouth of the Ganges. Little rain falls during this wind on the west coast of the Gulf of Bengal, but that these rains extend over the countries situated along the north, in which direction it extends to the foot and declivities of the Himalayas mountains, and as far as the place where the Ganges issues from the range; but here too the quantity decreases as it advances inland. The mean annual quantity of rain in the basin of the Ganges is not more than between 20 and 25 inches. The quantity of rain which, during this monsoon, descends on the eastern coast of the bay, is still larger, especially towards its northern recess, in Chittagong and Aracan, where, according to a rough estimate, founded on practical observation, it is between 30 and 40 inches.

The monsoons are subject to much greater variation to the east of the Bay of Bengal. In the Chinese Sea and the Sooloo Sea the wind is south-west-south-east when the sun is in the northern hemisphere, but it does not blow with regular force, between April and September. It is mild, bringing rain to all the countries which surround the sea on the north and east. In the southern provinces of China, in the Philippine Islands, and in the Sooloo Islands, the rainy season commences in the beginning of May, and terminates in September. The first rains are very abundant, when compared with those which fall in the countries without the tropics, are much inferior in quantity to the rains in Bengal and Chittagong. It is remarkable that these rains extend over the countries situated along the Gulf of Tonkin. The monsoon blows in these seas from north-north-west when the sun is in the southern hemisphere; but it is still less regular in its force, though more so than in the Bay of Bengal. It brings rain to the countries on the south coast of China and south of the southern coast of Cochin China, and the northern shores of Borneo, where the rains commence at the end of October and continue until March. They are more abundant than those which fall during the opposite monsoon on the northern coast of the Continent of India, and precede it.

Along the equator, and about one or two degrees from it, it appears that the winds are subject to frequent changes; and it is also observed that the islands situated within these limits have frequent showers nearly every day in the year. In the Java Sea and the southern parts of the straits which lead from that sea to the Chinese Sea, the wind generally blows from the west when the sun is in the southern hemisphere; but it is still less regular in its force, though more so than in the Bay of Bengal. It brings rain to these islands, but not in such abundance, as the south-west monsoon, and during the easterly winds the air is generally dry, but sometimes very heavy showers. In these islands neither reason has that decided permanent character which distinguishes it on the continent of India, and the rains are far from being violent, or even generally, but it is more in consequence of the nature of the character of the season of the continent of India. The rains do not seem to come down with such violence; not a drop falls during June, July, August, and September, which is also sometimes the case in Java and the Lesser Sunda Islands.

The direction of the monsoons in the vicinity of the land is frequently changed by the direction of the coast, especially when a mountain-range extends along the shore. The most remarkable instance of this phenomenon is observed
on the south-western coast of the island of Sumatra. The south-west monsoon is felt at Atcheen Head, its most
northern point; but, being opposed by the range of high mountains stretching southwards into the Indian sub-continent, it is
changed into a north-west wind, which blows as far south as 1° N. lat. South of the equator the wind is not south-
west, but south-east, and may be considered as the trade-
wind, which, as already observed, extends as far north as 30° N. lat. It is in the north-west that the monsoon
forms itself.
During this period that part of the island which lies north of
the equator has its rainy season, whilst the southern
districts have dry weather. When the sun is in the norther
hemisphere the southern portion has abundant rains, with
frequent thunderstorms, and this continues till the sun is
in the southern hemisphere: in that season the wind blows in
the southern part from north-west, and is that wind which is
generally called the north-west monsoon; but the northern
districts are under the influence of the north-east monsoon.

It is not easy to explain the origin of these periodical
winds. It is admitted on all hands that they are only a
modification of the trade-winds, produced by the peculiar
features of the southern part of that range, which extend
northwards as far as 60° S. lat. The difference in the
table-land of Asia and Africa is subject during the two great divisions
of the year. When the sun is in the northern hemisphere
the monsoon extends as far south as 30° N. lat. In this
point. The north-west monsoon is produced in the
monsoon of Formosa, and can hardly be admitted to
this explanation, when it is considered that the north-
est trade-wind retires to the most northern corner of the
Chinese Sea, and is there very feeble and irregular.

As for the monsoon of Java and of the seas between the
Lesser Sunda Islands and the north of the coast of Australia, they seem
to owe their origin principally to the changes of tempera-
ture which occur in the countries lying along the northern
coast of Australia, of which we have no information at all.

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MONS.

The origin of the south monsoon in the Chinese Sea is
more difficult to explain. The great plains of Siam and
Camboja, the mountain-range of Cochin China, which
extends along the monsoon of Formosa, are exposed to the
blows of the south, and have therefore one more or less
regular and constant. The vegetation which covers the
Gangetic Plain is probably also the reason why the rains
brought by the monsoon are distributed over its whole
extent, whilst it passes over the dry sands of the Thurm
almost without letting a single shower fall.

The origin of the south monsoon in China is
more difficult to explain. The great plains of Siam and
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met with, or monsters by default; and in the third he placed the various irregularities in size, relative situation, and structure of parts, which so often occur. The classification proposed by Mieckel (De Duplic. Monst. Comment., p. 29), takes from that of Buffon the addition of a fourth class, including the different forms of hermaphroditism only. The simplest classification of monsters, being that which excludes all theory as to their causes, is to distribute them according to some simple and obvious characters, either deep or superficial, of un unanimity in the region or system of organs affected; and such is the kind of classification which we shall adopt in the present article.

Monsters may be first divided into simple and compound, the first of which only contain the elements of a single individual, and the second, corresponding to the presence of two or more beings united. Simple monsters may be again distributed into three classes, which, though not all distinguished from each other by any precise characters, are yet sufficiently distinct for purposes of arrangement.

In the first of these classes may be included those congenital varieties of conformation which are simple and uncomplicated, only affecting one organ or system of organs, and in most cases not interfering greatly with the performance of such functions.

The second class, on the contrary, contains all those cases in which the degree of malformation is so extensive as to produce great alteration in the anatomical and physiological relations of organs, as well as, in most cases, serious external deformity. The primitive character of the anomaly is insisted upon by Isidore Geoffroy St. Hilaire (Hist. des Anomalies, tom. 1, p. 79) is of opinion that the term monster should be confined to these more complex cases, and thinks that all the other kinds of malformation, with the exception of the compound, could be simply called anomalous, but this distinction is arbitrary and inconvenient; indeed, in dividing this class from the previous one, it is exceedingly difficult to say where one begins and the other leaves off; and, consequently, to know in which of them to arrange many cases.

The third class may be very clearly defined, for all the malformations which it includes affect one system of organs, namely, those of generation. The monsters in this group are denominated hermaphrodites, the sex being imperfect, or at least not expressed in some of their characters, being present in one individual.

An immense number and variety of anomalies are included in the first class, which may be again subdivided into orders, according to whether the malformation affects the structure or form, or the position or arrangement, or even in the number of parts. It is often found however, that two or more of these varieties of malformation exist together in the same monster; thus in Cattus and idiotic, the third case of the skull is frequently influenced; and in club-foot we find a great change both in the form, structure, and position (or arrangement) of the affected limb. Simple alterations in the size or form of parts are so common, that the examples of them are too numerous, but very interesting changes in the intimate structure of the tissues of the body have been met with; and particularly that peculiar absence of the colouring matter of the skin which characterises the state called albinism. A description of this curious anomaly has been given in the article Albinism, and we shall only here state that its origin must be accounted for by simple arrest of the process of development.

M. J. Geoffroy St. Hilaire says (Hist. des Anomalies, tom. 1, p. 319), "The pigments, or colouring matter of the skin, is wanting, not only in the young, but in the adult, and even in black or dark people the integument remains, for some time after birth, of the same colour as in the children of fair men. We can easily conceive therefore that the skin may stop in the series of its stages of development at any time. It is supposed that, when this occurs, the pigments are deposited in the mucous layer, and consequently it will remain uncoloured. The colouring matter of the skin and hair, the iris and the choroid, may thus be distributed in an individual (independently of any pathological alteration), in the same manner on any organ, or part of an organ may be wanting from arrest of development. If any doubts remain regarding this explanation, they are removed by the circumstance that the absence of pigment in the eye is seen in any high degree of albinism. We know that the fœtus, during the latter part of pregnancy, has the skin covered with down; and this down is frequently preserved in albino, particularly in those which are met with on the isthmus of Panama. Lastly, the persistence of the membrane pupillaris in some of these cases beyond the third month of its existence, is another equally evident proof of arrest of development."

Many curious anomalies in the position and connection of parts have been met with, and it has been observed that organs are subject to changes of position in proportion as they are found in the rudiments of the animal, during its early period of development. The walls of the abdominal and thoracic cavities are thus much less subject to alterations in the position of their component parts than those organs which are loosely contained within them. The liver, stomach, intestines, spleen, biliary ducts, islets of the pancreas, are often found in the natural cavity to another, or transported into a neighbouring cavity, as from the abdomen to the chest; and some of the organs may protrude externally, when the malformation receives the name of a congenital hernia. But these anomalies the most curious is that in which the vescera are generally inverted, all the thoracic and abdominal organs presenting exactly an opposite arrangement to that which constitutes their natural state; the liver, oesophagus, free lobed lung, and all those parts originally being disposed to the right side, being transported to the left; while the heart, spleen, sigmoid flexure of the colon, &c, are found on the right.

It is the peculiar characteristic of this monstrosity, that though the actual situation of the vescera is changed, their relations to each other and to the walls of the abdominal cavity remain unchanged. Many of these abnormalities have been observed and described by many authors. The late Dr. Meré has communicated to the Academy of Sciences (of an invalid soldier, aged 72), may be prolonged to its ordinary term. The causes of this malformation are exceedingly obscure, but it seems probable that general change of position of the parts depends ultimately on the development of the structure of the abdominal cavity in the situation of one important organ, as the heart or liver; for we know that many organs are connected by their functions, or by the medium of large blood-vessels, in such a manner as to acquire a certain relative situation to each other, which it would be impossible to preserve the general shape of the animal. Accordingly we find that when any important viscus is changed in its situation, other vescera are affected in a similar manner. In the earlier periods of the evolution of the fetus, several of those organs which are afterwards found in one part of the body, or in the middle line: this is the case with both the heart and liver. The knowledge of this fact enables us to understand more readily how these parts may at a subsequent period incline to the opposite side of that organ, on which one part of them is found. We are unable to explain the mode in which they change the direction of all the other abdominal and thoracic vescera.

Together with the alterations of connection, we must place those cases in which we see a connection existent in one individual, but which in another, becomes divided; and different organs, naturally entire, are apparently divided into two or more portions, as in Hare-lip and Spina bifida.

The latter of these malformations consists in a division or fissure of the posterior part of the rings of the vertebrae, either in one region of the back (as is most common), or throughout the whole spine. The mode in which the production of these and many other anomalies of the same nature can be explained by arrest of development, is by a knowledge of the method by which parts are formed. It has been already observed that in the formation of any organ, which is supposed to take place in almost all stages of the growth of the animal, from the fœtus, to the adult, and even in old age, there is a part of the embryo. If the process of development becomes arrested by any accidental cause, these states will become permanent, and the child will be malformed.

We have shown that arrest of development may produce unnatural division of a single part, and it may also occasion the closure or connection of parts naturally open or separate. Thus we frequently meet with deficiency of one or more of the orifices which open on the surface of the body, and particularly of the anus, which, if it be perfect, and its orifice only closed by a membranous fold,
or it may be very incomplete, and terminate in a cul-de-sac at a greater or less distance from the situation of its natural outlet. The latter is naturally and usually the more deeply seated, the course of the alimentary canal being thus conveniently prolonged to the level of the intestinal vesicle, which gives rise in one direction to the stomach and upper part of the digestive tube, and in the opposite direction to the inferior or descending part of the intestines. The formation of either of these portions may be arrested in any part of its course (the canal terminating in a blind extremity), though the large intestines, as the colon or rectum, are most commonly the seat of this anomaly, which, on account of the serious interference with the functions of the alimentary canal, is necessarily of a very irregular nature: thus the symmetry of the body is lost, and nothing remains but an irregular shapeless mass. Malformation often affects only one region of the body, and the more the parts remain unaltered which are comparatively natural: thus the limbs are frequently much altered in structure and appearance, and may be even entirely deficient, in cases where the head and trunk preserve almost their regular form. Monsters have been seen in which the hands or feet were alone developed and inserted immediately upon the trunk. From a fancied resemblance between the state of the limbs in these monsters and their natural state in the seal and other amphibious animals, the name Phocomelus has been applied to them. M. Dumeril, "de la Soc. Philomathes," (in iii, art. xi) has described a man who was affected with this anomaly, and who died in Paris about the year 1806, at the age of 62. His body was carefully examined after death, when all four limbs were found alike deficient: the two clavicles were very large, the humerus and radius almost the same size, and the arm did not exist at all, but the hands were articulated by the bones of the wrist immediately to the scapula. In the abdominal limbs the head of the femur and the trochanters were found on both sides, and a rudimentary tibia existed in the one instance, with which the bone opposite it was connected by the short thigh-bone. The hands and feet have sometimes been found wanting in cases where the whole or part of the arms and legs were developed, which terminated in a stump; and in such cases, the limbs in man and different animals have been found entirely deficient. In another family of monsters, denominated Sympleis, or Sirens, the two thoracic or abdominal limbs are fused together into a single member: thus the trunk is divided into two instead of four parts; in which case, either a double or single foot, or terminating in a point or stump. These monsters are generally malformed in some other respects, and mostly die soon after birth.

The trunk may be the principal seat of malformation, while the head and limbs are referred to it as a seat of generation. In monsters of this kind evagination has generally been found, accompanied with other anomalies. Evagination consists in imperfect development of the walls of the abdomen, and consequently protrusion of the greater part of the visera, which form a large portion of the abdominal contents, and are the parts only covered by a thin and delicate membrane, consisting of the dilated base of the umbilical cord. This anomaly may be solely confined to the abdomen, or it may also involve the thoracic viscera. It is observed in the spleen, where the upper part of the abdomen, the sternum may be divided by a fissure, or may even be completely wanting, so that hernial displacement of the heart will take place. Where the sternum and chest are implicated, the diaphragm is also imperfect, being partly wanting or divided. (I. Geoffr. St. Hilaire, "Hist. des Anom., t. xi, p. 263.) When the evagination occupies the inferior regions of the abdomen, the urinary and genital organs are often imperfectly developed, as well as in some cases one of the two lobes of the lungs.

Extroversion is an anomaly of the heart, which is very well known in some species of animals. In this malformation there is both displacement and imperfect development of the bladder itself, as well as of part of the walls of the abdomen, the front wall of the bladder is deficient, and the mucous membrane of the urinary vesicle is prolonged forwards to project upon the symphysis pubis. On the surface of this tumour, towards the lower part, two apertures may be observed, from which the urine is constantly trickling out. These are consequently the orifices of a very imperfect stomach; the bladder does not seriously impede the performance of any of the vital functions, and therefore is not incompatible with prolonged life; but the more complicated forms of evagination are necessarily fatal.

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place, some other parts of the body participate in the anomaly. The brain has often been found imperfectly developed, and situated wholly or partly without the cranial cavity, the walls of which were incomplete. In these monsters, which have been named Cyclophorus, the brain may protrude through an opening in the posterior or occipital region of the skull, or in the anterior or frontal region. This bicornal displacement of the brain is often complicated by the imperfect closure of the spinal cavity.

In others whom organ has been found entirely deficient, and the vault of the cranium absent, a bright red-coloured tumour composed entirely of vessels lying on the base of the skull, and perhaps occupying the place of the brain. In two of this kind the cerebral canal has been seen widely open, and the spinal marrow also deficient, the vascular tumour sometimes existing and sometimes not.

The face in some monsters is the principal seat of anomaly, and no form of monsterity has attracted more attention than that denominated Cyclopa, in which, from atrophy of the nasal organs, the eyes approach and unite in the median line. In some of those beings, which have also been called Cyclophorus by Geoffroy St. Hilaire, the two eyes are placed very close together, but still remain distinct, the bony parts of the nose being entirely atrophied, but the soft and tegumentary parts remaining in the form of a proboscis, or trunk, situated above the orbits, which, though closely in contact, are not blended together. In other cases in which gravity has been lost, and the double eye, the component parts of which are sometimes so blended together, that only a few traces of duplicity remain; thus the cornesy, pupil, and crystalline lens have been found quite united into one organ. (Hist. des Malformations, t. i., p. 387.) None of these single-eyed monsters have ever been known to live for more than an hour or two after birth, and their speedy death must be accounted for by the imperfect state of the brain, which constantly accompanies this anomaly. Malformation of the head is sometimes carried to such an extent, that the natural structure becomes completely lost, and a mere shapeless mass remains; and lastly, in those monsters to whom the denomination of Acrophalous is correctly and should be exclusively applied, the head is entirely wanting, or at least, it is incompletely forming. In these very imperfect beings other parts of the body always participate in the malformation; the symmetry of the form is lost, one or both of the superior extremities are generally deficient, and many of the thoracic and abdominal viscera missing: the heart and lungs have been found absent in most cases; and some writers have remarked that the heart is never found in accephalous foetuses, but the testimony of many observers has proved that this is incorrect. (St. Hilaire, Hist. des Malformations, t. ii., p. 44.)

A curious case (Haut. de la Soc. Med. d’Emulation, Sept. 1821), in which an accephalous foetus was furnished with a simple tubular heart resembling the dorsal vessel of insects, into which the principal vascular trunks opened. This case furnishes a most interesting subject of inquiry, since it throws light upon the several parts of the heart first appears in the embryo in the shape of a long tubular pouch, which ordi-

narily transient state had doubtless become permanent in the above monster by arrest of the process of development.

Of the irregular shapeless masses generally called mole, consisting of different organic parts, as teeth, bones, hair, skin, &c., which are occasionally found in the uterus or ovaries, must be considered as the imperfect products of conception, or as results of a morbid process in the system, or by the theory of monstrosity by inclusion, which supposes that the elements of one being have been originally enclosed in the body of another, where they have remained in an imperfectly developed state.

The last class of simple monsters includes the various forms of hermaphrodism. An hermaphrodite was defined by the ancients as an individual capable of fulfilling by turns both the functions of male and female organs, or at least one who simultaneously possessed both the male and female organs fully developed; such a being however is not only unknown among the details of anatomy, but is physically impossible in man and the higher orders of ani-
mals without extensive alteration in the connections of the bones and other parts of the pelvis. The signification of the term hermaphrodism is now much extended, and it is used to designate an individual who possesses any mixture of the characters of the two sexes. An immense variety of these malformations of the generative organs has been observed; but in most cases the malformed being belongs essentially to one or the other sex, and is only referred to the other by the term hermaphrodite. The female hermaphrodite, male and female hermaphrodites have been thus formed, which include a great proportion of the cases which have been met with. In both of these forms of anomaly, by a careful examination of the generation during life, or dissection after death, it will be found that all these beings are essentially male or female.

In a few cases of what have been denominated neuter and mixed hermaphrodism, the organs belonging to the two proposals seem to have been so blended together in the same individual, that the being could not be referred to one sex rather than the other, but these instances are very rare. A most curious instance of this description is given by Schrele, a German anatomist. (Med.-Chr. prakt. Arch. von Hagen, &c., t. I. 1806.)

The mode of origin of hermaphrodism is very obscure, though the first mentioned forms of this anomaly must probably be referred to some arrest or excess in the process of development, since in the early stages of embryology life a great variety of forms exists between the generative organs in both sexes.

We now come to those curious and interesting anomalies in which the component parts of two or more distinct beings were united in the same individual. The two subjects composing a double being may possess an equal degree of perfection, or be very dissimilar in size and structure, one appearing as a mere parasitical appendage of the other: thus two individuals nearly perfect and distinct may exist, the one being perfectly formed, but the other an apparently single trunk may be furnished with two heads or four arms; the multiplication of one or more of the extremities constitutes in fact the first degree of double monstrosity. In some cases every limb is doubled, and the individual is thus provided with but one principal extremity, but only one supernumerary extremity, which, in some cases, has been observed single at its origin and doubled or tripled towards its termination, as when two or three feet are attached to the same leg. (Andri, Anat. Pathol., vol. 1.) It has been observed that in whatever manner or degree two beings are joined together, they are always united by corresponding aspects of the body, that is to say, side to side, face to face, or back to back: each part and each organ in the monster is always of the same age, and of the same degree of development, as if it had been cut off from a single trunk, nerve, or muscle situated in the line of union joins itself to the corresponding vessel, nerve, or muscle in the other subject, in the same manner as the two primitive halves of any single organ, which, according to M. Serres's theory of the formation of the body by closure, are originally separate, unite by the progress of development.

We have already said that the two subjects composing a double monster may be both nearly perfect and distinct, only adhering together by one region of the body. Beings of this description are sometimes capable of supporting an independent vitality for a considerable number of years, though they are mostly destroyed during parturition, their structure occurring great difficulty to the process of deli-

gination. One of the most perfect cases was that of the double female who was born in Hungary in 1701, and christened by the two names of Helen and Judith. This monster was shown about seven years in almost all the countries of Europe, and lived the age of twenty-two years. The two heads, which were each quite perfect, except at the point of union, were here placed back to back, and united by the buttocks and part of the loins. The external organs of generation offered evident signs of duplicity, though there existed a single vagina, which was furnished in both parts with two orifices, four thighs; the vagina was at first single, but soon divided into two distinct canals, which led to separate uteri. The two intestinal canals likewise terminated in a common anus, and the hands and feet were provided with corresponding extremities. The sorts and venes cases communicated at their lower part, and thus established a large and direct communication between the two hearts, producing an intimate relation of life and functions between the two beings. Whenever one
The foetus, a tendency known as the posterior septum. The Parisian, observed that in the well-known double monster which was exhibited in London in 1829–30, and denominated the Siamese twins. In this instance the two brothers were only furnished with a single umbilicus. Two varieties have been observed in the mode of junction wherever situated; in one the attachment is superficial, being effected only by the skin and bones; in the other it is more deeply seated, the cavities of the body at the point of union communicating in the two individuals, or being in fact converted into one; thus, the lungs being united, the sternum may be altogether deficient; and the thoracic cavities thrown into communication, in which case this portion of the mesoskeleton may be considered an arrangement. Sometimes there are two hearts, which are perfectly distinct, and enclosed in separate pericardia; sometimes the hearts, though both well formed, are contained in one common pericardium, in which they may be either side by side, or one behind the other. In some cases, two hearts are found, but both in a very imperfect state; lastly, there may be only one heart presenting several vices of conformation, as three or four ventricles. These cases may be considered as distinct, inasmuch as they may be more or less intimately united at the upper part of their bodies, so that they appear to have a double body and single head. In others, on the contrary, there are two distinct heads, and the upper part of the body is double, while the pelvis and inferior extremities are nearly or quite single. In some cases belonging to the former of these divisions the separation of the bodies is only complete inferiorly, all the parts above the umbilicus manifesting a certain degree of union; in others it is perfect as high as the neck. In all these instances however the head and upper part of the body, although apparently single, almost invariably present on dissection some supernumerary parts, which have been supposed to be rudimentary monsters which are furnished with two heads and a single body offer numerous varieties; the head may be double, but not distinctly divided, there being two faces, more or less perfectly formed, placed side by side, and separated by a longitudinal division; each face is generally provided with a pair of eyes, but sometimes there are only three, one being placed in the median line and formed by the union of two together, as in cases of Cyclopa. The two heads may be completely double, but the body and extremities single. Lastly, the heads and upper halves of the bodies may be separate, there being four upper extremities, while the monster is only single by the pelvis and lower extremities. A human monster of the last kind, which lived to be nine months old, excited great interest in Paris in 1829–30, and was denominated Rita-Christina. It was born in Sardinia, and was brought to Paris to be publicly exhibited. It was carefully examined after death, and a detailed account of its structure has been given by M. Villeneuve. The two vertebral columns were found quite distinct in their whole length, and a rudimentary pelvis separated them inferiorly; another fully developed pelvis was found in its natural position, which supported two well formed abdomens, each of which was a single bladder, uterus and rectum, which were common to the two subjects, but behind these organs were found rudimentary traces of others. There were two distinct hearts, and all the other thoracic and most of the abdominal viscera were double. A singular and unique case is recorded by Sir E. Home. 

(Philos. Trans., vol. lxxx., p. 236, and vol. lxxxix., p. 28; also in Lectures on Comparative Anatomy, t. iii., p. 334), or else the case observed by Dr. C. C. Home in 1783, in the Memoires de la Faculté de Médecine, vol. i., p. 235, a child of the same birth-chamber as that denominated Rita-Christina. It was born in Sardinia, and was brought to Paris to be publicly exhibited. It was carefully examined after death, and a detailed account of its structure has been given by M. Villeneuve. The two vertebral columns were found quite distinct in their whole length, and a rudimentary pelvis separated them inferiorly; another fully developed pelvis was found in its natural position, which supported two well formed abdomens, each of which was a single bladder, uterus and rectum, which were common to the two subjects, but behind these organs were found rudimentary traces of others. There were two distinct hearts, and all the other thoracic and most of the abdominal viscera were double.
The younger St. Hilaire repeated these experiments in a different manner, altering the structure of eggs previous to the commencement of incubation, and not during the course of this process, as had been done by his father. His experiments were attended with quite a different result: the more violent disturbing influences destroyed the vitality of the embryo altogether; others, less active, produced general retardation or arrest of the process of development. The whole influence of such one region or part effected. (Hist. des Anom., tom. iii., p. 503.) These experiments confirm the opinion that anomalies involving a single individual must principally be referred to a general cause of some disturbing influence occurring during the process of development. In some instances the birth of a monster has undoubtedly followed an accident received by the mother during the early months of gestation, such as a fall, a violent blow on the abdomen, or some long-continued mental impression or anxiety. The influence of such causes is however much weaker than has been supposed; for many examples occur every day of women producing well-formed children who have been suffering under violent moral emotions, or who have received serious accidents during pregnancy. It is unnecessary to bring forward any arguments to refute the ancient superstitions notions of the vast influence which the imagination of the mother was supposed to exert over the formation of the fetus. It is no longer supposed, except by the ignorantly credulous, that such has been the case, though it is true that the parent can be depicted on the body of the child; and in most cases where the child has been supposed to have been deformed through the influence of any such cause, if the same influence received by the mother be not fully ascertained, it will be found that the organ supposed to be altered or marked by such impression must have been nearly or fully developed at the time that it was received, and therefore could be in no way affected.

Another generally admitted cause for some malformations is the occurrence of disease in the fetus itself, and there is no doubt but that some cases of anencephalia and other malformations of the brain and spinal chord must be referred to drospical disease occurring in the interior of the body of the embryo; and doubtless to many of these cases this explanation is inapplicable, and supported by no proofs. Many other hypotheses have been proposed to account for the production of monsters, as adhesions between the fetus and its investing membranes; modifications in the quantity and quality of the nutritive fluids received by the embryo; pressure made on the fetus by tumours attached to the parietae of the uterus, &c. It is unnecessary to enter into the consideration of these causes; for, after all, we can only arrive at the conclusion that the development of the embryo was arrested by some anomalous cause, for its natural course, or arrested by some accidental cause, which, whether taking its origin in the fetus itself, or acting secondarily on the embryo, is involved in obscurity.

Though the occurrence of accidental causes acting during the process of development will account for most of the phenomena of monstrosity, yet it will not account for all. It has been observed that some malformations are hereditary, are transmitted from father to children; and since all influence of the father on the child must cease with the act of fecundation, these anomalies must be dated from the moment of conception.

3. Laws of Monstrosity. — From extended observation it has been found that the forms and varieties of monstrosity present are apparently under the control of certain fixed laws; or, in other words, there appear to be a number of general facts which are applicable to all cases of malformation. Some general facts it is necessary to be acquainted with by a knowledge of them, we shall therefore be enabled to distinguish (when reading or hearing descriptions of monsters, or looking at figures in old works) those anomalous cases which may really have existed, from others which are mere figments of the author’s imagination and the circumstance, to one of these laws we have already alluded, for instance, the fact that union between two individuals forming a double monster always takes place by corresponding parts of the body; and we shall now briefly mention several others.

Monstrosity, however complicated and extensive, is never carried to such a degree as to remove the animal affected with it out of the series of natural beings in which it has been originally placed; no being or organ has ever been met with so deformed that the species to which it belonged could not be recognised. Again, in the most extensively deformed monsters the relative connection between different organs are never so completely altered that it becomes impossible to distinguish them by the position which they occupy. Thus the heart has never been found in the head, nor the lungs in the skull. Anomalies are more frequent in proportion as they do not affect vital organs nor interfere with any important functions. Thus we very commonly meet with irregularities in the course of blood-vessels, since it signifies little to the individual having a supernumerary foetus or head arrive at the organ which it is destined to supply. It has also been found that the parts most liable to vary are those which are the latest in attaining their complete evolution; and this fact may very readily be explained, for if the process of development be disturbed or arrested by any cause during the course of fetal life, those organs which are already nearly or fully formed at the time of the occurrence of such disturbing influence will be little or not at all altered, while on the contrary complete suppression or a very marked alteration may be effected by any cause whose formation has not commenced or is very imperfect. This fact has been explained in another manner, by supposing that different organs are subordinated in their formation one to another, and by the view of another whose development preceded it. Thus the tendency to more or less influence those which have been previously formed, while it must necessarily lead to the complete absence of all those which ought to have followed it in the order of development.

A kind of compensation or balancing has sometimes been observed between different organs in monsters; excess of development in one part being accompanied with a corresponding arrest of formation in some other organ. Thus an individual having a supernumerary foetus; on one hand frequencies the opposite limb furnished with fewer than the usual number, and monsters deprived of the brain have been observed to have the face unusually large. Many other applications have been made of the law of compensation, as it has been termed by Geoffroy St. Hilaire.

It has been said that the left side of the body is more frequently deformed than the right, and that a greater number of monsters belong to the female than to the male sex, which last fact M. Geoffroy attributes to the theory that the generative organs are in both sexes originally female, and that many monsters remain of that sex by arrest of development; who, if naturally formed, would have been males.

For further information upon the subject of monstrosity the reader is recommended to consult Monstrelet; Meechel’s Manual of Pathological Anatomy (German); Geoffroy St. Hilaire’s Anatomie Philosophique; and his son Isidor Geoffroy St. Hilaire’s Histoire des Anomalies.

MONSTRELET, ENGUERRAND DE, a celebrated French chronicler, lived in the fifteenth century. His quotations from Lyly, Sallust, and Vegetius lead to the opinion that he must have had a tolerable acquaintance with Latin literature. M. Decret supposed that either from bodily weakness or a predominant taste for study, he habitually abstained from the profession of arms, which at the time when he lived was almost essential to the character of a gentleman. The same author is also of opinion that be never entered the army, which most probably he, nor indeed acted in any of the events of his time, but was a quiet spectator of the circumstances which he has recorded. In all his work Monstrelet only alludes to himself, where he describes the capture of the Maid of Orleans by the English and the death of the Guise. He tells us that he was present at the interview between the Pucelle and the duke of Burgundy, and almost implies that he was not present at the skirmish in which the capture was gained by the English. At this occasion (says Decret) accompanied by a numerous escort, and clad in the accustomed costumes of a soldier, the Duke Philip perhaps as historian, the rest of his life be passed in the city of Cambrai, where he held several offices, being bailiff of the chapter of Cambrai, provost of the city, and bailiff of Villancourt. He died in the middle of 1453.

The first book of the Chronicles of Monstrelet begins with the year 1400, and ends with the year 1422; the second concludes with 1444. The early editions contain a third
and fourth book, which are both rejected by M. Buchon, a modern editor; the latter for the obvious reason that the events which it records did not take place till after the death of the chronicler, and the former on the authority of M. Coney, who declares that Monstrelet stopped at 1444, as well as from the result of certain critical investigations on the part of M. Buchon.

Monstrelet is greatly commanded for his minuteness of detail, his fidelity, and the extended view he takes in his 'ChRONIQUES'; for, like Froissart, his predecessor, he does not confine himself to France alone, but gives all the circum-
stances of the events of the other countries of Europe which were within the compass of his knowledge. His principal object was to give a history of the wars of his time, and of the persons engaged in them, but he adds much valuable information, both political and ecclesiastical.

In France there are several manuscripts of Monstrelet. The first printed edition is a quarto, dated 1512, which was followed by four others, the last dated 1603, all containing the additional books rejected by Buchon, who however praises the third edition (1578) for its beauty. The new edition by Buchon was published in 1836, and forms part of a series of the 'Pantheon Littéraire', in which it is designed to give all the principal chronicles of France. In 1808 an English version of Monstrelet was published by Mr. John, the translator of Sueton.

MONT DE MARSAN. [Landeres.]

MONT DE PIETE (MONT DE PIETÀ), in Italian, a benevolent institution which originated in Italy in the fifteenth century, the object of which was to lend money to merchants, especially the great money-lenders in that age, exacted an enormous interest, and as much as 20l. to 25l. per cent. The Papal government and other Italian governments established establishments for the same purpose, lending in these cases for a fixed term, at a low rate of interest, intended chiefly to defray the unavoidable expenses of the establishment; at the expiration of which term, if the capital lent and interest were not repaid, the pledges were sold, and the surplus money was divided among the owners. In most instances however the term might be renewed by merely paying the interest. The difference between these establishments and those of the ordinary pawnbrokers seems to have been that they were intended mainly for the benefit of the borrowers, and not for the profit of the lenders, and that every reasonable facility was afforded to the former.

The administration of the Monte de Pietà was therefore conducted upon economical and strictly equitable principles, and established on the model of public beneficent institutions. This at least was the original principle, although it may occasionally have been deviated from in after-times, in consequence of the want of means of the government itself. In Italy it was a beauty immortalized in verse by the poet Petrarch. In France it had been fused than it is now, and when loans of money were difficult to be got, the Monte de Pietà was a most useful institution.

Leo X., some say Paul III., sanctioned the first establishment of a Monte de Pietà at Rome, which was under the direction of a society of wealthy persons, who, having contributed the necessary funds, lent upon pledges small sums not exceeding thirty Roman scudi, a little more than six pounds sterling, to each person. The money was lent for a term of eighteen months. The establishment was under the inspection of the treasurer of the Apostolic Chamber.

Large storehouses were annexed to the office, which stood in the district of the Regola, near the banks of the Tiber. (Richard, Description de l'Italie, vol. v.) Other establishments were afterward commenced at Milan, Florence, Naples, and most other towns of Italy. That of Padua is one of the oldest on record, having been established in 1491, when the Jewish banks, which lent at usurious interest, were shut up. (Scarcionni, De Antiquitate Urbis Puteat.)

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In Spain there were also similar establishments at Madrid and some other large towns, but in no country were they so general as in the grand-duchy of Savoy, and the original beneficent institutions during the middle ages.

When the French under Bonaparte invaded Italy in 1796–7, they plundered the Monte di Pietà of Milan, Modena, Parma, and most other towns. At Rome, Pope Pius VI., being pressed by the French to pay an enormous sum for war contributions, was obliged to seize upon the richer pledges in the Monte di Pietà, for the part of which he gave bonds; but these bonds lost all value in the subsequent invasion of Rome by the French in 1798. The Monti di Pietà have been re-established in most Italian cities.

The Monti Frumentarii, in several parts of Italy, are storehouses of corn, which is lent to poor cultivators on the same principle as money by the Monti di Pietà.
without his knowledge), and from this the Letters were published, in three volumes 12mo, in 1763, the editor, it is said, having been the notorious Captain Cleland. A fourth volume appeared in 1767, composed of letters of which no manuscript is known to exist, but of the authenticity of which no doubt was ever entertained by Lady Mary's family. As they originally appeared, the Letters were introduced by a 'Preface by a Lady,' dated 1724, and signed M. A., which now turns out to have been written by a person once of considerable distinction in society, a Miss Compton, eldest daughter of the Tatler (see Nos. 32 and 63), who was a particular friend of Lady Mary, and who had drawn up the said preface after perusing the Letters in manuscript. The author says that, 'it was not easy to be contentedly established till the publication of the first collected edition of Lady Mary's works in 1803, in five volumes 12mo, by permission, from her genuine papers,' by Mr. Dallaway, who prefixed to the whole her ladyship, of very little merit in every respect. A second edition of this publication appeared in 1817, containing some additional letters; but its value has been since entirely superseded by the publication of 'The Letters and Works of Lady Mary Wortley Montagu,' edited by her great-grandson, Lord Wortley Montagu, Esq., published by Longmans, Green and Co., London. Besides presenting the letters formerly printed in a much more correct shape, this publication contains several letters and other pieces which had not before been given to the world; but it derives its chief value and interest from a new Life of Lady Mary Wortley Montagu, written by the Archdeacon Atherton (understood to be from the pen of Lady Louise Stuart, the only surviving daughter of her daughter Lady Bute), which is as able and spirited as anything Lady Mary herself ever wrote, and must be considered as one of the gems of our literature.

Lady Mary's visit to Turkey, besides producing the Letters, is famous for having been followed by the introduction, through her means, into this country, and thence into the rest of Europe, of the practice of inoculation for the smallpox. [INOCULATION.] Of the next twenty years of her life, which she passed in England, the most memorable incident is her quarrel with Pope, an affair which is involved in considerable mystery, but in which it appears probable that the poetess was in the right, and that the conduct of her antagonist was one of the levities of the lady. During this interval also she composed a considerable quantity of verse, which was handed about in society, and some of which got into print; but she had not much of the poetical temperament, and her rhymes, though not without astringency, contained nothing which could ensure them a long life. Among those of her performances in this line of greatest pretension were six satirical sketches, entitled 'Town Elogeurs,' which have been often quoted, and a number of poetic pieces, or that had been generally attributed to her, are in so free a style, as to make it necessary to exclude them from the modern editions of her works. For reasons, the nature of which is not well known, she again left England in 1739, but this time without her husband, from whom however she seems to have parted on very good terms, although they never met again. She directed her course to Italy, where she lived first on the shores of the lake of Iseo, and afterwards at Venice, till 1761, when she was prevailed upon, by the solicitations of her daughter, to return to England. She only survived her return to her native country a few months, dying of a cancer in the breast, on the 21st August, 1762. Besides a son, the subject of the next article, she left a daughter, Mary, who died in 1709, and a daughter, Lady Bute (George III.'s celebrated minister), and who died in 1794.

MONTAGU, EDWARD WORTLEY, son of Edward Wortley Montagu, Esq., and lady Mary Wortley, the subject of the present article, was born 1530, at a place near Colchester, in Yorkshire. His niece, Lady Louise Stuart, in her biographical sketch of his mother, describes him as 'betraying from the beginning that surest symptom of moral (or moral) culture, the spirit of adventure, accompanied by a fertile ready invention never at fault.' When very young he was sent to Westminster school, from which he repeatedly ran away, till at last making his escape altogether from his friends, or abandoned them as irreconcilably, set himself up to his own devices, and going through a variety of adventures, hired himself for a cabin-boy in a ship sailing to Spain, where he was after some time discovered by the British consul at Cadiz, and once more restored to his family. He was then sent to travel on the Continent in charge of a private tutor, and was while abroad that he published his first work, a treatise entitled 'Reflections on the Rise and Fall of Antient Republics.' His literary labours however still left him leisure for pursuits of a very different kind; and while at Paris he got involved in a dispute with a Jew, which subjected him to a criminal prosecution. We presume it was after he returned to England that, while still under age, he married, at a time when he was hardly considered considerably older than himself, whom he forsook in a few weeks, and never saw again. His wife, who gave him no ground for divorcing her, lived nearly as long as himself; but new and more important scenes were already successively passed by his name, some of whom were married to him, others possibly not; the last of them, at any rate, bad, like himself, been married before to a person who was still alive.

Notwithstanding all this profligacy and disregard of reputation, Mr. Montagu, having procured a seat in the House of Commons, retained it for two parliaments, till at last his extravagant expenditure involved him in such pecuniary embarrassments that he deemed it expedient to relinquish the connexion; and on his return to Italy, he but proceeding first to Italy, made himself remarkable there by becoming a convert to popery, and then transferring himself to Egypt, excited a still greater sensation by turning Mohammedan. The rest of his life he spent in the Continent, where his literary pretensions were called in question; for, whether it was by the spirit of emulation, or the spirit of rivalry, he had shown himself rather a philologist than a poet. Thus much is certain;—Mr. Wortley and Lady Mary (neither of them an incompetent judge) were far from thinking highly of their son's abilities and understanding. His irregular conduct was imputed by them rather to weaknesses of character than to "the flash and outbreak of a sanguine spirit" conscious of its own powers; and from first to last they held him utterly incapable of pursuing any object or course whatever, praiseworthy or blameable, with that firmness and consistency of purpose which perhaps belongs as necessarily to the great wick, as to the good one. They would have passed upon him the sentence of the patriarch on his first-born—"Unstable as water, thou shalt not excel!"

Nicholas, the last published volume of his Travels (Hamburg, 1837), tells a curious anecdote about Montagu marrying another man's wife in Egypt; and states some other facts which throw light on the character of the eccentric man, who seems to have had more ability than his family gave him credit for. The dispute between the father and son appears to have been mutual.

MONTAGNE, MICHEL, LORD OF, born in 1533, was a younger son of a nobleman whose estate, from which he took his name, was situated in the province of Perigord, near the river Dordogne. His father, an eccentric blind feudal baron, placed him under the care of a German tutor, who did not speak French, and the intercourse between tutor and pupil was carried on entirely in Latin; and even his parents, who could not address him in that language, of which they knew a sufficient number for common purposes. The attendants were enjoined to follow the same practice. 'They all became Latinists,' says Montaigne himself; 'and even the villagers in the neighborhood spoke Latin.' His education was such that of which took root in the country, and became of common use among the people.' Thus without the aid of scholastic teaching, Montaigne spoke Latin long before he could speak French, which he was afterwards obliged to learn like a new language.

He studied the law by way of pastime rather than as a task. He was afterwards sent to the college of Guinnee at Bordeaux; and at the age of thirteen he had completed his college education. The first book of his Essays, 'Of Friendship,' was made 'con- sellor,' or judge, in the parliament of Bordeaux; repaired several times to court, and enjoyed the favour of Henri II., by whom, or, as some say, by Charles IX., he was...
made a gentleman of the king's chamber and a knight of the order of St. Michel.

When he was three years of age Montaigne married Francine de la Chassaigne, in order, as he says, to please his friends rather than himself, for he was not inclined to a married life. He however lived on good terms with his wife till his death. He had only one daughter by her, and managed his own estate, on which he generally resided, and from which he derived an income of about 6500 livres.

In 1569 Montaigne translated into French a Latin work of Raynouard de Sébode or Sebun, a Spanish divinity, on "Naissance de la Religion," the life of Jesus Christ. At Rome he was introduced to several cardinals and other persons of distinction, and was introduced to pope Gregory XIII., and received the freedom of the city of Rome by a bull of the pope, of which he appended a condition that he was to be received into the Catholic religion with Rome; he there found himself at home among those scenes and monuments which were connected with his earliest studies and first impressions of his boyish years. He wrote a journal of his tour, evidently not intended for publication, but the MS., being discovered after nearly two centuries in an old chest in the château of his family, was published in 1774, under the title of "Journal du Voyage de Michel de Montaigne en Italie, par la Suisse et l’Allemagne, de 1568-1571." It is one of the earliest descriptions of Italy by a Frenchman.

While he was abroad he was elected mayor of Bordeaux by the votes of the citizens in honour which he would have declined had not the king, Henri III., insisted upon his accepting the office. At the expiration of two years Montaigne had retired to his country house, and two years after his return to office he returned to his patrimonial estate. The war of the League was then raging in the country, and Montaigne had some difficulty in saving his family and property from the violence of the contending faction. A time broke out in his neighbourhood (in 1586), and obliged him to leave his residence and wander about various parts of the country. He was at Paris in 1588, busy about a new edition of "Essais." It appears from De Thou that he met the partisans of the one or the other faction employed in negotiations with a view to conclude a peace between Henri of Navarre, afterwards Henri IV., and the duke of Guise. At Paris he became acquainted with Mademoiselle de Gournay, a young lady who had conceived a kind of sentimental affection for him from reading his book. Attended by her mother she visited him, and introduced herself to him, and from that time he called her "sa fille d’alliance," or adopted daughter, a title which she retained for the rest of her life, as she never married. Montaigne was often in the house of this young lady, of which, though warm and reciprocal, has every appearance of having been of a purely platonic nature, is one of the remarkable incidents of Montaigne's life. At the time of his death Mademoiselle de Gournay and her mother crossed the Alps by the Simplon with the body of Montaigne, and at the insecurity of the roads, to repair to Montaigne's residence and mingle their tears with those of Montaigne's wife and daughter.

On his return from Paris in the latter part of 1588, Montaigne stopped at Blois with De Thou, Pasquier, and other friends. The States-General were then assembled in that city, in which the duke of Guise and his brother the cardinal were treacherously murdered, on the 23rd and 24th of December of that year. Montaigne, however, was seen, and the civil dissensions could only terminate with the death of one of the great party leaders. He had also said to De Thou that Henri of Navarre was inclined to adopt the Catholic faith, but that he was afraid of being forsaken by his party; and that on the other side Guise himself would not have been averse from embracing the Protestant religion if he could thereby have promoted his ambitious views. After the catastrophe Montaigne returned to his château.

In the following year he became acquainted with Pierre Charron, a thinker of considerable reputation, and formed an intimate friendship with him. Charron's book "De la Sagesse," borrowed many ideas from Montaigne's "Essais." Montaigne by his will empowered Charron to assume the coat of arms of his family, as he himself had no legal heir.

Montaigne's health was in a declining state for a considerable time before his death; he was afflicted with the gravel and the colic, and he obstinately refused to consult medical men, of whom he had generally an indifferent opinion. In September, 1592, he fell ill of a malignant quinsy which kept him speechless for three days, during which he had recourse to his pen to signify to his wife his last wishes. He also requested that several gentlemen of the neighbourhood should be invited, in order that he might take leave of them. When they were all assembled in his room, a priest said mass, and at the elevation of the host, Montaigne half raised himself up in his bed, with his hands joined together as in prayer, and in that attitude he expired, the 13th of September, 1592, in the sixtieth year of his age. His body was buried at the feet of the Seigneur de Charnay, in the church of the Feuillans, where his widow erected a monument to him.

Montaigne's "Essais" have been the subject of much conflicting criticism. If we consider the age and the intellect of the man, which the author lived, we must consider them a very extraordinary and almost a unique attempt, as much on account of the learning contained in the work, although that is very considerable, as for the clear good sense, philosophical spirit, and frank liberal tone which are displayed in it, and for the utter simplicity of the language. Literature was then at a very low ebb in France, the language was hardly formed, the country was distracted by feudal turbulence, ignorant fanaticism, deadly intolerance, and civil factions, and yet in the midst of all this a country which for the first time in the history of the world was not divided, and which was not hampered by the traditional enmity of the language. Literature was then at a very low ebb in France, the language was hardly formed, the country was distracted by feudal turbulence, ignorant fanaticism, deadly intolerance, and civil factions, and yet in the midst of all this a country which for the first time in the history of the world was not divided, and which was not hampered by the traditional enmity of the language.
order to clear themselves of the suspicions arising from their past errors, become violent, indiscreet, unjust, and throw discredit on the cause which they pretend to serve. And a few lines after, he modestly places himself in the second class instead of that, who, by diminishing the first state of unimpaired simplicity, have not yet attained the third and last exalted stage, 'and who,' he says, 'are thereby rendered inept, important, and troublesome to society. But I, for my part, endeavour, as much as I can, to fall back upon my first principles from which I will not hesitate to depart.' In his chapter on prayers (b. i. 56), he recommends the use of the Lord's prayer in terms evidently sincere; and in the 'Journal of his Travels,' which was not intended for publication, he manifests Christian sentiments in a far different style.

Montaigne has been censured for several licentious and some cynical passages in his 'Essais.' This licentiousness however appears to be rather in the expressions than in the meaning of the author. He spoke plainly of things which were not new, but too new for his time, and he did so evidently without bad intentions, and only followed the common usage of his time. Montaigne combats most earnestly the malignant feelings frequent in man, that in the aggregate, inhumanity was habitual with his cruelty detests, his whole nature was averse from it. His chapters on pedantry, on the education of children, on the administration of justice, and especially of criminal justice, are remarkably good. He also throws considerable light on the state of manners and society in France in his time.

The 'Essais' have gone through many editions: that of Paris, 3 vols. 4to., 1725, is the most complete. Vernier published, in 1810, 'Notice et Observations pour faciliter la lecture et l'usage général de Montaigne,' 3 vols. 8vo., Paris. It is a useful commentary.

MONTANISTS, or CATAPHRYGIANs, a sect of Christians, which arose in Phrygia about 171 A.D. (Eusebius, Chron., p. 176; and Hist. Eccl., v. 3). They were canonized from their master Montanus, and Cataphrygians or Phrygians from the country in which they first appeared.

Of the personal history of Montanus little is known. He is said to have been born at Arsac in a village in Mygdonia, and to have had only a very refined state of society, but he did so evidently without bad intentions, and only followed the common usage of his time. Montaigne combats most earnestly the malignant feelings frequent in man, that in the aggregate, inhumanity was habitual with his cruelty detests, his whole nature was averse from it. His chapters on pedantry, on the education of children, on the administration of justice, and especially of criminal justice, are remarkably good. He also throws considerable light on the state of manners and society in France in his time.

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Germans, which is built at the foot of the mountain, partly occupies the site of the ancient Caesarea, a town of the Volscii, and subsequently a Roman colony, which was sacked by Hannibal's troops on their march from Capua towards Rome. Remains of the ancient town are still seen, including an amphitheatre, a theatre, and several sepulchral monuments of much height. Near the castle of Ratchis, almost a century and a quarter after the Conquest, the monastery was again destroyed by the Saracens, a.d. 884, but was restored in the year 949. The age that followed was a period of the greatest splendour for the monastery: the abbots were powerful feudal barons, who had jurisdiction over an extensive territory, and interfered in the quarrels of the neighbouring princes and of the Normans. The abbots Desiderius, afterwards pope Victor III., rebuilt the church of the monastery in the year 1066, and a numerous assembly of bishops assisted at its consecration. The bronze gates which adorned the edifice were the work of the sculptors of Constantinople, and which are still seen, exhibit in silver inlaid letters a list of all the tenures, castles, fiefs, and lands possessed by the abbey at that time. The abbots were seated on the left, and the monks on the right, of the monastic institution; a custom which was kept up till the middle of the sixteenth century. The abbots were bestowed in commendam on several cardinals in succession. The last commendatory or titular abbots were Giovanni de' Medici, afterwards pope Leo X., after which the regular election of abbots was restored. The abbots were seated on thrones, during which time he was also bishop of San Germano and the adjacent district. He was first baron of the kingdom of Naples, enjoyed ample privileges, and went out generally in a coach and six. At the expiration of the six years, he returned to his former condition. He died in the year 1530, while rich and aged monks were vying with each other to assist the abbots and travellers and visitors were entertained, and a seminary in the town of San Germano attached to that episcopal see.

Among other literary men who visited, at various times, the monastary of Monte Casino, chiefly for the sake of its libraries, learned Borgia, Buonaccorsi, and Magalotti, and the accounts of whom may be referred to for the condition of that institution in their respective epochs. Swinburne and other travellers of the last century have given an account of Monte Casino as it was before the French revolution and invasion. After the French occupied the kingdom of Naples in 1806, they suppressed all the wealthy convents, abolished among others the feudal rights of Monte Casino, and seized its landed property, but maintained the establishment, as well as those of Monte Vergine and La Cava, with a few monks in each to take care of the valuable archives and libraries of those institutions. King Ferdinand, after his restoration in 1815, gave back to the monastery of Monte Casino its former privileges. The monastery has now a revenue of 24,000 ducats, about 10,000, sterlings, and is inhabited by about 15 monks. The last account we have seen of Monte Casino is by the Hon. Keppel Craven, in his interesting "Excursions in the Abruzzi and the Marches," London, 1829, from which we derive the following description.

The vast structure, every side of which exhibits long rows of windows, covers the whole platform of the detached and conical mountain, the ground sloping from the base of the walls on all sides. Some of the adjoining borders have been converted into enclosed grounds, and furnished with fruit-trees and timber of larger growth. The edifice is built of small stones, covered with a reddish-gray stucco, of a sober yet not dull hue. The road to the monastery winds in a zigzag up the mountain, and gives access to the building through an archway cut in the rock, forming a double gate leading into a large court, followed by two other courts of equal dimensions, communicating with each other by open arcades. The middle court is provided with a large cistern, and from one of its extremities a handsome flight of steps ascends to the quadrangle before the church, which stands upon the summit. The quadrangle is surrounded by cloisters, the arches of which are supported by fine granite columns, brought from the ruins of Caesarea. Marble statues of the principal benefactors of the community are seated on niches of the cloisters. The church is very handsome, rich in marbles, and enriched with several interesting sepulchral monuments; amongst others, that of Piero de' Medici, the son of Lorenzo the Magnificent, who was drowned in the Liris after the defeat of the French, under Marshal Saxe, by the Genoese and Savoyard, in 1563. The ceiling and lateral chapels are painted by Luca Giordano and other Neapolitan and Sicilian painters. The organ is one of the finest in Italy. The seats in the choir are of walnut and oak wood, richly carved. The church is kept remarkably clean, and in this respect it reminds the traveller of St. Peter's at Rome. The rest of the monastery is grand and imposing, but not magnificent, being distributed internally in a style of simplicity which corresponds with the original institutions of the order. The contrast between the original cell, the exercise hall, and library, with the magnificent and the magnificent distribution of the public or communal part of the building, such as the courts, porticoes, church, chapter, and refectory, is characteristic of the old spirit of the order. The community was everything—the individual nothing. The library of Monte Casino, which is now kept in very good order, contains 18,000 volumes, among which are some rare editions of the fifteenth century. The archives contain original charters, grants, &c., of emperors, kings, and Longobard dukes, as well as papal bulls; many of the charters belong to the ninth century, and some MSS. to the sixth century; a curious letter of Mahomet II. to Pope Nicholas V., with the original plans for the aqueducts, the building of the town of Cassino, and the cutting of a well; a letter of Benedict XI. to Archbishop of Bologna, in 1302; a letter of the Grand Master of Malta, to Pope Urban IV. in 1260; a letter of the pope, Martin IV., to the King of France, one of the most important documents of the Crusades; a letter of the pope, Celestine III., to the King of France, 1193; a letter of the pope, Urban IV., to the King of France, 1262; a letter of the pope, Honorius III., to the King of France, 1224; a letter of the pope, Gregory X., to the King of France, 1273; a letter of the pope, Boniface VIII., to the King of France, 1296; a letter of the pope, Urban VI., to the King of France, 1380; a letter of the pope, Gregory XII., to the King of France, 1394; a letter of the pope, Benedict XIII., to the King of France, 1421; a letter of the pope, Martin V., to the King of France, 1422; a letter of the pope, Pius II., to the King of France, 1455; a letter of the pope, Leo X., to the King of France, 1519; a letter of the pope, Clement IX., to the King of France, 1667; a letter of the pope, Clement XI., to the King of France, 1715; a letter of the pope, Benedict XIII., to the King of France, 1724; and in fact, all the voluminous archives of the order. The library is also a small collection of antiquities, inscriptions, and a chair of 'rosse antico,' of exquisite workmanship, which was found in the neighbourhood. MONTECUCCI, RAYMOND, COUNT DE', Prince of Molfi, Knight of the Golden Fleece, and Generalissimo of the Imperial armies, was born at Modena in 1668, of a noble family of that duchy. He was the descendant of some of his members, he entered the service of the house of Austria in the Thirty Years' War; and after bearing arms as a simple volunteer under one of his uncles, and rising through the usual gradations of rank, he first signalized his military talents by the capture of two castles and two forts, and later by the taking of eight hundred and ten thousand Swedes, who were engaged in the siege of Nurnberg, in Silesia. But he soon after experienced the inconstancy of fortune, being himself defeated and made prisoner, in 1639, by the Swedes under the celebrated Banneck, near Prague. He is said to have beguiled the two years of his captivity in cultivating the taste for letters which he subsequently eceived; and, after his release, he resumed his service, with increasing reputation, in the defence of Silesia and Bavaria, in the war with the Turks, and in the capture of Wzemel at Triebel, in 1647; until the termination of hostilities, by the peace of Westphalia in the following year, enabled him to revisit his native duchy. There, at the marriage festivities of the marriage of the archduke, Francis, to Maria of Austria, was killed by his dearest friends, Count Mansani, in a tournament; perhaps the latest recorded catastrophe which attended the dangerous games of chivalry.

In 1657 Monteucelli was sent to the empire as a plenipotentiary at the court of John Casimir, king of Poland, against Ruggiero, prince of Transylvania, and the Swedes, whom he drove out of Poland, and compelled to conclude a peace. He was subsequently employed in Hungary in the war, of which he has himself given a relation in his memoirs, between the Imperialists and the Turks; and, at last, he was able to decisive victory over the latter at St. Gothard as to compel them to sue for a truce of twenty years.

In 1673 he reached the climax of his fame by being opposed to the illustrious Turenne, in the war between the Swedes and France on the Rhine frontier. 

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balanced operations of these two great generals, who, with-
out committing the event to a battle, displayed more science
in marches and encampments than other commanders have
exhibited in a whole series of victories. Here the armistice
of the conference, and when the fall of Turonue by a
chance shot, in 1675, gave free scope to the genius of his
opponent, Louis XIV. could find no one but the great
Condé competent to arrest the progress of Montecucoli.
Another of the Austrian campaign closed the
services both of Condé and Montecucoli: the latter of whom,
claiming no victory, deemed it his highest honour to have
encountered without defeat the two greatest French generals
of their century. The remaining few years of his life were
passed in leisure at the Imperial court, and he died in 1680.

As a general, Montecucoli was accused of excessive ca-
tion and want of enterprise, qualities which he himself held
to be no reproach. He had profoundly studied the art of
war; and the memoirs which he composed upon its general
principles and practice, as well as upon the peculiarities
of warfare against the Turks, and on the operations of the
Turkish war of 1661-1664, still retain their value, not only
as the most interesting and instructive records of the mar-
tial establishments and service of his times, but for the
soundness of the theory of the plan of the Revolution. It is
strikingly true of all ages of the military art. He was a zealous and generous
patron of letters, as well as a great strategist; and to him
principally the Academy of Naturalists at Vienna owes its
establishment.

A good French translation of the Memoirs of Montecucoli
was published at Amsterdam, in 1752, with a 'Life of the
Author' prefixed.

MONT'EGO BAY. [JAMAICA]

MONTE'LLIMAR, or MON'TELLIMART, a town in
France, capital of an arrondissement in the department of
Drôme, situated at the junction of the Jabrou and the
Roubion, two small streams which flow into the Rhône a
little below the town, in 44° 33' N. lat. and 4° 44' E. long.,
381 miles from Paris by Sens, Auxerre, Lyon, Vienna, and
Valence.

The Itinerary from Burdigala to Hierosolyma (Bordeaux
to Jerusalem), and the Théodiscus or Puteignier Table,
mention a place, Acumum, on the road between Valentina
(Valence) and Araconum (Aix-la-Chapelle), and Pliny mentions
a Roman colony, Acusio, in the country of the Cavares.
These two places are considered as identical, and some
geographers fix them on the site of Montélimar; but
D'Anville prefers to fix them at Aceune, a village near
Montélimar. It is of course not improbable that Montélimar
rose on the decay of the Roman town. In the religious wars of the sixteenth century it
was taken by the Huguenots, who had a considerable party
in the town, and taken by the Catholics; but it
was not till the reign of Henri IV. that internal peace
was restored.

The town is delightfully situated in the midst of hills,
covered with vines and mulberry and other fruit trees.
It is built on a hill about half a mile distant from the
main street, which has no houses without. The town gates face the four cardinal points.
The ruins of an ancient citadel command the place. Several
canals traverse the town, and the road from Lyon to Mar-
selle runs through the best built and pleasantest quarter.
There is a stone bridge over the united streams of the Rou-
bian and the Jabrou.

The population in 1831 was 5516 for the town, or 7560
for the whole commune; in 1836 it was 7966 for the commune.

There are silk-throwing mills; linens, wicker-wares,
cloth and damask, are manufactured. Trade is carried on in walnut-oil, wax, honey,
silk, corn, hay, wine, &c. The meadows round the town are irrigated with considerable skill; and there are lime-
woods and vines. Many silkworms are bred. Truffles of middling quality are found, and there is a tannery
and copious medicinal spring. Fuajza de St. Foud, the geolo-
gist, was a native of Montélimart.

There are a subordinate court of justice, one or two fiscal
agents of revenue, and a high school; a public library of
3000 volumes, and a printing-press and mechanical appa-
cus. The arrondissement has an area of 436 square miles, and
compasses 66 communes. It is subdivided into five cant-
ons, and is subintendant to a judicial district.

The population in 1831 was 62,320; in 1836 it was 64,612.

MONTENÉGRIN. [MONTENEGRO]

MONTENEGRO, the 'black mountain,' so called
on account of the dark forest which envelops its sides, is the
name given by the Venetians, and adopted by European
geographers, to a mountainous district forming part of
the high land of Albania, and situated on the borders of Her-
egovina, and of the former Venetian and now Austrian ter-
ritory. As an offshoot of the Alps it begins to the
north of Albania to the north, the Mounts Bertiscus and Scardus of the
anticlinal, runs in a southern direction between the sources of the Narenta and the Morak, and forms the
boundary between the Turkish provinces of Albania and Her-
egovina. On reaching the coast of the
deep Gulf of Cattaro, north-east of the town of Pera-
sto, this ridge divides into two branches, one to the north west and
the other to the south-east, both of which advance to the
mouth of the Morak. The coast of the
basin of the Gulf of Cattaro with its several bays and the territory around, which constitutes the Austrian districts
of Castelnuovo, Risano, Perasto, Cattaro, Budua, and Pastro-
vech. To the east of the main ridge, and north-east of the
Austrian territory, lies the district of Montenegro, consisting
of several high valleys sloping to the south-east, the waters
of which flow into Turkish Albania by two streams, the
Schiniza and the Rkovovenich, both affluents of the lake of
Scutari. The length of this mountainous and little known
district is 25 miles, and its breadth, or, more accurately, its
width, is 15 miles. The western half of the
basin of the Gulf of Cattaro with its several bays and the territory around, which constitutes the Austrian districts
The inhabitants of Montenéro, or Montenegrins, are a Sclavonian race, and speak a dialect of the Sclavonian. They call their country Czerna Gora. They belong to the Eastern church, and are governed by their Wiadiks, or bishop, assisted by a council of the chief families. All the men are armed, and extremely jealous of their independ- ence. The Turks, Montenegrins, and Persanes, are very warlike, but little corn, and has good pastureage for cattle, and much timber. The Montenegrins are given to plunder, and they now and then make predatory incursions into the Turkish territories. In the wars of Venice with the Turks they acted as auxiliaries, though at times troublesome ones, of the former power.

In 1757 an adventurer made his appearance among them, who gave himself out for Peter III., emperor of Russia, and created considerable disturbance for a time. After the fall of Venice in 1797, Cattaro was given up to Austria. By the treaty of Presburg in 1806 it was ceded to France; but before the French garrison could reach that district, the natives, joined to the Montenegrins, excited by a Russian agent, mutinied, and took possession of the town of Cattaro and the other towns of the territory. This served to the French as a pretext for taking forcible possession of the neighbouring republic of Ragusa. But the Montenegrins came down from the mountains, and besieged General Lauriston within the town of Cattaro. The French were defeated and had to evacuate the town and the other towns of the territory.

A French traveller, Sommieres, has written a Voyage Historique et Politique à Montenéro, 2 vols. 1829.

MONTEREAU. [SEINE ET MARNE.]

MONTEREY [MEXICAN STATES.]

MONTICELLI, VICGIL DE SEGONDAT BARON DE LA BRÉDÉ ET DE, was born on the 18th of January, 1839, at the Château de la Bréde, in the immediate neighbourhood of Bordeaux. He was descended from a noble and otherwise distinguished family of the province of Quercy. As a young boy he travelled much, and was a resident of the parliament of Bordeaux in 1714, and three years afterwards, on the death of a paternal uncle, he succeeded at the same time to his fortune and to his post of président à mortier in the parliament of Bordeaux, a post which Montesquieu himself afterwards filled. His father entered the same service, but quitted it early. The nobility which Montesquieu inherited was conferred upon his great- grand-grandfather.

Montesquieu gave in youth the promise of his future fame. His habits were most studious, and his desire for learning was encouraged in every way by a fond and judicious mother, who was educated anonymously, but the author soon became study of the civil law, with a view to the profession for which he was destined, was also preparing a work on a theological subject, namely, 'Whether the idolatry which prevailed among the heathens deserved eternal damnation?' He attained the rank of conseiller in the parliament of Bordeaux in 1714, and three years afterwards, on the death of a paternal uncle, he succeeded at the same time to his fortune and to his post of président à mortier in the same parliament. With the most assiduous and conscientious diligence he pursued his studies and examined carefully all the productions of literature. In 1716 he had become a member of the Academy of Bordeaux, and he was so zealous in endeavouring to direct the attention of this body more to physical science. He seems at this time to have been very much impressed with the maxim, 'Matters of earth concern but little the Academy likewise to return, to literature; and he now wrote several small essays on literary subjects, which were read at meetings of the Academy. In 1721 appeared the work which first brought him fame, the 'Lettres Persanes,' which was an attack upon his countrymen, the Montenegrins. The popularity of these letters was so great, that, as Montesquieu says in a preface to a later edition, 'Book sellers used to go about the street, catching every one by the sleeve, and begging, 'Pry'thee, write for me some Persian Letters.'"

His classical romance, called 'Le Temple du Gude,' was published in 1725. In the course of the next year Montes- quieu formed the resolution of retiring from his judicial duties, and of devoting himself entirely to literature. He accordingly sold his presidency. A vacancy occurring shortly after in the French Academy, on the death of M. de la Cantigny, he was elected to the seat vacated.

His principal claim to the distinction was derived from the 'Lettres Persanes,' but these seemed likely for a time to be the chief obstacle to his success. Notwithstanding their general popularity, an outcry had been raised against them by many on the ground of irreverence. The President of the Academy, Cardinal de Fleury, the chief minister, now wrote to tell the president of the Academy that the king would refuse his consent to the election of the author of so irreverent a work as the 'Lettres Persanes.' The course taken by Montesquieu for the purpose of overcoming the royal opposition does not seem to have been the most straightforward and manly.

He immediately published, according to Voltaire, a new edition of the 'Lettres,' in which the passages objected to were omitted; and having been admitted to the minister, and having disavowed all the obnoxious passages of the earlier editions, he succeeded in changing the king's resolution. (Ecrits de Voltaire.)

D'Alembert gives a somewhat different account: but inasmuch as this appears in an éloge, it is to be received with suspicion. There seems indeed to be no authority for the statement which D'Alembert makes, and which is indeed unnecessary, that the contents of the book were such as the minister could approve of, that several of his friends put their hand by inserting the printer of the book. The writer of the life of Montesquieu, in the 'Biographie Universelle,' rejects D'Alembert's account, and, admitting that Montesquieu omitted passages of his work which they were likely to stand in the way of his ambition, attempts to justify him on the ground that the work had been published anonymously; that he had never since put his name to it, and that there was in consequence no fraud in it.

The result however was that Montesquieu gained the support of the minister, and was elected a member of the Academy. He shortly after set out on an extensive tour in various countries; he visited Italy, and was president à mortier at Venice, Rome, and Genoa. He next travelled through Germany into Holland, and thence to London, where his brother was in the service of the English government. In England he stayed two years, receiving great attentions from the great, whether by rank or by reputation, and collecting materials, as he had done also in the other countries which he had visited, for his great work, which was the result of his studies.

On his return to France he spent two years in studious retirement in the country. He published in 1734 his work on the causes of the 'Greatness and Decline of the Romans,' and immediately after its publication he set to work to prepare the 'Esprit des Lois.' He was engaged upon this for fourteen years; and he tells us that very often, frightened with the greatness of his task, he was disposed to abandon it. When at last it was completed, he submitted it to the judgment of his friend Helvetius, who, by reason principally of its dissent from the opinions of the great jurist, strongly dissuaded him from publishing it. But whatever misgivings Montesquieu may have had while the work was in progress, were now entirely removed; and with the monumen- tary testimonies of Helvétius, it was published in an almost universal admiration. Montesquieu did not very long survive the publication. He died in 1755, after a short but severe illness.

The personal character of Montesquieu was in every respect excellent, and he was the best informed of his age. He maintained at the age of twenty- six, and his family consisted of a son and two daughters. Through life he practised a rigid economy, on the principle, as we are told by M. d'Alembert, that he ought to trans- mit his patrimony unimpaired to his children; but he took care that his economy should not stand in the way of charity. In the intercourse of society Montesquieu appears to have been agreeable without being brilliant.
The writings of Montesquieu show much variety of talent. Even if the 'Esprit des Lois' had not been written, the author of the 'Lettres Persanes,' remarkable for their refined humour, and of the 'Temple du Goût,' an exquisite little book, he would not have been without considerable merit. And without disparaging at all the merits of Montesquieu's great and best known work, it may be said that these smaller productions are much more perfect in their kind than the 'Esprit des Lois' as a treatise on political science. The chief merit of this work is its variously ingenious and at the same time sensible mode of treating the art of government, and its enlightened advocacy of what, not very definitely or correctly, are called the principles of liberty. This treatise has its defects, greater in account of the time at which the work appeared. The defects of the work, on the other hand, are want of system, shallowness, not so much of knowledge as of thought, and (what is at once a sign and a consequence of this shallowness) an undervaluation of experience over principles. The time again at which the work appeared will serve in the way of extenuation of these defects; and it is to be remembered also that the plan of the work is profusely inductive rather than scientific.

The following is a biographical notice occasioned to a work by M. Destutt de Tracy, which, though partaking in some degree of the vagueness of Montesquieu's work, is very valuable both in itself and as a commentary on the 'Esprit des Lois.'

MONTFÉVETEO, or S. FELIPE DE MONTFÉVETEO, is the capital of the republic of Uruguay, or Banda Oriental, in South America. It is situated in 34° 55' S. lat. and 56° 10' W. long, and built on a small promontory, which forms the entrance to the port. It was founded in 1713 by the French, and the present site of the city is that of a projecting point connected with a hill, from which the town has received its name. It is 130 miles from Cape S. Mary, which forms the northern point of the entrance of the La Plata river, and opposite the town the river is still 70 miles wide. The town is about six miles long and more than 2 miles wide, but too shallow for large vessels; it is also exposed to the pamperos, or south-western winds, which blow over the extensive plains called pampeas with exceedingly great force. With all these disadvantages, it is the religious seat of Limon, which is the first prefecture of the La Plata river. The town is in general well built, the streets being wide, straight, and intersecting each other at right angles; they are paved, and have narrow footways. The houses are built with taste, and have flat roofs and parapets. The castle is situated on a hill in the south-east, and so is not distinguished by its architecture, nor are there any other public buildings of note. Montevideo is a very healthy place, but suffers from want of wood and water. The inhabitants are divided between French, Portuguese and Germans, and are supported by commerce and agriculture. The water supply consists of two wells placed in the court-yard of each house; but there are also some wells dug near the sea-shore, from which water is brought in carts for the supply of the town. The population, which, before 1810, is stated to have amounted to 38,000 souls, in 1836,79,500 souls, but has been reduced in consequence, which the town had to sustain against the Brazilians, to 15,000 souls; but it has probably again increased during the last ten years. Its commerce is increasing. The principal articles of export are the produce of the numerous herds of the country, as horses, cattle, and jerked beef, tallow, and hams, to a very considerable amount.

(Henderson's History of Brazil; and Brunckeredge's Voyage to South America.)

MONTFÉVETEO (MONTFÉVETTEO.)

MONTFACON, BERNARD DE, a Benedictine of the congregation of St. Maur, and a very learned antiquary, was born January 17th, 1655, at Soulage in Languedoc. He was the son of Timolón de Montfaucon, lord of Roquefollade, and his birthplace was in that county. He has himself preserved, in his 'Bibliotheca Bibliothecarum MSS.,' the pedigree of his family, which was originally from Gascony. His early studies were conducted first in his father's castle at Roquefollade, and afterwards among the Dominicans of Toulouse. He first entered the military, and he served in one or two campaigns in Germany under marshal Turenne. The death of his parents however, and of an officer of distinction under whom he had fought, induced him, after two years, to change his plan of life, and in 1672, he entered the congregation of St. Maur. In this learned Society he had every opportunity to improve his early education.

His first work was a supplement to Cotelierus, entitled 'Anallecta Graeca,' 4to., Paris, 1688, with notes by him and the fathers Anthony Pouget and James Lopin. In 1696 he published a small volume entitled 'La Verité de l'Histoire de Judas le Soyez.' His next important work was a new edition of St. Athanasius, in Greek and Latin, 3 vols. folio, a labour which established his reputation as a profound scholar.

In the same year Montfaucon, who had turned his thoughts to more extensive collections of antiquities than he had then appeared, determined to visit Italy for the purpose of consulting the manuscripts in the Italian libraries. In this pursuit he passed three years, and upon his return in 1702, published the second part of his 'Diarium Italicum.'

During Montfaucon's residence at Rome he held the office of procurator-general of his congregation at that court; and while there, in 1699, published a little volume in vindication of the Benetians. The edition of the work was of Augustin, in 11 vols. folio, the publication of which had been begun by some able men of his Order, at Antwerp, in 1679, and had not been completed till 1700. In 1706 Montfaucon published, in 3 vols. folio, a collection of the most important Ancient laws, in Latin, French, and Greek, with notes, and an attempt to prove that the Thracian language of whom Philo speaks were Christians; and in 1710 an 'Episto-

DICTA on the fact mentioned by Ruffinus that St. Athanasius baptised children when himself a child. This was followed by another interesting work, 'Les Monuments de la Monarchie Gréco-Romaine,' a work in 1708, in which he again estimated, not the least important of his works was his 'Bibliotheca Biblio-


Besides the work already enumerated, he has left curious and valuable essays on subjects of antiquity to the Memoirs of the Academy of Inscriptions and Belles-Lettres, as well as to other literary journals. (Moreri, Dict. Hist.; Chast. des Lettres, 1709-903.)

MONTFERRAND. [CLERMONT.

MONTFILANQUIN. [LOT ET GARONNE.

MONTFORT. [ILLES ET VILAINE; SHIRE OF OFF.]

MONTFORT, SIMON DE. [HEVERY III]

Surface and Geology.—Montgomeryshire is entirely an inland county, and belongs wholly to the mountainous tract of Wales. The north-western border toward Monmouth-
Montgomeryshire is occupied by the Berwyn Mountains, and when these form two branches enclosing the valley of the Dovey, the south-eastern branch belongs in great degree to Montgomeryshire. It separates the basin of the Dovey from that of the Severn.

The south-eastern branch is occupied by the heights which extend from the neighbourhood of Shrewsbury across Clun Forest to Rhayader in Radnorshire. Irregular branches from these two principal chains occupy the intermediate part of the county, and there are several small valleys watered by the various streams that flow into the Severn. These branches extend to the basin of which the whole county belongs, except that part which is enclosed between the two branches of the Berwyn chain, and which belongs to the basin of the Dovey. This is Montgomeryshire on the north, Cardiganshire and Moel Angel, Blwch-y-felin, Mynydd Cwmnes, and Moel Frí, in the Berwyn chain; and the Breiddin hills (Moel Golpha, Moel Famau, and Cofn Cyliffy) about 1200 feet high; Long Mountain, 1393 feet; Kerry Hill, and Llandinam Mountain, 1992 feet high, in the chain that skirts the Shropshire and Radnorshire border.

Plinlimmon belongs to the Berwyn chain, and is partly in this county, but its summit (2463 feet) is just within the border of Cardiganshire.

The county is almost entirely occupied by the slate rocks which overspread so large a portion of Wales. The principal exceptions are the Breiddin hills, which are composed of rocks of very varied character, granite, greenstone, and conglomerates. The same variety of rocks exists in various parts of the county, near the junction of the Severn and the Vyrnwy, where the red-sandstone, or red marl of Cheshire and Shropshire, is found. The mineral treasures are not very abundant. Lead and zinc are procured from mines near Llangynog, and there are small veins of silver and tin in similar localities.

The county extends through the entire course of the Severn, and is the principal river of the county; it rises within the border towards Cardiganshire, on the eastern side of Plinlimmon, and flows east about twelve miles to Llanlloes, receiving at that town the Clywedog, a river of about the same length as the Severn, which enters the valley of the Tanat or Tanat; lead in the Berwyn mountains near Plinlimmon, and copper and zinc between Llanfyllin and Oswestry, on the Shropshire border. Millstones are quarried in the Breiddin hills; stone for other purposes comes from London, via Shrewsbury, to Caernarvon, Barmouth, Towny, and Aberystwyth. The road to Caernarvon crosses the north-eastern side of the county near the Denbighshire border, through Llanfyllin and Llangynog to Bala in Merionethshire. The Barmouth road passes through the town of Llanfyrnwy and the Chep round Newtown and Llanfair, points of entrance to the county from the south. The former was held by the Romans, and the latter is the residence of the Bishop. The road to Barmouth is a part of the boundary of the county.

The Vyrnwy, or the lower part of the river, is formed by the union of the Tanat and the Afon Gurno, of about the same length; about nine miles lower down it receives the Muls and its branches, and about five miles lower still the Rhiw, which is seventeen or eighteen miles long, and the Canal, about twenty miles long; this last rises in Shropshire near the hill called Stiper Stones, six miles west-north-west of Church Stretton. All these streams, except the Muls and the Canal, join the Vyrnwy on the left bank. That part of the course which lies in Montgomeryshire or on the border may be estimated at fifty-one miles.

The Vyrnwy rises on the border near Blwch-y-pawl, and receives a considerable branch, the Emnet, of the Afon Cedig, the Afon Gwynan, the Glanwern, and the Conway; it flows south-east in a winding channel twenty-two miles to the junction of the Trech, twenty-one miles long, which receives the Brawy and other small streams, and the Conway; the Conway joins the Vyrnwy and flows south-east into the Vyrnwy, chiefly in Montgomeryshire, partly on the Denbighshire border, and for two or three miles in Shropshire; it receives the Rhaeadr, the Afon Corrog in Montgomery, the Afon Ymryn and Montgomeryshire and Denbighshire, and from the junction of the Tanat the Vyrnwy flows about 9 miles further to its junction with the Severn; its whole course is about 45 miles.

The southern part of the county is watered by the Wye, an important tributary of the Severn, which rises on the south-east side of Plinlimmon near the source of the Severn, and flows south-west, joining fourteen miles into Radnorshire, receiving by the way the Tarrenig, the Bidno, and the Nant-y-Durrell.

The Dovey chiefly belongs to Merionethshire. [Mærionethswe.] It enters Montgomeryshire about four miles below Dinas-Mawddwy, and flows about the same distance on the north-east side of the neighbourhood of Machynlleth, where it again touches Merionethshire. Its remaining course is between Merionethshire on the north-west, and Montgomeryshire and Cardiganshire on the south-east. The Vyrnwy forms its tributaries the Talugol and the Cwmweli partially, and the Afon Ygle, the Corrig, and the Dulas entirely, belong to this county. The Lyfh Nant, another feeder, separates Montgomeryshire from Cardiganshire. The Dulas has its source in the Glas Lyn, a small lake not a mile in extent in any direction, but yet the largest in the county.

Of these rivers only the Severn and the Dovey are navigable in that part which belongs to this county. The navigation of the Severn begins at Welsh Pool, that of the Dovey in the neighbourhood of Machynlleth; the length of the Severn navigation in or upon the border of this county is about eleven miles; that of the Dovey five or six miles.

The only navigable canal is the Montgomeryshire canal, which was commenced under an act obtained a.d. 1794. It commences in the county at Newtown, and runs along the valley of that river past Welsh Pool, about four miles below which it quits the immediate neighbourhood of the Severn, and runs northward to Llanyliyn and Llanllobid to Shropshire, where it joins a branch of the Ellesmere canal. Its whole length is twenty miles, and is wholly within the county; it has a short branch below Welsh Pool to Gttsfield.

The principal roads which pass through this county are those from London, via Shrewsbury, to Caernarvon, Barmouth, Towny, and Aberystwyth. The road to Caernarvon crosses the north-eastern side of the county near the Denbighshire border, through Llanfyllin and Llangynog to Bala in Merionethshire. The Barmouth road passes through the towns of Llanfyrnwy and the Chep round Newtown and Llanfair, points of entrance to the county from the south. The former was held by the Romans, and the latter is the residence of the Bishop. The road to Barmouth is a part of the boundary of the county.

\[\text{Divisions, Towns, &c.} \]
Montgomery takes its name from the town and castle of Montgomery, founded by Baldwin, the husband of Matilda, daughter to William the Conqueror and William Rufus, and recaptured, probably from the Welsh by Roger de Montgomery, earl of Shrewsbury, who gave both to town and castle his own name. The Welsh call the town, from the name of its original founder, Tre Ffaldwyn, and the county Sir Tre Ffaldwyn. The county was formed in the reign of Henry VIII. It is divided into nine hundreds, as follows:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Pop. in 1831</th>
</tr>
</thead>
<tbody>
<tr>
<td>Llanfyllin</td>
<td>N.E.</td>
<td>6,842</td>
</tr>
<tr>
<td>Oswestry</td>
<td>N.E.</td>
<td>9,057</td>
</tr>
<tr>
<td>Caerso</td>
<td>E.</td>
<td>2,712</td>
</tr>
<tr>
<td>Mathrafal</td>
<td>Central &amp; N.W.</td>
<td>5,899</td>
</tr>
<tr>
<td>Llanidloes</td>
<td>W.</td>
<td>12,159</td>
</tr>
<tr>
<td>Llanfyrnwy</td>
<td>S.</td>
<td>5,532</td>
</tr>
<tr>
<td>Newtown</td>
<td>Central</td>
<td>13,930</td>
</tr>
</tbody>
</table>

It contains the borough and market towns of Montgomery and Machynlleth, at one or other of which the county-court and court of election for the county members are held; Newtown and Welsh Pool, at which the assizes are held; the town of Montgomery, and the market-town of Llanfair.
Montgomery is the hundred of Montgomery, 168 miles from London by Ludlow, or 174 by Shrewsbury. Baldwin or Baldwyn, who had been appointed lieutenant of the Marches by William the Conqueror, built a castle or other fortified tower, and laid out the town; but the town (A.D. 1021) both appear to have been almost immediately captured by the Welsh, from whom they were taken again (A.D. 1093) by Roger de Montgomery, earl of Arundel and Shrewsbury. The earl fortified the place and called it after himself, but in 1109 was taken by the Welsh, who put the garrison to the sword, and ravaged this part of the border-land. William Rufus assembled an army, repulsed them, and strengthened and provisioned the castle of Montgomery. It was however again taken and burnt by the Welsh; but the new Norman power prevailed, the Welsh were driven to their fastnesses, and the earl of Shrewsbury rebuilt the castle. This however appears to have shared the fate of its predecessor, for Henry III built a new castle here, A.D. 1221, which was, ten years afterwards, taken and burned by Llewellyn, prince of North Wales. Montgomery afterwards formed part of the possessions of the Mortimer family. In the civil war of Charles I, the castle was fortified for the king; but it was given up by the governor to the Parliamentary forces afterwards, 1646, and granted by the Royalists. The advance of a body of 3000 Parliamentary troops to its relief led to a desperate encounter, in which the Royalists (5000 strong) were defeated, with the loss of 500 slain and 1000 taken. The castle and fortress afterwards dismantled by the order of the House of Commons.

The town is partly on the slope and partly on the summit of a hill, which is commanded by a much loftier elevation in the immediate neighbourhood. It is a small place, consisting of a few narrow streets, which are the main place in the centre of the town. The houses are well built and of respectable appearance, and the town is the residence of several persons of small independence, to whom its quiet situation and delightful environs, and the cheapness of living, are a great attraction. It is a manufacturing town, has been long a market and garrison, and has little trade or manufacture. There is a weekly market on Thursday, well supplied with corn and provisions of all kinds. There are several yearly fairs. The population of the parish in 1821 was 1188, about one-third agriculture.

The castle stood on a steep projecting eminence on the north side of the town. The remains consist of a fragment of a tower at the south-west angle and some portions of the walls; between the buildings and the precipitous side of the hill above the town is a level space, probably used as a parade for the garrison. This castle appears to have been defended by four ditches cut in the solid rock, and crossed by drawbridges. The town itself was also defended by walls to the south-west and south-east quarters, and probably a few of these defences there appear to be no other remains than a few trifling fragments of the wall. At the foot of the castle-hill are traces of a small fort, conjectured to be the original Norman castle erected by Baldwyn; and on a neighbouring hill, intersected in the only accessible parts by deep ditches, are the remains of an extensive British camp, from which is a fine view of the vale of Montgomery. The church is an ancient cruciform building, not very large, in the early English style, with a tower erected in the course of the present century. There are some interesting monuments in the church. The town-hall is a brick building, with a market-house underneath; and there is a new county gaol on the road to Shrewsbury. There is a meeting-house for the Dissenters.

Montgomery is a corporate town; the limits of the borough and parish are the same. The corporation consisted, at the time of the Municipal Commissioners' Reports, of 72 resident burgesses. There is no town-council, but two bailiffs, elected in the borough and divided by the burgesses in common hall. The corporation remains unaltered by the Municipal Reform Act. The borough has returned one member to parliament from the time of Henry VIII. Llanfyllin, Machynlleth, and Welshpool were formerly contributory boroughs, but had been disfranchised for above a century before the Reform Act, by which they were restored, and Newtown added. The county-court and the election for the county member are held either at Montgomery or Machynlleth.

There were, in 1833, four town-schools, with 167 children, and two Sunday-schools, with 133 children. One of the day-schools, with 42 children, was partly supported by an endowment and by donations. Machynlleth, which is the hundred of the same name, 208 miles from London by Bishop's Castle, Newtown, and Llandiolo, or 215 miles by Shrewsbury and Welsh Pool. It has been commonly asserted to have been a Roman station, and some regard it as the Maglove of the Britons. The town was two miles from the Severn, and formed a borough, but was afterwards taken by the Welsh, who put the garrison to the sword, and ravaged this part of the border-land. William Rufus assembled an army, repulsed them, and strengthened and provisioned the castle of Machynlleth. It was however again taken and burnt by the Welsh; but the new Norman power prevailed, the Welsh were driven to their fastnesses, and the earl of Shrewsbury rebuilt the castle. This however appears to have shared the fate of its predecessor, for Henry III built a new castle here, A.D. 1221, which was, ten years afterwards, taken and burned by Llewellyn, prince of North Wales. Machynlleth afterwards formed part of the possessions of the Mortimer family. In the civil war of Charles I, the castle was fortified for the king; but it was given up by the governor to the Parliamentary forces afterwards, 1646, and granted by the Royalists. The advance of a body of 3000 Parliamentary troops to its relief led to a desperate encounter, in which the Royalists (5000 strong) were defeated, with the loss of 500 slain and 1000 taken. The castle and fortress afterwards dismantled by the order of the House of Commons.

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has received, and in all probability will receive, great additions.

By the Reform Act, Newtown was added as a contributory borough to Montgomery. The borough comprehends the parish of Newtown and the parishes of Llanidloes, and Llanfair-ar-y-Bryn. The place was belangor for many years the chief mart for the flannels and webs of the counties of Montgomery and Merioneth; but within the last few years an attempt has been made to make Newtown the mart for flannels. There are several maltings, and a stately house in or near the town. For provisions is on Monday, that for flannels on alternate Thursday. The Montgomeryshire Canal passes close to the town, and the navigation of the Severn begins here. There are two Sunday-scholuy in and three Sunday-schools, with 550 children. Two of the day-schools have a small endowment, for which some of the children are educated.

Welsh Pool received at an early period a charter of incorporation from the lords of Powys; but the governing charter is that of James I. By the Municipal Reform Act the corporation consists of four aldermen and twelve councillors. The borough has a commission of the peace. The corporate jurisdiction extends over the whole parish, and parts of some other parishes. The borough was antiently contributory to Montgomery, and had been to that corporation before than a century when it was restored by the Parliamentary Reform Act. The parliamentary borough includes nearly the whole of Pool parish, and a small part of the parish of Guilsfield.

The living of Welsh Pool is a vicarage, in the archdeaconry and diocese of St. Asaph, of the clear yearly value of £231l., with a glebe-house. There were parishes in Newtown and Llanfair-ar-y-Bryn inherited, thirteen day-schools, with 355 children, and six Sunday-schools, with 1540 scholars.

Welsh Pool is the seat of the Clive family. Llanidloes, 188 miles from London, through Bishop's Castle and Newtown. The town has a pleasant vale watered by the Severn, on the south-east bank of which, 12 miles from its source, the town of Montgomery.

The houses were few years since almost entirely built with timber frames and the intervals filled up by laths and mud or plaster; many were roofed with slabs of oak timber, cut into the form of slates; the streets, which are wide, were also disfigured by ashes or other refuse heaped up in front of the houses. But of late years great improvements have been made; many houses of better construction have been erected in the town, and the streets, which were narrow and ill-paved, have been widened and the street nuisances have been cleared away. There are two bridges over the Severn, one of them a handsome stone bridge of three arches. The market or town-house is in the middle of the town; it is about 200 years old, and is built chiefly of brick with exquisitely carved armorial bearings. The columns and the carved work of the roof are said to have been brought from Crown Hir Abbey in Radnorshire. There are several dissenting places of worship.

The parish, which extends for about a square mile, including large tracts of waste land on the slope of Pinnimon. The population in 1831 was 4189, of which population 2562 persons were in the township of Llanidloes. The staple manufacture of
the place is flannel. There are several factories for carding and spinning the wool, and fulling-mills. The weaving is done chiefly at the west and southwest. The flannel made here is perhaps not so fine as that of Newtown, but more durable. There are, in and round the town, several malt-houses or kilns, flour-mills, and tan-yards. Coarse slate and building-stone are quarried in the surrounding hills. There is a market on Saturday for wool, corn, and provisions, and several fairs in the year, some of which are great sheep-fairs.

Llanidloes is a corporate town, but the corporation is not noticed in the Municipal Reform Act, or in the Corpora-
tion Act of 1840. It is also a market-town, and formerly a contrib-
utory borough to Montgomery, and, like Machynlleth, Llanidlois, and Welsh Pool, was restored by the Reform Act, after a disestablishment of a century. The boundary of the restored borough is much more comprehensive than that of the old borough. There is a number of qualifying (i.e., 10l.) houses within the boundary was estimated by the Boundary Commissioners at 124.

The living of Llanidloes is a vicarage in the peculiar juris-
diction of the bishop of Bangor; its clear yearly value is 151l., with a glebe-house. There were in the parish in 1833 five day-schools (one partly supported by subscription), with 204 scholars, and seventeen Sunday-schools, with 2643 scholars. The following observations may be made on their means of support, as exemplifying the nature of Welsh dissenting Sunday-schools. They are a kind of mixed congregation of all ages, parents with their children, heads of families with their servants. ... The number of children, under 14 years of age, taught at these schools, is about 12,000; the amount of the annual return number returned; the rest being engaged in reading, repeating portions of scripture, or catechisms from memory, intermixed with praying and singing, making them upon the whole religious meetings rather than schools.

Llanidloes is a hundred of Llanidloes, 179 miles from London, by Shrewsbury and Llandrindod Bridge, or 180 miles by Shrewsbury and Montford Bridge; in a pleasant valley watered by the Cain, an affluent of the Vyrwy. The town, the market, and the south and west sides of the principal street runs east and west, and is crossed by the Abel brook, which flows into the Cain; over this brook is a next bridge. There is a town-hall, a neat brick building with a covered area for a market underneath, on one side of the principal street. The church is a brick building erected early in the last century. The population of the parish (which is of considerable extent) was, in 1831, 1836; of whom 853 were in the town. There is little business carried on; a small quantity of local produce is sold in the market, and more is sold in the market of Montgomery.

Boundary commissaries to contain about 60 qualifying or 10l. houses.

The living is a rectory in the archdeaconry and diocese of St. Asaph, of the clear yearly value of 453l., with a glebe-house. There were in the parish in 1833, the one infant or dame-school, with 46 children; four day-schools, with 113 children; and four Sunday-schools, with about 300 scholars.

There are traces of a Roman road about two miles south of the town, and some Roman antiquities have been dug up in the neighborhood.

Llanbrynmair is a village in Machynlleth hundred, on the road between Llanfair and Machynlleth. The parish, which is of considerable extent, abounds with delightful scenery. It had, in 1831, a population of 2040. A considerable quantity of flannel is manufactured in the parish, about which the manufacture employs above 100 men in weaving, besides those occupied in carding and spinning wool. Peat is dug in the parish. The church is an ancient structure, adorned with some fine specimens of carved oak. There are some fine seat-tenures in the churchyard.

The living is a vicarage, of the clear yearly value of 330l., with a glebe-house; part of the revenue is appropriated to a sinecure rectory, the clear yearly revenue of which is 26l. 10s. 6d. The benefice is in the archdeaconry and diocese of St. Asaph.

There were in the parish, in 1833, three day-schools, partly supported by endowment or gift, with 129 children, and nine Sunday-schools, with 1285 scholars.

Llangyndeyrn, was a village in Llanfyllin hundred, on the road from Llanfyllin to Bala, in Merioneth-
shire: it is in a pleasant but narrow vale, watered by the Tanat, and surrounded by lofty and steep mountains. The parish, which is about four miles long and as many broad, is the chief seat of the old manor of the earls of Montgomery. The village was situated by Mr. Bingley (Tour in Wales, A.D. 1798) as 'small and dirty.' There are many detached farm-houses in the valley. The church is a small ancient structure, and there are one or two dissenting meeting-houses.

The population of the parish, in 1831, was early inhabited by the Llanyryd, or Iron age people. The village is situated by the number of children, under 14 years of age, taught at these schools, is about 12,000; the amount of the annual return number returned; the rest being engaged in reading, repeating portions of scripture, or catechisms from memory, intermixed with praying and singing, making them upon the whole religious meetings rather than schools.

The living is a rectory, in the parochial archdeaconry and diocese of St. Asaph, of the clear yearly value of 126l., with a glebe-house. There were in the parish, in 1833, two Sunday schools with 193 scholars, and a small endowment for a day-
school.

Divisions for Ecclesiastical and Legal Purposes.—The county is for the most part in the archdeaconry and diocese of St. Asaph. Those parishes in the hundreds of Caerwaff and Pool which are east of the Severn, and the whole of Montgomery county, are in the diocese of Bangor, and in the archdeaconry of St. David's and Breccon, respectively, are in the archdeaconry of Salop and the diocese of Hereford. The hundred of Llanidloes is in the peculiar juris-
diction of the bishop of Bangor. The number of parishes wholly or partly in the county is fifty-seven, but six belong chiefly to other counties. Of the remaining fifty-one, thirty-six are in the diocese of St. Asaph, six in that of Hereford, and the remaining nine are in the diocese of Bangor, and are included in the hundred of Montgomery. The county is divided into two ridings, one consisting of the parishes and townships of St. Asaph, Caerwaff, and Pool; the other of Montgomery and Shrewsbury. The latter division is reckoned as containing about half of the whole county.

The county is included in the North Wales circuit. The assizes were, till lately, held at Welshpool; but, by order published in a late Gazette, they are to be held in the spring at Welshpool, and in the winter at Newtown. The county court and houses of correction are at Montgomery, whereas the quarter-sessions for the county are held at Montgomery.

The county returns one member to parliament, and Montgomery with its contributory boroughs another. The court of election for the county member is held either at
Montgomery or Machynlleth; and the polling-stations are Montgomery, Machynlleth, Llаниdoes, Llanfyllin, and Llanfair. The contributory boroughs to Montgomery were historically Llаниdoes, Llanfyllin, Machynlleth, and Welshpool, but under the Reform Act, 1832, and except Montgomery, were enlarged by the Boundary Act. The contributory boroughs to Montgomery were abolished in 1832, and Newtown added as another contributory borough to Newtown and Welshpool, to reflect the continued and severe struggle for the possession of these strongholds. The division of Powysland between two chieftains served to weaken the Welsh power, and to augment the predominance of the Norman barons.

In the latter part of the eleventh century a desperate engagement was fought on the hills of Carno, near the Afon Gynwarch, between the forces of Gryfydd ap Cynan, lawful claimant of the throne of Gwynedd, or North Wales, assisted by Rhys ap Tewdwr, prince of South Wales, against those of Trahaire ap Caradog, his usurping competitor. The engagement was the most bloody of any recorded in the Welsh annals, and ended in the death of Trahaire and the entire defeat of his army. The independent power of Powys was overthrown before the final subjugation of North Wales: it became an English lordship, which remained for many years in the possession of John de Charlton, who, in the time of Edward II., married the heiress of the Welsh chieftains. The barony and title passed to the sons of Northumberland, until it became extinct in the reign of Henry VIII. The only remaining castles, or ruins of castles, appear to be those of Montgomery and Powys. There do not appear to be any monastic ruins in the county; none, at any rate, of importance.

In the civil wars of Charles I. Montgomery and Powys castles were the objects of contest. The incidents of the war are noticed above, in the account of the towns of Montgomery and Welshpool.

(Men's and Bingley's Tours in Wales; Beauties of England and Wales; Arrowmith's Map of England and Wales; Grogan's Geological Map; Reports of Boundary and Municipal Corporation Commissioners, and other Parliamentary Papers.)

STATISTICS.

Population.—Montgomeryshire is mostly an agricultural county. Of 16,732 males twenty years of age and upwards, 4,925 are engaged in agricultural pursuits, and 1,639 in manufactures or in making manufacturing machinery. This latter number is chiefly employed in weaving, an occupation followed in this county more than in any other county of Wales. At Llanidloes 533 men are so employed, and in making machinery for that purpose and in other branches of the woollen manufacture. There are 549 woolen weavers at Newtown, 180 at Llanuwchllyn, 169 at Llanfyllin, at Welshpool 68; indeed scarcely any parish throughout the county is deficient in this species of manufacture.

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

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Oswestry (hundred)</td>
<td>451</td>
<td>486</td>
<td>2</td>
<td>12</td>
<td>356</td>
<td>75</td>
<td>54</td>
<td>1382</td>
<td>1350</td>
<td>2732</td>
<td>718</td>
</tr>
<tr>
<td>Dwyfor</td>
<td>441</td>
<td>503</td>
<td>1</td>
<td>15</td>
<td>364</td>
<td>89</td>
<td>59</td>
<td>1271</td>
<td>1320</td>
<td>2591</td>
<td>641</td>
</tr>
<tr>
<td>Llanyblodwel</td>
<td>1336</td>
<td>1381</td>
<td>6</td>
<td>16</td>
<td>726</td>
<td>313</td>
<td>297</td>
<td>2542</td>
<td>2531</td>
<td>5073</td>
<td>1703</td>
</tr>
<tr>
<td>Llanidloes</td>
<td>2178</td>
<td>2338</td>
<td>17</td>
<td>49</td>
<td>1090</td>
<td>807</td>
<td>441</td>
<td>5923</td>
<td>5626</td>
<td>11549</td>
<td>2878</td>
</tr>
<tr>
<td>Machynlleth</td>
<td>1517</td>
<td>1613</td>
<td>7</td>
<td>94</td>
<td>720</td>
<td>468</td>
<td>425</td>
<td>3881</td>
<td>3606</td>
<td>7487</td>
<td>2011</td>
</tr>
<tr>
<td>Mathrafal</td>
<td>1162</td>
<td>1322</td>
<td>6</td>
<td>28</td>
<td>636</td>
<td>289</td>
<td>317</td>
<td>2817</td>
<td>2592</td>
<td>5409</td>
<td>1493</td>
</tr>
<tr>
<td>Montgomery</td>
<td>974</td>
<td>1090</td>
<td>26</td>
<td>922</td>
<td>602</td>
<td>226</td>
<td>283</td>
<td>2843</td>
<td>2549</td>
<td>5392</td>
<td>1505</td>
</tr>
<tr>
<td>Newtown</td>
<td>2496</td>
<td>2931</td>
<td>8</td>
<td>45</td>
<td>1233</td>
<td>1231</td>
<td>467</td>
<td>6630</td>
<td>7000</td>
<td>13630</td>
<td>3546</td>
</tr>
<tr>
<td>Pool</td>
<td>722</td>
<td>809</td>
<td>1</td>
<td>7</td>
<td>626</td>
<td>139</td>
<td>45</td>
<td>1863</td>
<td>1929</td>
<td>3802</td>
<td>956</td>
</tr>
<tr>
<td>Pool (town)</td>
<td>993</td>
<td>1069</td>
<td>6</td>
<td>22</td>
<td>293</td>
<td>513</td>
<td>261</td>
<td>2342</td>
<td>2713</td>
<td>5055</td>
<td>1727</td>
</tr>
</tbody>
</table>

Total | 12,169 | 13,407 | 62 | 402 | 6610 | 1192 | 2599 | 33,048 | 33,434 | 66,482 | 16,723 |
The population of Montgomeryshire, as given at each time the census was taken, was as under:

<table>
<thead>
<tr>
<th>Year</th>
<th>Males</th>
<th>Females</th>
<th>Increase per cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1801</td>
<td>364</td>
<td>378</td>
<td>0.578</td>
</tr>
<tr>
<td>1811</td>
<td>351</td>
<td>341</td>
<td>0.511</td>
</tr>
<tr>
<td>1821</td>
<td>29,743</td>
<td>30,156</td>
<td>15.34</td>
</tr>
<tr>
<td>1831</td>
<td>33,434</td>
<td>33,434</td>
<td>10.99</td>
</tr>
</tbody>
</table>

showing an increase between the first and last periods, of 16,904, or nearly 39 per cent, on the whole population; being 19 per cent, less than the whole rate of increase of England.

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

<table>
<thead>
<tr>
<th>Year</th>
<th>£.</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1811</td>
<td>32,297</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>1821</td>
<td>33,273</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>1831</td>
<td>34,815</td>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>

The sum expended for the same purpose for the year ending March, 1838, was 22,235l.; and assuming that the population had increased at the same rate of progression as in the ten preceding years, the above sum gives an average of £2,34d. for each inhabitant. These averages are above those for the whole of England and Wales.

The assessment in this county for poor-rate, county-rate, and other local purposes, in the year ending the 25th of March, 1833, was 43,974l. 11s., and was levied upon the various descriptions of property as follows:

- **On land** | £39,680 | 0 | 0
- **Dwelling houses** | 3,374 | 19 | 0
- **Mills, factories, &c.** | 3,771 | 16 | 0
- **Manorial profits, navigation, &c.** | 197 | 16 | 0

The amount expended was—

- **For the relief of the poor** | £35,346 | 8 | 4
- **In suits of law, removal of paupers, &c.** | 1,377 | 8 | 0
- **For other purposes** | 6,848 | 11 | 0

Total **£32,572** 7

In the returns made up for subsequent years the descriptions of property assessed are not specified. In the years 1834, 1835, 1836, 1837, and 1838, there were raised 42,606l. 7s., 40,003l. 13s., 37,412l. 11s. (not given for 1837 in government tables); and 31,536l. as an annuity; and the expenditure for each year 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>34,201</td>
<td>31</td>
<td>948</td>
</tr>
<tr>
<td>1835</td>
<td>30,743</td>
<td>25</td>
<td>443</td>
</tr>
<tr>
<td>1836</td>
<td>29,278</td>
<td>22</td>
<td>226</td>
</tr>
<tr>
<td>1837</td>
<td>21,783</td>
<td>7</td>
<td>29</td>
</tr>
<tr>
<td>1838</td>
<td>31,536</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

For the relief of the poor

<table>
<thead>
<tr>
<th>Year</th>
<th>£.</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>1838</td>
<td>31,536</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

In suits of law, removal of paupers, &c.

<table>
<thead>
<tr>
<th>Year</th>
<th>£.</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1834</td>
<td>4,654</td>
<td>4</td>
<td>952</td>
</tr>
</tbody>
</table>
| 1835 | 4,946 | 0 | 0

For other purposes

<table>
<thead>
<tr>
<th>Year</th>
<th>£.</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1834</td>
<td>2,163</td>
<td>2</td>
<td>102</td>
</tr>
<tr>
<td>1835</td>
<td>1,797</td>
<td>1</td>
<td>800</td>
</tr>
</tbody>
</table>

Total money expended **£41,160** 39,943 37,175 30,828 29,007

The savings effected on the whole sum expended in 1838, as compared with that expended in 1834, was therefore 12,653l. 7s., or about 362 per cent.; and the savings effected on the sum expended for the relief of the poor was 11,566l. 4s., or 35 per cent. as compared with the expenditure in 1834.

The number of turnpike trusts in Montgomeryshire, as ascertained in 1833, under the acts 3rd and 4th Wm. IV., chap. 80, was 5; the number of miles of road under their charge was 640. The annual income arising from tolls and parish composition in lieu of statute duty, in 1835, was £1,757 l. 16s., and the annual expenditure in the same year was as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>£.</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
</table>
| 1834 | 4,549 | 17 | 0
| 1835 | 4,004 | 17 | 0
| 1836 | 2,355 | 17 | 0
| 1837 | 2,303 | 5 | 0
| 1838 | 2,160 | 6 | 0

The various sums placed in the savings banks in 1836, 1837, 1838, were distributed as under:

<table>
<thead>
<tr>
<th>Year</th>
<th>£.</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1836</td>
<td>421,174</td>
<td>35,936</td>
<td>80,007</td>
</tr>
<tr>
<td>1837</td>
<td>90,007</td>
<td>39,772</td>
<td></td>
</tr>
</tbody>
</table>

**Education.—** The following summary is taken from the Educational Returns laid before parliament in the sessions of 1835: the inquiry was made in 1833.

<table>
<thead>
<tr>
<th>Description</th>
<th>£.</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
</table>
| Bridges, building, and repairs, &c. | 3,199 | 12 | 0
| Gaols, houses of correction, &c., and maintaining prisoners, &c. | 504 | 0 | 0
| Prosecutions | 593 | 15 | 0
| Clerk of the peace | 91 | 8 | 0
| Conveyance of prisoners before trial | 84 | 18 | 0
| Conveyance of transports | 47 | 10 | 0
| Coroners | 159 | 14 | 0
| Debt, payment of, principal and interest | 311 | 2 | 0
| Miscellaneous | 374 | 17 | 0

Total **£2,396** 16 | 0

The number of persons charged with criminal offences in the three septennial periods ending with 1820, 1827, and 1834, were 191, 157, and 222, making an average of 27 annually in the first period, of 29 in the second period, and of 32 in the third period. The number of 1831, 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 11, 12, and 30 respectively. Among the persons charged with offences, there were committed for—

<table>
<thead>
<tr>
<th>Year</th>
<th>£.</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
</table>
| 1831 | 1,840 | 0 | 0
| 1832 | 35,527 | 33,048 |
| 1833 | 1838. |

The number of convicts was **8** 9 30

The number acquitted was **1** 4 10

Discharged by proclamation: **1** 4 19

At the assizes and sessions in 1838, 48 persons were charged with crimes in Montgomeryshire, out of which number 10 had committed offences against the person, 2 of which were common assaults; one was charged with an offence against property committed with violence; 26 with offences against property committed without violence. The remaining 9 were committed for riot or breach of the peace, &c.

Of those committed 33 were convicted, and 15 acquitted or no bill found against them. Of those convicted I was sentenced to transportation for 10 years and 2 for 7 years, 1 to imprisonment for 1 year, 18 for 6 months or under, and 11 were fined. Of the offenders 42 were males and 6 were females. Among the whole number, 3, accused of each of the peace, were superiorly instructed; 1 could read and write well, 19 could read and write imperfectly, and 16 could neither read nor write: the degree of instruction of 9 is not ascertained.

The number of persons qualified to vote for county members in Montgomeryshire is 2915. Of these 1539 are freeholders, 203 leaseholders, and 1077 occupying tenants. The number of voters is about one in 24 to the whole population, and one in 6 to the male population twenty years and upwards, as taken at the census of 1831.

There are four savings banks in this county. The number of depositors and amount of deposits on the 26th November were—

<table>
<thead>
<tr>
<th>Year</th>
<th>£.</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1832</td>
<td>119,317</td>
<td>120,176</td>
<td></td>
</tr>
<tr>
<td>1833</td>
<td>90,007</td>
<td>39,772</td>
<td></td>
</tr>
</tbody>
</table>

The various sums placed in the savings banks in 1836, 1837, 1838, were distributed as under:

<table>
<thead>
<tr>
<th>Year</th>
<th>£.</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1836</td>
<td>421,174</td>
<td>35,936</td>
<td>80,007</td>
</tr>
<tr>
<td>1837</td>
<td>90,007</td>
<td>39,772</td>
<td></td>
</tr>
</tbody>
</table>

**Education.—** The following summary is taken from the Educational Returns laid before parliament in the sessions of 1835: the inquiry was made in 1833.
Infant schools... 6
Number of children at such schools; ages from 2 to 7 years—
Males... 7
Females... 33
Sex not specified... 39
Daily schools... 120
Number of children at such schools; ages from 4 to 14 years—
Males... 1,837
Females... 1,426
Sex not specified... 3,306
Schools... 4,566
Total of children under daily instruction... 4,667
Sunday-schools... 192
Number of children and others at such schools; ages from 4 to 70 years—
Males... 4,652
Females... 4,395
Sex not specified... 7,433
Total... 16,478

Assuming that the population had increased between 1833 and 1833 in the same ratio as in the ten preceding years, and that the children between the ages of 2 and 15 years bore the same proportion to the whole population as in 1821, we then obtain 23,694 as the approximate number of children between those ages living in Montgomeryshire in 1833. Fourteen Sunday-schools are returned from places where no other school exists, and the persons who attend (117) (7) cannot be supposed to attend any other school; at all other places Sunday-school children have opportunity of resorting to other schools also, but in what number, or in what proportion duplicate entry of the same children is thus produced, must remain uncertain. Thirteen schools, containing 146 children, which are both daily and Sunday schools, are returned from various places, and duplicate entry is therefore known to have been thus far created. Some of the Sunday-schools consist of adults and aged persons as well as children. Making allowance for these two causes of inaccuracy, we may perhaps fairly conclude that not more than three-fourths of the whole number of children between the ages of 2 and 15 are receiving instruction in Montgomeryshire.

Maintenance of Schools.

<table>
<thead>
<tr>
<th>Description of Schools</th>
<th>By endowments</th>
<th>By subscription</th>
<th>By permissive Acts of Parliament</th>
<th>Escheats and pay from lands and rents</th>
<th>No. of Schs.</th>
<th>No. of Scholars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant Schools</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>23</td>
<td>1,094</td>
</tr>
<tr>
<td>Daily Schools</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>376</td>
</tr>
<tr>
<td>Sunday Schools</td>
<td>143</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>189</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>1,389</td>
<td>191</td>
<td>649</td>
<td>23</td>
<td>1,094</td>
</tr>
</tbody>
</table>

The schools established by dissenters, included in the above statement, are—

Scholars.

Daily schools... 7, containing 221
Sunday-schools... 143, 12,774

Scholars.

The schools established since 1818 are—

Infant and other daily schools... 61, containing 2,464
Sunday-schoqls... 161, 14,305

No school in this county appears to be confined to members of the Established Church or of any other religious denomination, such exclusion being declared in almost every instance, especially in schools established by dissenters, with whom there are included Wesleyan Methodists. Lending libraries—books are attached to 4 schools in Montgomeryshire.

MONT. [MOON; YEAR.]

MONTI, VINCENTO, born in 1753, near Ferrara, in the Papal States, studied at Ferrara under the poet Minzoni, and gave early indications of poetical genius, as well as of correct taste in refusing to join the effeminate race of sonneteers and courtly versifiers, and resorting to the good old rcney style of Dante for his model. From Ferrara Monti repaired to Rome, the capital of his native country, and the general resort of aspiring unprovided provincials who looked for patronage and support. In that metropolis he was fortunate enough to be introduced to Don Luigi Brascia, the favourite nephew of the then reigning Pope Pius VI, and was retained by that nobleman as his secretary, an office well suited to the habits and disposition of the young poet. He assumed the convenient costume of an Abbé, which at Rome was a general passport into society, and did not bind the wearer to any clerical duties or vows. Monti was now in air and place to run his career alate and to rise to the noble elevation of the young poet. He assumed the convenient costume of an Abbé, which at Rome was a general passport into society, and did not bind the wearer to any clerical duties or vows. Monti was now in air and place to run his career alate and to rise to the noble elevation.

The spirit takes its flight towards France, and the poem, which is an imitation of Dante's "Comedia," consists of descriptions of the kingdom of France, during which it witnessed the insurrections and civil wars of the year 1814, and the revolution of 1815.

Some of the descriptions are truly magnificent, such as that of
the gigantic church watching over the Vettian, the account of the horrors of Marseilles, the description of Paris under the reign of terror, and the tragedy of the 21st of January, when the poet introduces the shades of former regicides and of infidel writers exulting at the execution of Louis, and the phantoms of the antient Druids rejoicing in the sight of bloody holocausts renewed. A bas, the strange but striking conceptions of the poet, we may notice one in canto iv., where the angel tells Bassi that the souls of several revolutionists and members of the Convention have been sent to eternal torments before their natural death, and that death was the punishment of their bodies, so that these satanic incarnations breathe and act, sit in the Convention, and write and speak under the inspiration of the intrusive spirits, but in appearance as if the bodies were still animated by their former possessors. The poem, which was left unfinished, is filled with canto iv., when war is proclaimed in heaven, and echoed throughout Europe, against France.

The 'Basvilliana' had an astonishing success: eighteen editions of it appeared in the course of six months. Fantastic as the conception may appear, it is still considered as Monti's best work.

When the French armies invaded North Italy and occupied Ferrara, the country of Monti, the poet left Rome and repaired to Milan, the capital of the new Cisalpine republic. Here he had the opportunity of witnessing the political revolutions: among others he composed a savage song for the theatre of La Scala on the occasion of the festival of the 21st of January, 1799, the anniversary of the day of the execution of Louis XVI., an act which he had repeatedly denounced in his sonnets before the death of the 'Basvilliana.' About the same time he wrote his famous sonnet against England, beginning: 'Luce ti neghii il sol, erba la terra,' and which, after a shower of invectives and curses, he foretells the day when, stripped of all her ill-gotten wealth, Britain shall be reduced to the primitive occupation of fishing up to herself:  

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Monti was a classicist, and, as such, waged war against the 'Romantic,' as they are called, or that school of writers who have undertaken to modernise the literature of Italy. In one of Monti's latest effusions, 'Sermone sulla Filologia,' he says, 'I am emphatically and unreservedly at enmity with the new doctrines or innovations in the art of poetry; in fine, I am for the ancient authors, for the ancient method of composition.' At a later period, he is said to have received from the Emperor of France, on the occasion of a visit of the emperor himself to Milan, his pension was continued to him by the Austrian government, and he remained at Milan. After the marriage of his only daughter with Count Perticari of Pesaro, both father and daughter became engaged to marry, but Monti was not satisfied with this, and instead of permitting his daughter to marry, he wrote a poem entitled 'Proposta di alcune correzioni ed aggiunte al Dizionario della Crusca,' which became the signal of a paper war between the Tuscan and the Lombard literati, or rather of a war between two parties, the Crusca and the Anti-Crusca. ('Curzca, Aria &c.)' Monti's 'Proposta' is valuable, not only as a supplement to the Italian Dictionary, but as a store of erudition: it contains several disquisitions of essays upon questions connected with the ancient and modern learning of Italy.

Monti died at Milan, in October, 1826. His works were
The lordship of Montpellier was at this time in the hands of the kings, first of Aragon, and subsequently of Majorca, a younger branch of the same house. These princes held their lordship immediately of the bishops of Maguelone, who divided with them the jurisdiction of the city, under the suzerainty of the kings of France. The portions of the bishop and the king were alternately united to the French crown; the first in the reign of Philippe IV., le Bel (a.d. 1293), by purchase; the second in the reign of Philippe V. de Valois (a.d. 1278), also by purchase. The lordship was subsequently conferred on Charles de Montesquieu, count of Navarre (a.d. 1771), in exchange for certain lordships ceded by him to the king of France; but on the forfeiture of that king's domains for treason (a.d. 1789), it was re-united to the French crown. The addition of the suzerainties and exactions of the duke of Anjou, the king's brother and lieutenant, was suppressed (a.d. 1579), and the city, after one brief alienation of fifteen months, was permanently united to the domains of the crown.

In a.d. 1388 the bishopric of Maguelone was transferred to Montpellier. Montpellier came into the hands of the Huguenots in the reign of Henri III., and they, having organised it as a municipal republic, retained possession of it until the crusade. But the reformed party by Richelieu, under Louis XIII., Montpellier, and Montauban, was surrounded by siege, surrendered to the king (a.d. 1622). Louis XIII. ordered the construction of a citadel to retain the place in subjection.

The town of Montpellier is situated on an eminence, from which there is an extensive prospect over the Mediterranean and the adjacent coasts, extending on one side to Mont Ventoux, in Provence (not to the Alps, as some authorities state), and on the other to Le Camoug, one of the summits of the Pyrenees. It is only the ruins of the ancient city that are seen now, the greater part of it having been destroyed.

Montpellier is surrounded by antient and now ruined walls of freestone. The citadel is of little strength; it is however well kept up, and has a pleasing aspect. The streets are narrow, crooked, and steep; but the houses, which are almost all of brick, are generally built, though not handsome, except in the newer parts. Most of the places or squares are small and of irregular form; the public fountains are numerous, but none of them are remarkable for propriety of design or excellence of workmanship. There are two promenades, the esplanade between the walls of the town and the ramparts of the citadel, and the Peyrou, a terrace planted with trees and covered with turf, and raised ten or twelve feet above another terrace, and an extensive prospect of the town. The temples of the temple are a bronze equestrian statue of Louis XIV., and an hexagonal tower adorned with columns, enclosing a reservoir supplied with water by a fine modern aqueduct about five miles long. The water from this reservoir falls in a cascade over a cascade rock, and the fountains of the city. The cathedral presents little that is worthy of notice, except a picture in the choir of the fall of Simon Magus, by Sebastian Boudon, who was a native of Montpellier, and has been remarkable for propriety of design or excellence of workmanship. There are two promenades, the esplanade between the walls of the town and the ramparts of the citadel, and the Peyrou, a terrace planted with trees and covered with turf, and raised ten or twelve feet above another terrace, and an extensive prospect of the town. The temples of the temple are a bronze equestrian statue of Louis XIV., and an hexagonal tower adorned with columns, enclosing a reservoir supplied with water by a fine modern aqueduct about five miles long. The water from this reservoir falls in a cascade over a cascade rock, and the fountains of the city. The cathedral presents little that is worthy of notice, except a picture in the choir of the fall of Simon Magus, by Sebastian Boudon, who was a native of Montpellier, and has been remarkable for propriety of design or excellence of workmanship. The town is a fine building, and the gate of Peyrou, a triumphal arch opening on the promenade of Peyrou, is also handsome, but the public buildings, as the former episcopal palace (now occupied as a medical school), the court-house, the prefect's house, &c., are of ordinary appearance.

The population of Montpellier, in 1831, was 33,914 for the town, or 35,028 for the whole commune; in 1836 it was 35,606 for the commune. These enumerations are, we believe, exclusive of the students and other strangers, who are attracted to Montpellier by its literary advantages, and by the high reputation the city enjoys for the beauty of its situation and the healthfulness of its climate.
particular repute; it is chiefly made by females. There are several printing-Offices, sugar-houses, potteries, and oil-mills, a paper-mill, and a saw-mill. Cattle is the port of Montpellier, and there are ready communications with Narbonne, Carcassonne, Nimes, Avignon, and other cities of the south of France.

Montpellier is the seat of a bishopric, the diocese of which comprehends the department of Hérault: the bishop is the archbishop of Avignon, who has a Cour Royale, the jurisdiction of which extends over the departments of Aude, Aveyron, Herault, Pyrénées Orientales, and an Académie Universitaire, whose circuit is coincident with the jurisdiction of the Cour Royale. There are a subordinate court of justice for commerical causes, a board of trade, and several fiscal and administrative government offices. Montpellier is the head-quarters of the ninth military division, which comprehends the departments of Ardèche, Gard, Lozère, Hérault, Tarn, and Aveyron. There are barracks and some military offices, several prisons, a house of correction for eight departments, with suitable workshops, and a charitable insti-tution for the benefit of the prisoners.

There are, besides the cathedral, seven Catholic churches, a Protestant church, and a Jew's synagogue, four hospitals, one of which is for foundlings, and another for the insane. These hospitals, as well as the house of correction, are remarkable for their excellent management. The mont-d'Huét is remarkable for advanced scientific studies of no uncommon interest. There are two Protestant Bible Societies, one of them for each sex.

Montpellier has a large number of institutions for educational and scientific objects. There are the faculties of science and medicine connected with the Académie Universitaire; there is also a college or high school. The school of medicine of Montpellier, one of the most eminent in Europe, owes its establishment to the Moorish or Arab physicians driven out of Spain by the Christians (a.d. 1200) and received here by the lords of Montpellier. From its first establishment it has been much resorted to by many eminent physicians and surgeons; and there have been born in this city, and others have here received their education, among the latter are Chirac and Barbe雁re, and the chemist Chatfield. There is attached to this school a museum and a library of natural history, and an illustrated collection of anatomical models in wax. The chair of the professor of anatomy is a fine marble antique, brought from the ruins of the amphitheatre at Nîmes. There are also schools of pharmacy and veterinary medicine, schools of engineering, drawing, architecture, practical geometry, and music; societies of the sciences and arts, of practical medicine, and of agriculture; a museum of painting and sculpture, containing some specimens of the French school; there is a botanical garden, one of the four in France designed for naturalising foreign plants, and the first for that purpose established in France. It contains more than eight thousand plants, an orangery, and a hot-house for rare plants.

Cambacérès and the historian Dahu were natives of Montpellier.

Montpellier offers many attractions to strangers; numerous cafes, excellent inns, public baths, and a theatre where the performances are constant; to which may be added the beauty of the situation. The air is purer and less scorching and stifling than at Marseilles. Flies are less troublesome, and the keen blasts of the Mistral are less felt.

The arrangement of Montpellier has an area of 780 square miles, which comprehends 116,000 inhabitants. It is divided into 14 cantons or districts, each under a justice of the peace. The population, in 1831, was 120,051; in 1836 it was 123,656.

MONTECRLAL, one of the five districts into which the province of Lower Canada is politically divided. [Canada.] It comprises nineteen out of the forty counties of the province, and its comparative importance will further appear from the fact that, of 511,917 inhabitants returned in the provincial census of 1831, there were 115,000 or very nearly three-fifths, living in the district of Montreal. Of this were Roman Catholics, and prin-cipal.

The number of inhabited houses at that time was 45,323: the extent as about 24,500 acres, Hess was only from propletion. In 44,711 square miles, upwards or about 6000 square miles less than the area of England. There has been no account of the population taken since 1831; but calculating from the number of births and deaths, and the amount of emigration during the next five years, it was estimated that the popula-tion of the district amounted in 1836, to 233,172.

MONTECRLAL, an island in the river St. Lawrence, situated 580 miles from the mouth of that river, at the point of its confluence with the Ottawa. This island is 84 square miles long and 101 miles broad. Its surface is low and flat at the western side, where it is subject to frequent inundations; but the level rises grad-ually towards the east, till it forms a ridge, wherein is the upper part of the city of Montreal is built, at the height of 6 feet above the level of the river. The city is divided into sixteen counties into which the district is divided, and is a seigniory, which was formerly vested in the seminary of St. Sulpice at Paris, but is now held by a resident religious body under that name, which supports one of the public institutions of the city of Montreal. The population of the island, in 1831, was 43,773, including 27,297, the inhabitants of the city.

MONTECRLAL, the City of, second in importance only to Quebec in the province of Lower Canada, is built on the north side of the island, in 45° 31' N. lat. and 73° 24' W. long. It was founded in 1640, under the name of Ville-Marie, on the site of an Indian village called Hochelaga, and very soon came to be a place of some importance. It is now divided into nine parishes; the streets are wide and avy, because the principal streets run either parallel to the river or at right angles to it. A great proportion of the houses are large and of handsome elevation, built with a greyish stone; the roofs are all covered with sheet-iron or tin plates. The population is estimated at present to exceed 35,000. One of the streets, Rue Notre Dame, is 1344 yards long and 40 feet wide. In this street are the principal public buildings among others the Hôtel-Dieu, occupying a frontage of 225 feet, with a depth of 468 feet, the seminary of St. Sulpice, and the convent of Notre Dame. The Cathedrale, a church, the Montcalm General Hospital, the Hôpital Général des Sœurs Grises, and the new college are also worthy of notice.

Montreal is a place of great trade. In the year 1836 it was made and cleared from the port the following amounts of shipping:

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Ship</th>
<th>Number of Ton</th>
<th>Number of Ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>From and to Great Britain</td>
<td>73</td>
<td>15,410</td>
<td>68</td>
</tr>
<tr>
<td>From and to other British colonies</td>
<td>23</td>
<td>2,392</td>
<td>31</td>
</tr>
<tr>
<td>From and to the United States, North America</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>From and to Foreign states</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Total</td>
<td>98</td>
<td>22,869</td>
<td>99</td>
</tr>
</tbody>
</table>

The harbour is small, but while the river continues open it is always secured. Ships draw 10 feet water, and discharge their cargoes close to the shore. The harbour was formerly difficult of approach, owing to the rapid of St. Mary about a mile below the city, which is so strong, that with light or contrary winds, it was not possible to steam at, but this difficulty is now overcome by the employment of steam-tug vessels. Montreal was formerly the head-qua-rers of the North-West Company. [Fur Trade.]

MONTBUILL. [PaS DE CALAIS.]


MONTBOURG, JAMES GRAHAM, MARQUIS OF, born in the year 1612, was descended from one of the most antient families in Scotland. His grandfather, John, third earl of Montrose, was some time lord high chancellor of Scotland, and was appointed regent of the kingdom—sumptus regni Scotica procurator—for life; and he succeeded his father John, fourth Earl of Montrose, in 1626, being then just fourteen years of age.

The following year he was served heir to his father in his title of earl of Montrose, as well as to the counties of Fforfar, Linlithgow, Perth, and Stirling. He married soon after, and then went on foreign travel till about 1639, when, at the age of twenty-one, he returned to Scotland, with the reputation of being one of the most accomplished house for tropical plants and flowers, and from the coronet of King Charles L, which took place in the above year, though he does not appear to have immediately taken any prominent part in the quarrel of which that splendid
ceremonial was the commencement. He soon joined the popular party however in opposing the canons and other arbitrary innovations of the court on the established religion of the country; and on the 15th November, 1637, when the celebrated Tables were made up, that is to say, when the most popular cause of the time had added to the table of the nobility, to the great dismay of the bishops, who, according to Guthrie, ‘thought it time to prepare for a storm when he engaged.’ He was indeed the most ardent and zealous of his party, displaying at times a vindictive spirit. He threw his coat upon his shirt, and drank to the health of his country and its defence. Such was his behaviour on occasion of the king’s proclamation approving of the ‘Service Book.’ On that occasion Montrose stood for some time beside Johnston, the minister, listening to a protestation in name of the Tables, but at length, the latter became a mere renegade, and he got up upon the end of a puncheon, which made his friend the earl of Rothes say, ‘James, you will never be at rest till you are fairly lifted up above your fellows;’ a remark uttered in mere jest, but recorded with solemnity by Gordon of Strachan, who adds that the pro- ceed was ‘accomplished in earnest in that same place, and some even say that the same supporters of the scaffold on which it occurred were made use of at Montrose’s execution.’

When the rebellion gathered into a movement, which was projected by the Tables, Montrose was also a leading actor; and in swearing and imposing it on individuals there was none more zealous than he. This course of action, springing from the natural ardour of his temper, continued for some time. He was then almost in a state of importance and military talents undervalued by the Covenanters when Argyle and Lesley were allowed to lead, the one in the senate, the other in the field, Montrose deter- mined to go to the latter, and entered into a secret correspondence with Charles, but this being detected, the Covenanters threw him into prison, where he was when Charles made his second visit to Scotland. This took place in the year 1641; and as the prin- cipal in whose behalf he had been so obtrusively engaged, his integrity, Charles made various concessions, and Montrose was set at liberty with his adherents in the beginning of the year 1642. From that time he retired to his own estate in the country, living privately till the spring of 1643, when the King of Denmark cast his eye upon a company of cuirassiers, and, pointing them out to his men as ‘cowardly rascals cased in iron,’ he threw off his coat and waistcoat, tucked up the sleeves of his shirt, and drawing his sword, said, ‘Let us fight the fellows in our shirts.’ This example was instantly copied by the enthusiastic and sanguinary troop, and, falling upon the enemy before they had taken ups the places assigned them, the battle ensued with the latter as a race of 6000 of the Covenanters, if we are to believe the royalists, were cut down and slain. Montrose now carried such of his men as would accompany him to the borders, presuming on the continued success of his arms. He was however mistaken: at Philiborg, near Selkirk, he was surprised by General Lesley on the 13th September, 1645, and upon the panic-struck royalists was that day inflicted a fearful retaliation for their previous enormities. Montrose regained his lands and estates, but was perfectly unsuccessful in all his endeavours to excite sympathy towards either his person or cause; and on the king’s surrender to the Scots, Montrose capitulated, and was permitted to embark in a small vessel for Norway, on the 3rd September, 1646. On this occasion he disguised a maniall, and passed for the servant of his chaplain. When on the Continent at this time he had the offer of the appointment of general of the Scots in France, lieutenant-general in the French service, and captain of the king’s d’armes, with the pension of 10,000 crowns, he declined all appointments, saying he wished only to be of service to his own sovereign.

He remained abroad till the accession of King Charles II., and even then he received no commission for a new campaign, and was left in his native country. Accordingly, selecting the remote islands of Orkney for his rendezvous, he despatched thither a part of his troops, consisting of foreign auxiliaries, in the month of September, 1649; and in the month of March following, he himself arrived there. In their very first encounter with the enemy however on the mainland, his forces were utterly routed; and after some time, he himself was discovered on foot in the disguise of a Highlander. In this condition he escaped to the house of McLeod of Assynt, by whom he was detained, and was conducted towards Edinburgh in the same mean garb in which he was taken; but in Dundee a change of raiment was allowed him. His reception in the capital was that of a condemned traitor; his sentences of outlawry and forfeiture having been pronounced by the General Assembly and parliament so far back as the year 1644; and many barbarous indignities were heaped upon him. But throughout, his dignity remained undiminished, and he now excited a sympathy which had never before been felt for him. He received sentence of death with the same firmness; and on Tuesday, the 21st May, 1650, the sentence was executed upon him: he was hanged on a gibbet 30 feet high, and his limbs, after being severed from his body, were affixed to the gates of the principal towns in the kingdom. ‘Thus be- shamed,’ says Laing (Hist. of Scotland, b. 6), ‘at the age of thirty-eight, the gallant marquis of Montrose, with the reputation of one of the first commanders whom the times had produced. He excelled, in all the qualities, indeed were almost always of a desperate character, and no failure ever destroyed his confidence of ultimate success. His army was reinforced from all quarters, its attacks were sanguinary and violent, and its progress was marked by deeds of the most horrid and inhuman kind. He entirely reversed the coali- tion, reversed the consequences of the long series of events, and even was left in his quiet possession of the very fortitude which he sustained an ignominious death.’ He retained his heroism and self-possession to the last. On the Restoration, King Charles II. reversed the sentence of forfeiture which had been passed by the parliament; and his scattered remains were collected and buried.
with great solemnity in the cathedral church of St. Giles, Edinburgh.

MONTERRAT, on the Lesser Antilles, is about 22 miles south-west from Antigua, and is about the same distance north-west of Guadaloupe. The island is about 12 miles long from south-east to north-west, and about 7 miles broad.

Montserrat was discovered by Columbus, and received the name it bears from him in consequence of its resemblance to a mountain of the same name near Barcelona, and as being descriptive of its appearance, that of a broken mountain. The first settlement was made on it in 1626, by the English under Sir Thomas Warner. It was taken from the English in 1664 by the French, but was restored at the peace of Breda, and has since continued in the possession of the English. The island is of volcanic origin; the mountains are in many places quite inaccessible, and separated from each other by almost perpendicular chasms, which, with the sides of the mountains, to their summits, are clothed with a luxuriant vegetation, including both lofty trees and tropical shrubs. On the south-west side, in a dell formed by the junction of three conical hills, and at a height of 1000 feet from the level of the sea, is a southerly, or boiling sulphurous spring.

The town of Plymouth is situated on the south-west side of the island, in 16° 42' N. lat. and 62° 19' W. long. It is small, but well built. The shipping lies off the town in an arm of the sea, which is uninhabited and has no road leading to any part of the shore, and it is hazardous for ships to remain at the island during the hurricane months. A heavy surf beats constantly on the shore, and it requires great skill on the part of those who manage the boats to land, and thus ensure their safety. For conveying produce and goods to and from the ships, a peculiar kind of boat, called a Moses boat, is used.

The island is esteemed to be so healthy, that it has acquired the name of the Montpellier of the West. The average mortality of the troops stationed there is found to be far less than is experienced in any other of the West India stations.

The population in 1834 was as follows:—

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whites</td>
<td>140</td>
<td>149</td>
</tr>
<tr>
<td>Free Blacks</td>
<td>412</td>
<td>569</td>
</tr>
<tr>
<td>Apprenticed negroes</td>
<td>2,827</td>
<td>3,155</td>
</tr>
<tr>
<td>Total</td>
<td>3,379</td>
<td>3,866</td>
</tr>
</tbody>
</table>

Montserrat is a dependency of the island of Antigua, but has a separate legislature of its own, consisting of eight members of the House of Assembly, two of whom are returned from each of the four districts into which the island is divided, and six members of council. The settlers are mostly Irish, or the descendants of Irishmen.

The island produced for exportation in 1836, 11,586 cwt. of sugar, 33,300 gallons of molasses, 17,930 gallons of rum, and 300 bu. of cotton. Incompetence at the distance of about three leagues to the north-west, and between Montserrat and Nevis, is a high, round, barren, and uninhabited rock, to which the name of Redonda has been given; it may be seen at a distance of nine or ten leagues.

MONTCAL, JEAN ETIENNE, was the son of a merchant at Lyon, in which city he was born, 5th September, 1725. At the age of sixteen he became an orphan, and his grandfather, who had been left guardian of his estate, did not see him afterwards. At the Journets' College of Lyon his attention was chiefly directed to the study of mathematics, being in the antient classics, although a decided taste for philological pursuits in general, as induced by a particularly retentive memory, enabled him to become acquainted with several of the modern languages, among which the Italian, English, Dutch, and German are mentioned as those with which he was more particularly conversant. At this college also, under Le Père Braud, the subsequent tutor of Lalande, he attained to considerable proficiency in those sciences of which he was afterwards the historian.

From Lyon he went to Toulouse, in order to qualify himself for the legal profession, and having taken the usual course of studies for the bar, left Toulouse, proceeded to Paris, where he made the acquaintance of Cochin, Lalande, and others. To his tribulation, he probably owed much of his mathematical knowledge; and Lalande, if he did not suggest a history of the mathematical sciences, at least gave him considerable encouragement to carry out the design which it had been formed. In 1744 he published in 12mo, anonymously, the 'History of the Researches for determining the Quadrature of the Circle,' to which was appended 'An Account of the Problem of the Duplication of the Cube,' and the Trisection of the Angle. This short work was the first edition of his 'Mathematical Recreations,' in 4 vols. 8vo, edited by Lacroix. The following year (1755) he was admitted a member of the Academy of Berlin; and in 1758 he published, in two volumes 4to, the first part of his 'History of the Mathematics.' After this he began to be employed in official capacities, first as a judge at Grenoble, where he became acquainted with the family of M. Romand, whose daughter he married in 1763; and then (1764), as secretary and astronomer royal to the expedition of the navigators in the south-west of the American continent, who set out to search for the fabled island of Darien. The same year he went to France; the following year, he obtained, through the influence of his friend Cochin, the situation of 'premier commissaire des bâtiments,' the duties of which he discharged most assiduously for twenty-five years. To the above appointment was added that of director of the society, a body of some repute, for the immediate wants of himself and family, but by the events of the Revolution he lost his situation, and was left little short of destitute.

In 1774 he was employed in forming an analysis of the mathematical sciences contained in the archives of the foreign department, and about the same time he was nominated professor of mathematics to one of the central schools of Paris, but his health not permitting him to fill the appointment, he lost his situation. 'Juris dictionis' was assigned to him. In 1798 he published a second edition of part of his 'History of the Mathematics,' in which he introduced many improvements and augmentations. With the exception however of the profits, if any, which he may have derived from this work, he had no resource for two years, from which he could provide for his family, and was in a most deplorable situation in the office of the National Lottery. Upon the death of Saussure, in 1799, the minister Neufchâtel conferred upon him a pension of 2400 francs, which he enjoyed until the end of the year 1804. In December, 1799. His modesty and benevolence were so less conspicuous than his erudition and the smallness of his fortune. When Lalande, deputed by the Academy, offered him some situation in that society, he declined the honour,

Before his decease he had occupied himself with the second part of his History. The completion of the work was confided to Lalande, who, with the assistance of several scientific individuals, among whom was Lacroix, published the remaining two volumes in 1809. The whole work is divided into five parts, and these are subdivided into books and chapters. Part I. contains the History of the Mathematics up to the destruction of the Grecian empire. Part II. comprises the History of the Sciences among the Arabians and Persians, and the science of navigation. Part III. contains the History of the Sciences among the Latins and the Western nations up to the commencement of the seventeenth century. These three parts form the first volume. Part IV., forming the second volume, contains the History of the Sciences among the Greeks during the Seventeenth Century, is divided into nine books, namely: 1. Progress of Geometry, as treated after the manner of the Antients; 2. Progress of Analytical Geometry; 3. Progress of Mechanics about the middle of the Seventeenth Century; 4. Progress of Optics about the middle of the Seventeenth Century; 5. Progress of Astronomy during the Seventeenth Century; 6. Rise and Progress of the Differential and Integral Calculus in the latter part of the Seventeenth Century; 7. Progress of Mechanics during the same period; 8. Progress of Optics during the same period; 9. Progress of Astronomy during the same period. The remaining two
It appears then not only that the lunar month varies, but that there is no yearly cycle of variation. Before however we make any remark on the preceding, we shall place by its side materials for confidence in the almanac from whence the preceding dates were quoted. Taking at hazard a volume of astronomical observations, and opening it at the part where the lunar month is mentioned, and as found, we took the first right ascensions [Ascensions] of the moon which we came to, opposite to which, for comparison, were written the right predicted ascensions of the moon for the same times. The dates matter nothing, since only the accuracy of prediction and observation is to be noticed. (Camb. Obs., 1835, p. 125.)

The lunar theory then, resting upon the Newtonian doctrine, enables astronomers to find the position of the moon within a part of the heavens answering to a second of diurnal revolution, while the rough observation with which astronomers must always commence would not give the length of a lunation within an hour.

Taking the lunar phenomena in the order of discovery, we next notice that this planet writes its mark on the earth in terms which render the subject of astronomical inquiry. The alternate rise and fall of the waters, called the tides, is found to follow its motions, so that high water is always found to succeed the time when the moon comes on the meridian, whether on the visible or invisible side of the earth, in the first single sign it was above the horizon. There is high water twice a day (that is, in the common solar day), but it is found on further examination that the interval between high water and high water is a little more than twelve hours—a fact that in the year 1833 that phenomenon occurred only 705 instead of 730 (twice 365) times.

Now the motion of the moon round the heavens is found to take place (one time with another) in 27;32616142 solar days (we shall presently see why this is not a lunation), which gives 13' 16' 30° increase of right ascension in each solar day, or 15° 23' in a sidereal day, or actual revolution of the earth. Hence the meridian of the spectator, between two times at which the moon is on the visible side of that meridian, must make so much more revolution as is necessary to overtake a body which revolves through a 13° 58' 23" while it revolves through 366°; which gives 24° 55' of a revolution of the earth for each lunar day, or 12° 27' for its half. Now the year contains 365 1/4 solar days, or revolution of the earth, and we shall find that 12° 27' contains 705 times and a fraction in 366142. As every reader may not be acquainted with the distinction of sidereal and solar time, we may here simply state (referring to Sun and Time for detail) that the sidereal time of one day is that which is measured by the screw of the sidereal clock which includes the additional time in which the meridian overtakes the sun, which has moved forward about a degree. Thus it appears, that even on a single year the coincidence of half a lunar day and the interval between two times of high water is sufficiently apparent. It may be said that we have assumed the question by counting the times of high water from an almanac constructed on the supposition which we wished to establish. This would be true if we had talked of the year 1840; but we may consider the almanac for 1838 as now a verified and accurate chronometer. It would have made no small noise in the public papers if there had been a tide more or less in the Thames than was predicted in the almanac. The theory of the tides is the most difficult in astronomy, owing to the disturbing action of winds, channels, and so forth, which are all of intrinsic motion and accidental difficulties; but this one phenomenon has never had its exception in open sea—that every transit of the moon over (either side of) the meridian is followed by the rise of the water, though so high a wind has been known as to prevent the tides of high water from being recorded.

We return to the phenomena of the phases (Greek for appearances), as they are called, of the moon, namely, the changes in the quantity of its illuminated part. These may be immediately explained on the supposition that the moon is not luminous in itself, but receives light from the sun.
To show how this may be, suppose a ball, illuminated by another ball at a great distance in the direction ES, to be carried round the spectator at E. This ball may be always subdivided into a visible and invisible half, since one-half must hide the other in all positions. But it may also be divided into an illuminated and unilluminated half. At A the visible half is all unilluminated, and though we have called it the visible half (meaning in a position to be seen, if there were light), it will not be seen. But when the ball arrives at B, a small portion of the illuminated half is in the visible half, as much as is intercepted between the arrows. At D a larger portion of the illuminated part is visible, and at E a full half of the visible surface is illuminated. A little consideration of this scheme (which is moreover explained in all popular works) will show not only the occurrence of phases precisely similar to those of the moon, but also that the circular boundary of the illuminated part is towards the illuminating body. We copy from Riccioli his collection of the Latin and Greek terms used with respect to the different phases:

A Novemlunium, luna silens, Conjunctio, Eo.
B Prima phasis, Nova luna.

C Ultima phasis.
D Primus sextilis aspectus et E secundus.

F Prima Quadratura, G secunda; luna dividua, bieseta, dimidias, semiplena.
H, K, L, I, Luna Gibba, gibbos.; H pri- mus, I secundus aspectus trinus; Luna in tripetro.
M Plenilunium, Opposito, Luna Toti- luneus, in diametro situate in orbem, medius menias.
N Luna crescentia ab A per F in M, Luna descescentia seu senescens ab M per G in A.

If the moon moved in the plane of the ecliptic, or of the sun's motion, as in the figure, there would be an eclipse of the sun at every new moon (A), and of the moon at every full moon (M); since in the former case the moon would hide the sun, and in the latter the earth would intercept the sun's light. The moon however is generally a little on one side or the other of the ecliptic, not enough to introduce any sensible error into the preceding explanation of the phases, but enough to hinder the eclipses from taking place, except now and then: we shall see more of this presently. Again, if the sun remained in the line ES, the luneation, or complete cycle of phases, would be of the same duration as the actual revolution of the moon round the heavens, since however the sun moves slowly forward in the same direction as the moon, the latter does not alter its phases so rapidly as in the figure, nor is the cycle of phases complete until the moon has overtaken the sun.

It is usual to divide the whole lunation into four quarters, the first from new moon to increasing half moon, the second from half moon to full moon, the third from full moon to waning half moon, the fourth from half moon to new moon. Each of these is called the change of the moon, and it is a very common belief that a change of weather and wind is to be expected, if not at every change of the moon, at least more often at the changes than at other intervals. This opinion, when not absolutely received as true, is usually treated as the extreme of absurdity. It is in truth neither one thing nor the other, as the following considerations will show.

The atmosphere is continually undergoing a slight alteration from the effects of the tide. At new and full moon (or rather a little after these phenomena) there are those great tides called the spring-tides, arising from the action of both luminaries: at the two quarters the same luminaries oppose each other, and the quarters are followed by the smaller floods, called neap-tides. What effect may be produced by this succession of smaller and greater oscillations of the sea, which must produce oscillations of the atmos- phere, is not easy to say; we know nothing of the electric action of either luminary upon the earth, or whether any and what electric state may depend upon their relative position. We have therefore abundant grounds a priori to abstain from forming any opinion upon the question of the effect of the luminaries upon the weather; and we shall now state the results of such facts as observation has furnished. A few years ago M. Arago collected the evidence on this subject in an article published in the 'Penny Magazine,' and we do not hesitate to say that it is, upon the whole there is a little more rain during the second quarter than during either of the others; but that there is no reason to confirm the common notion that a change of the moon is accompanied by change of weather. It has also escaped our notice that the weather is in the second quarter more or less changeable than in either of the other quarters. We shall also state the results of such facts as observation has furnished. A few years ago M. Arago collected the evidence on this subject in an article published in the 'Penny Magazine,' and we do not hesitate to say that it is, upon the whole there is a little more rain during the second quarter than during either of the others; but that there is no reason to confirm the common notion that a change of the moon is accompanied by change of weather.

The moon's age is usually reckoned from the new moon, and the rules by which Easter is found depend, or should depend, upon the correct knowledge of the moon's position at the rising of the year, called the Epact. But all readers should remember that the sun and moon by which Easter is found are not the real bodies, but fictitious ones, moving not with the real but the average motions, and therefore sometimes before and sometimes behind the real bodies. It should then be no matter of surprise if, as will happen, Easter-Sunday should sometimes be seven days sooner or later than it would be if the real bodies were employed. [Easter]

We now come to the actual motion of the moon round the earth, which is the most complicated question in astronomy. Roughly speaking, it may be said that the moon's motion is circular, which is sufficient for the explanation of the phases; it is somewhat, but very little, more correct to say it is elliptical. If the moon's orbit were actually exhibited in space, an ellipse might be found which would nearly fit one of its convolutions; but the succeeding convolutions would depart further and further from such an ellipse, so that the moon wouldbe nineteen days behind its phase, and would again occur which is situated in space near to the ellipse with which we started. And though astronomers have found a way of simplifying the question, by assuming the moon to move in an ellipse which itself moves in space, yet we may better explain the subject by arriving at that ellipse from the real motion than by beginning with it.

When the motion of the moon is watched in the heavens with instruments fitted to measure its apparent diameter, it is soon found that she changes her distance from the
earth, occupying alternately larger and smaller. Her path is not very much inclined to the ecliptic, so that she is never 51° from some one of the positions which the sun has had or will have in the course of the year. We may explain the apparent path in the heavens by the following figure,

which represents a portion of the apparent heavens. T is the earth in the centre, $xxx$ is the circle of the ecliptic; $yyy$ and $zzz$ are small circles parallel to the ecliptic, and each distant from it in the heavens by an angle of 5° 4' 7". The moon may rise 8° 47' 16" above $xxx$, or fall as much below $zzz$; but these two circles are chosen because they are means, that is to say, for every convolution which rises above $xxx$ there will be another, described at some other time, at which it falls short of $zzz$; so that in a long series of years the sum of all the areas by which convolutions rise above $xxx$ would be equal to the sum of those areas by which other convolutions do not attain $xxx$. The angle 5° 4' 7" is, in the astronomer's elliptic fiction, the mean inclination of the orbit to the plane of the ecliptic. The dotted line $A B C D E F G H$ is one complete convolution of the orbit and the greater part of another. We suppose the moon to set off from its highest point (high and low have reference to the ecliptic) A, and at or very near $yyy$: from thence it falls to the descending node $B$, and continues to descend to its lowest point $G$, from whence it rises to the ascending node $D$, and from thence ascends to $E$, from thence to the next descending node $F$, from thence to $G$, the lowest point (at or near $zzz$), and to the next ascending node $H$, &c. In this way the whole of the lunar eccentricality is interposed between the convolutions of its orbit, which we go on for ever; nor have we any reason to suppose that the cycle of convolutions is ever complete, so as to begin again.

The first thing we have to notice is what is called the regressive motion [Motion] of the nodes. The first node we meet with is $B$, and the next, $D$, is not exactly opposite to $B$, but a little behind the opposite point; the next, $F$, is still more behind $B$. The words before and behind have reference to the direction of the motion. This recession of the node amounts, one year of 365 days with another, to 19° 19' 42"-316, and the node makes a complete retrograde revolution in 6793-3908 mean solar days, or 186 years nearly. The point in which the moon ascends through the ecliptic falls back more than $B$, and may thus become the moon's diameter in each revolution. The amount however is subject to some variation; that given above is its average.

Again, the apparent diameter of the moon is observed to vary, owing to an alteration of her distance from the earth. When least it is 29° 31' 41; when greatest 36° 31'' 07. But it is observed that the least and greatest diameters of a single revolution are not exactly the same as those of another revolution; and also that the place where the diameter is least is not exactly opposite to that in which it is greatest, but always in advance. Thus the diameter, being greatest at $A$, becomes least at $P$, in advance of the point opposite to $A$, greatest again at $Q$ (in advance of $A$), and least again at $R$. Now the apparent diameter must be least when the distance is greatest, and vice versa; the point of a convolution most distant from the earth is called the apo-gée, that nearest to the earth the peri-gée. There is then a progression of the apogees, and its average quantity is no less than 6° 41' for each solar day, or 40° 39' 45° 36 in 365 days; which is equivalent to a complete revolution in 2322-575343 mean solar days, or about nine years. The quantities above given are averages, for the actual progression is irregular.

We may notice then five distinct species of months—1. The average sidereal month, or complete circuit of the heavens. 2. The average lunation, common month, or interval between two conjunctions with the sun. 3. The average anomalistic month, or revolution from perigee to perigee. 4. The average tropical month, or from the vernal equinox to the vernal equinox again (the equinox being in retrograde motion [Precession]). 5. The average nodical month, or from the ascending to a node of the same kind. The quantities of these months are as follows (Bally, Astronomic Tables and Formulae) in mean solar days—:

<table>
<thead>
<tr>
<th>Type of Month</th>
<th>Days</th>
<th>Hours</th>
<th>Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidereal month</td>
<td>27 7 43 11/2</td>
<td>27 32156142</td>
<td></td>
</tr>
<tr>
<td>Lunation</td>
<td>29 12 44 2/9</td>
<td>29 3306872</td>
<td></td>
</tr>
<tr>
<td>Anomalistic month</td>
<td>27 13 18 37/4</td>
<td>27 5439956</td>
<td></td>
</tr>
<tr>
<td>Tropical month</td>
<td>27 7 43</td>
<td>27 3212222</td>
<td></td>
</tr>
<tr>
<td>Nodical month</td>
<td>25 7 36</td>
<td>27 3212222</td>
<td></td>
</tr>
</tbody>
</table>

If we compare the lunation with the common year, we shall find that 235 lunations make 6539-69 days, while 19 years make 6539 or 6540 days, according as there are four or five leap-years in the number. Neither is wrong by a day; consequently the years of the lunations and moons are restored to the same days of the year. This does not absolutely follow, either from the preceding or from the method which gave it, since neither is the coincidence exact, nor are the months exactly equal. But it will generally so agree because these two systems are founded on the same principle. [See also Calippus.]

Again, 233 lunations make 6585-292 days, and 242 nodical revolutions make 6585-257 days, so that there is only 03 of a day, or 50 minutes difference between the two. This period of 233 lunations is the Metonic cycle, a celebrated period in which the lunations is in round numbers of days 18 years, and 10 days, or 18 years and 11 days, according as there are five or four leap-years. It may be worth while to express these numbers of lunations in terms of the Sun.

**Metonic Cycle.**—233 lunations make 252 999 sidereal months, 251 832 anomalistic months, and 254 921 nodical months.

**Saros.**—223 lunations make 241 929 sidereal months, 238 999 anomalistic months, and 241 999 nodical months.

The rate at which the moon moves is different in different parts of the orbit. We may speak either of the rate at which she changes longitude, latitude, or distance from the earth; and owing to the smallness of the inclination of her orbit to the ecliptic, her motion in the earth's equator is nearly the same thing as her motion in her own orbit. The quickest motion is at or near the perigee, and the slowest at or near the apogee. The moon's rate of motion follows no easily obtainable law in its changes, which is different in different months. The rate of change of latitude is greatest near the nodes, and the rate of change of distance from the earth is least at the apogee and perigee, and greatest at and about the intermediate points. We have hitherto considered the apparent path of the moon among the stars: we now pass to the real orbit in space. Her average distance from the earth is 299827175 times the equatorial diameter of the earth, which makes about 60 radii of the earth, or 238,000 miles. But the radius of the sun's body is 114 times the radius of the earth, so that having its centre in the earth, should contain every part of the moon's orbit, would not be a quarter of the size of the sun.

Again, the sun's distance is 33,984 radii of the earth, or nearly 480 times the moon's average distance. A good idea of the relative magnitudes of the distances may be obtained as follows:—Take a ball one inch in diameter, to be the sun, and another of one half an inch in diameter to be the earth where which is itself 19° 19' 42"-316 from the moon's real orbit; place these nine feet apart, and a proper idea of the distance of the sun, compared with its size and that of the moon's orbit, will be obtained.

To form a sufficient notion of the real orbit, imagine another body, directly under the moon on the plane of the ecliptic, to accompany her in her motion. Let S S S S represent the plane of the ecliptic, in which the sun must
To connect this figure with the last, suppose that the moon is at \( P \) when it was projected in the heavens to \( Q \), and let \( P \) be the projection of \( L \) on the ecliptic: then \( P \) will be thrown upon \( M \) in the heavens. The average motion of \( M \) will be that of the moon, or a circuit in 27°32'16½ days. Then we were to suppose a fictitious moon setting out from \( M \), and moving with this average motion, it would never be far from the point \( M \); which last, from the irregularity of the real moon’s motion, would be sometimes before and sometimes behind the fictitious moon.

If we could observe the fictitious moon, thus regularly moving in the ecliptic (say every day at midnight), and also the real moon, we might take a long series of years’ observations, and sum all the excesses of \( M \)’s longitude over that of the fictitious body, when there are excesses, and all the defects, when there are defects. We might expect to find the one sum equal to the other; but we are taught by the theory (which, as before seen, is exact enough to find the moon’s place within a second) that the equality of these sums will not be absolutely attained in any series of years, however great, if we take the commencing point, at which \( M \) is to coincide with the fictitious body, at our own capsices. Wherever \( Q \) may be, there is a proper place for this fictitious moon, before \( M \), from which to start, the longer we go on with the series of supposed observations, the more nearly will the excesses balance the defects; supposing always that our series of observations stops at the end of a complete number of circuits, and not in the middle of one. This point is the place of the moon, as distinguished from \( Q \), its real place.

Let us suppose it to be at \( V \); then if the average moon start from \( V \), with the moon’s average motion, it will at every instant of time point out what is called the mean place of the moon corresponding to the true place. At the commencement of the present century, that is, when it was 12 o’clock at Greenwich on the night of December 31, 1800, the longitude of the average moon, or the moon’s mean longitude, was (according to Burckhardt) 118°17' 2", and the mean place of the moon, at any other time, is found by subtracting, in the proportion of 4890°-38468 for every 365 days, and making the necessary additive allowance for the precession of the equinoxes. [Precession]

In the same way the node and perigees of the moon have their mean places, and, as we have seen, their mean motions. The mean longitude of the perigee, at the commencement of the century, was 256°10'7½"; that of the ascending node 15°53'22½°.

The major longitudes being ascertained for the given time, the true longitude is found by applying a large number of corrections, as they are called, some determined from the theory of gravitation, but the larger ones, as might be supposed, detected by observation before that theory was discovered, and since confirmed by it. Into this subject it will be impossible to enter at length; we shall therefore merely instance a few of the principal corrections for the longitude, observing that the latitude, distance, &c. are all determined by adding or subtracting a number of corrections from the results of the supposition that the moon moves uniformly in the ecliptic at her average distance from the earth.

The first correction is one which brings the motion nearer to an elliptical one, and is called the equation of the center.

When we consider the moon’s distance from the perigee, called the anomaly. This is the distance of the moon’s mean place from that of the perigee. The mathematical expression is (we give only rough constants),

\[
6°17' \times \sin (\text{mean anomaly})
\]

The second correction, known as the ejection, and discovered by Ptolemy, is,

\[
16' \times \sin \left\{ \frac{1}{2} (\theta - \theta_0) - \text{mean anomaly} \right\}
\]
Aristotle then Heraclides Atlas. Seasons, the C will not by MOO A 20 H gradual; These B 21 out By D

The variation and the annual equation (discovered by Tycho Brahe) are represented by

\[ 39' \times \sin 2(\theta - \phi) \]

and

\[ 11' \times \sin (\theta \circ \text{mean anomaly}) \]

Many such corrections (but those which remain, of less amount) must be added to or subtracted from the mean longitude before the true longitude can be determined.

Having thus noticed the actual motions of the moon, we proceed to the phenomena of eclipses, and of the harvest-moon, as it is called. An eclipse of the moon has now lost most of its astronomical importance, and can only be useful as an occasional method of finding longitude, when no better is at hand. Eclipses of the sun, observed in a particular way, may be made useful in the correction of the theory both of the sun and moon; in this case matter is absolutely hid from view by matter, and the moment of disappearance can be distinctly perceived. But if we can of the moon, which is eclipsed by entering the shadow of the earth, the deprivation of light is gradual; so that it is hardly possible to note, with astronomical exactness, the instant at which the disappearance of the planet's edge takes place.

In a lunar eclipse the first thing to be ascertained is the diameter of the earth's shadow at the distance of the moon. Suppose this shadow, that is, its section at the distance of the moon, to be represented by the circle whose centre is C; N is a line directly opposite the eclipse, on the ecliptic, and moves in the direction of the sun's general motion, or from west to east.

Let CA be the ecliptic, and let BC be a part of the moon's orbit, with the node at D. It must be remembered that the whole takes place on a very small part of the sphere so that all the portions of the orbit which actually come into use may be represented by straight lines. Let the centre of the moon be at E when that of the shadow is at C; and let the hourly motions of the sun (that is, of the shadow) and of the moon be CF and EG. Then CF and EG will represent the quantity and direction of the hourly motion of the moon relatively to the shadow at rest. By geometrical construction therefore, M, N, and P may be ascertained, the positions of the moon's centre at the beginning, middle, and end of the eclipse; and EM, EN, and EP, at the rate of EL to an hour, represent the times elapsed between that of the moon being at E and the phenomena in question. Such is the geometrical process: the one employed in practice is algebraical, and takes in several minor circumstances which it is not worth while to write up.

An eclipse of the moon is a universal phenomenon, since the moon actually loses her light, in whole or in part; while in an eclipse of the sun, the moon hides the sun from one part of the earth, but not from another. The former can only take place when the conjunction (or sameness of longitude) of the moon and earth's shadow, that is, the opposition of the sun and moon, or the full moon, happens when the moon is near her node. The subject of eclipses is fully explained, with as little as possible of mathematic, in the Library of Useful Knowledge, 'Astronomy,' pp. 87-101. See also SUN; SAROS. For the phenomena of the occultation of a star by the moon, see OCCULTATION.

The harvest-moon is a phenomenon observed in our latitudes at the time of the full moon nearest to the autumnal equinox, when it happens for a few days that the moon, instead of getting a new face every day, rises for several days nearly at the same time. Something of the sort takes place always when the moon is near her node; but the circumstance is most remarkable when it happens at the time of greatest illumination, when it is known that the increase of declination (which is most rapid when the moon is near the equator, which she must be when full moon comes nearly at the time of the equinox) compensates the retardation which would otherwise arise from her orbital motion. [Sphrke.] See the treatise above cited, pp. 59, 81.

The discovery of the telescope, and the examination of the moon which followed, soon showed that the planet always turns the same face towards the earth, or very nearly. From hence it immediately follows that the moon must revolve round an axis in the same time as that axis revolves round the earth. If any one should walk round a circle without turning himself round, that is, keeping his face always in the same direction, and should present alternately his front and his back to the interior of the circle. But if he desires to turn his face always inwards, he must turn round in the same direction as he walks round. [MOTION, DIRECTION OF.] If the moon moved uniformly round in her orbit, and had a uniform rotation at the same time, then if her axis were perpendicular to the plane of the orbit, and the spectator were always at the earth's centre, the face of the moon would be always actually the same. None of these suppositions are true. 1. The motion in the orbit is irregular, yet the moon's rotation is exactly the sidereal month: the consequence will be that when the moon is moving quicker than the average, a little of the western side will be coming into view, and a small portion of the eastern side will be disappearing and rise over. 2. The axis of the moon is not perpendicular to her orbit, but is out of the perpendicular by an angle of 5° 8', 49"; the consequence is, that as she revolves in her orbit, the north and south poles of the moon will alternately become invisible, each during half a revolution. 3. The spectator is in motion round the earth's axis, which will slightly vary the part seen of the moon in the course of the day. These effects are called librations: (1) the libration in longitude, (2) the libration in latitude, (3) the diurnal libration. The second will be elucidated in SEASONS, CHANGE OF, and the third in PRECESSION AND NUTATION.

The way in which we know that the face presented is always nearly the same, is by observation of that face, which is varied by numberless spots. But the seeing is a view of the average face in the mean state of libration, that is to say, no part of the present edge is ever hidden by libration, without as much of the opposite edge being hidden at some other time. One cut represents the appearance of the planet; the other is a plan on which numbers and letters are laid down, referring to the following list, which contains the names usually given to them, and which were given by Riccioli, whose nomenclature has been generally adopted. Many other names are given, but the following are the most remarkable:

10. Archimedes, 29. Mare Nectaris.
11. Clomedes, 30. Mare Tranquillitatis.
12. Aristarchus, 31. Mare Serenitatis.
15. Kepler, 34. Mare Frigoris.
16. Hevelius, 35. Mare Vaporum.
18. Tycho, 37. Mare Humorum.
From the manner in which the moon is seen, as well as from the stars, when she approaches near them, undergoing no refraction whatever, it is certain that she has either no atmosphere, or one of a degree of tenuity which must exceed, perhaps, that of the best exhausted receiver. From this it has been inferred that there are no fluids at the surface of the moon, since, if there were, an atmosphere must be formed by evaporation. It is however enough to say that the fluids, if such there be, must be very different from those which abound at the surface of the earth.

Since the moon has a day (with reference to the sun) of a whole sidereal month in duration, each part is 14 days in sunlight, and 14 days without it. The intense heat and cold which must thus alternate would destroy human life, even on the supposition that terrestrial vegetation could be maintained. The fluid on the warm side (if any) must be constantly evaporating and passing off to the colder side.

'The consequence must be absolute aridity below the vertical sun, constant secretion of hoar frost in the opposite region, and perhaps a narrow zone of running water at the borders of the enlightened hemisphere. It is possible, then, that evaporation on the one hand, and condensation on the other, may, to a certain extent, preserve an equilibrium of temperature, and mitigate the extreme severity of both climates.' (Sir J. Herschel, *Astronomy*, p. 230.)

The mass of the moon, as determined from her effect upon the earth's motion, is about one-eighth (or 0.125) of that of the earth, her volume is one-forty-ninth of that of the earth, and the average density of her material 0.15, or about six-tenths, of that of the earth. A body weighing six pounds at the earth, would weigh one pound at the moon, if tried against weights which retained their terrestrial gravity. Travelling 10 miles an hour on the surface of the moon, would enable a person to keep up with the sun; so that it is not at all impossible that animal life may be maintained by constant migration, keeping always near the boundary of light and darkness.

The surface of the moon exhibits a very large number of mountains 'almost universally of an exactly circular or oval shaped form, foreshortened however into ellipses near the limb; but the larger have for the most part flat bottoms within, from which rises centrally a small, steep, conical hill. They offer in short, in its highest perfection, the true volcanic character, as it may be seen in the crater of Vesuvius. . . . . And in some of the principal ones, decided marks of volcanic stratification, arising from successive deposits of ejected matter, may be clearly traced with powerful telescopes. What is moreover extremely singular in the geology of the moon is, that although nothing having the character of seas can be traced (for the dusky spots which are commonly called seas, when closely examined, present appearances incompatible with the supposition of deep water) yet there are large regions perfectly level, and apparently of a decided alluvial character.' (Sir J. Herschel, *Astronomy*, p. 229.) The mountains are known by their shadows, which are perfectly visible, and which are long when they are near the boundary of light and darkness, or when the sun is in the horizon, and disappear when they
are 90° from that boundary, or when the sun is overhead. We copy from Schroeter's 'Selenographische Fragmente' two representations of the spot Archimedes, the first when very near the dusk part, the second when far from it.

By the help of these shadows, as well by other means, the heights of many of the lunar mountains have been measured, and some have been found whose heights exceed a mile and a half.

It might be supposed that nothing could ever be known of the figure of the moon, since we can only see one side. But this very circumstance leads us to some knowledge on the point. It is impossible to believe that the moon should revolve on her axis precisely in the same average time as she revolves round the earth, without half a second of difference, and not to suppose that there is some mechanical connection between the two revolutions, so that either one is a consequence of the other, or both are consequences of some common cause. As this subject is rarely elucidated in elementary treatises, we have somewhat abridged several of those topics which are usually treated, in order to supply considerations for which we could only refer to treatises of the most mathematical character.

It is well known in mechanics that the rotation of a body is in no way affected, if we suppose its centre of gravity to be fixed instead of moveable, provided the same forces act in both cases. Thus if a stick be tossed into the air (or rather into vacuum) by an impulse communicated at one end, and the same impulse be communicated to a similar stick which revolves on its centre of gravity, the first in its combined rotation and translation, and the second in its rotation only, will always remain parallel to each other, if they were so at first. Let us now suppose a needle placed on a point, and magnetic, round which a ball of iron revolves from A. If the needle be first at rest, then when the ball moves towards B, it will endeavour to draw the needle towards the position ON, and the needle will begin to revolve in the same direction as the ball. Suppose that by the time the needle points to ON, the ball is at O; C: and ON being perpendicular; then the ball then acts equally on both sides of the needle, and all acceleration of the rotation stops. When the ball arrives at D, it is tending to destroy its former effect, pulling the end P towards it. It may thus be seen that if the needle were heavy enough, the ball would by its motion cause an oscillation, working to produce rotation in one direction during half its revolution, or

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rather more, and the opposite effect during rather more than another half of revolution, in alternate quarters. But if the needle were light enough, it is easily seen that the rotation in the first direction might be produced so rapidly, that the second mode of action should never be exerted, or the revolving ball should never so far outstrip the needle that No one can have any doubt upon the subject. In this case the action would go on in one direction until the needle would acquire a rotation equal to and even exceeding that of the ball. But in the latter case, when the needle overtake and passes the ball, the opposite action would be immediately exerted, and the rotation would be checked. The end would be, that the needle would acquire a rotation equal to that of the ball, on the average, and would revolve so as always to present its point either to the ball, or alternately a little on one side and on the other. The same would be the case with the needle, with one end turned towards the earth, it is found by calculation, that it is sufficient to suppose it slightly spheroidal, with the longer axis towards the earth. The same mathematical considerations which have so completely resolved the first question, show that the figure of the moon must be an ellipsoid [SURFACES OF THE SECOND DEGREE] revolving round the shorter axis, and presenting the extremity of the longer axis to the earth. But the proportions of these axes have not been well determined, from which the position of the equator of the moon has been arrived at by practice only. It is but comparatively lately that even the inclination of the moon's equator to the ecliptic has been determined at 1° 30' 10''/8; that of the equator to the orbit being 8° 49'/9, as already noticed.

The above phenomenon has been shown to be of the same kind as the preceding; namely, of the sort which must be made absolutely true by the earth's attraction, if it were nearly true at the beginning. The moon's equator cuts the orbit in a line which, for its own parallelism, has to be placed at the position of the earth, and the line of nodes of the moon's orbit. If the axis of the moon's rotation were perpendicular to the ecliptic, this must be the case, for the moon's equator and the ecliptic would then be parallel planes. And the moon's axis being nearly perpendicular to the ecliptic, it may be shown from spherical trigonometry that the two lines in question could not make an angle of many degrees. But the fact observed by (Dominic Cassini, before the theory of gravitation had been formed) was that the phenomena for the present are really the same as for the moon, and the moon's orbit would be made to revolve rapidly round its axis, and if the earth were made of a shade and light giving seasons to the moon, as the sun does to the earth, then the nodes of the moon's orbit on the ecliptic, which it is supposed to have is very nearly parallel to the equator of the moon, would be divided into summer and winter paths by the same line as that in which the sun's path cuts the moon.

The great many miscellaneous phenomena connected with the moon might be collected, to which we have no space. For the light thrown on her surface when eclipsed see REFRACTION, for a remarkable appearance sometimes observed when she passes over a star see OCCULTATION; for her use in finding LONGITUDE see that word.

...and... {Moon.}

MOON, SUPERSTITIONS INCLUDING THE BRANCH, in his 'Popular Antiquities,' gives a long list of lunar superstitions. It was formerly conceived that if hogs were killed when the moon was increasing, the bacon would produce the greatest hardness. (See Occultation, Practice, or Prognostication for ever, 1800, Lond. 1664.)

In Decker's 'Match me in London,' act ii, the king says:

'Some people and bones in the vault of the moon
Who worship them, you are worship too:
Who worship all the planets, may
And furnish with bearing most plentiful wise.'
The surface should be examined to find out whether there is a moor-band or rock below. The first must be broken through, which may be done by trenching or by means of heavy-pointed iron bars thrust into the ground with considerable force, wherever a plant is put in. If there is a rock below with six inches of earth over it, provided it be not of a very compact and solid nature, the fir-trees will grow rapidly, and the roots will find crevices to strike into. A plantation should begin in a sheltered spot, and it may be enlarged as circumstances may demand the more exposed side. Thus even the highest and bleakest hills may in time be covered with wood, and, if properly managed, cannot fail to be profitable. \[Plantations.\]

**Moss-land and heath.** These two terms are used with a connotation of a special character very distinct in its nature. Moss-land is produced by the accumulation of aquatic plants, and its origin is chiefly vegetable. When it has a considerable depth, and its substance has lost all power of vegetation, it forms peat-bogs of various sorts, more or less compact, and in which the water is easily retained, which keeps up a kind of internal circulation of the moisture. The quantity of the mass is greatly increased. This is the substance which covers the surface of bogs, and where it is of some consequence it allows a passage over them \[Bog;\] but where it is very thin and loose it deceives the eye by an appearance of solidity, like that of the mosses. The quantity of water retained is in proportion to the pressure of the foot, and allows it to sink through it with very little resistance. The only way to improve moss is to drain it, and then convert the vegetable matter of which it is composed into soil, by means of lime and pressing down the earth. The quantity of earth, especially sand and gravel, which, incorporating with the moss, consolidates it, and assists the lime in decomposing the vegetable fibre. After this it becomes extremely fertile, producing potatoes and other crops; and when this has acquired sufficient solidity by the treading of sheep and cattle, it will produce good crops of wheat, or, if laid down to grass, give abundance of hay and pasture. Trees do not thrive in mossy soil, there being too little solid earth; and the large trunks which are frequently found in bogs must have grown before the moss was formed. This may be easily imagined. A wood laid flat by a storm or hurricane may obstruct the natural flow of the waters, and cause them to accumulate. The prostrate trees become surrounded by aquatic plants, which spread their fibres and roots freely through the water, and, decaying, make room for others. Thus the trees are gradually covered and buried in the moss till future generations find them, when the moss or bog is explored for fuel or for hay and pasture. The trees which are found buried in mosses frequently show evident signs of having been gradually covered. The upper surface is often decayed and uneven, while the lower shows that it has remained submerged and protected from the contact and influence of the atmosphere.
poetical reputation, was born in 1712, and bred to the business of a linen-draper, which he followed for some time in London, until he deserted it for the pursuit of literature. He married a lady, named Hamilton, of a strong poetical vein, who was supposed to assist him in his writings. His first metrical work was 'Fables for the Female Sex,' which, though it obtained great sale among His Majesty's troops, is not likely to have numbered him, by their pleasing versification and well-pointed morals, among the happiest imitators of that writer. These fables were succeeded by 'The Trial of Selim the Persian,' an ingenious complimentary effusion on Lord Lyttelton, in return for some favourable notice from that nobleman.

Moore's dramatic pieces were, two unsuccessful comedies, 'The Foundling' and 'Gil Blas,' and 'The Gamester,' a tragedy, which, without any striking touch of genius, still retains its place on the stage, and its hold on the feelings, by a natural and affecting exhibition of domestic misery. The last literary undertaking in which Moore became engaged was the editorship of 'The World,' a miscellaneous weekly paper, to which Lord Lyttelton and Chesterfield, Horace Walpole, and other high personages of the day contributed. The series closed with the death of Moore, which occurred in 1757.

MOORE, Dr. JOHN, M.D., better known as a miscellaneous poet, was employed in the office of the master of the Scotch church, and was born at Stirling in the year 1729. In his youth, after having studied in the university of Glasgow, he served for a time as a medical officer in the British army in Flanders, in 1747-8, and subsequently became involved in a venial moral misconduct, and was appointed to be the English ambassador at the court of Versailles. Having passed some years abroad in these stations, he returned to Scotland, and entering into partnership as a surgeon, settled at Glasgow, from whence, after taking his degree as physician, he was induced, in the year 1772, to recommend the young duke of Hamilton to the Continent, in the joint capacity of medical attendant and travelling tutor. With his charge he spent five years in visiting some of the most interesting parts of Europe; and returning home in 1778, and settling down in London, he found in his observations of foreign countries to the world in two lively works, under the title of 'A View of Society and Manners in France, Switzerland, and Germany,' and 'In Italy.' These, his first literary productions, were followed by a volume of 'Medical Sketches,' and by 'Zeluco,' the ablest and most popular of his novels, in which he has powerfully portrayed the dreadful effects of indulgence upon a disposition naturally selfish and cruel. His succeeding work was 'A Residence in the Peninsula: the Revolution of 1792,' 'A View of the Causes and Progress of the French Revolution,' 'Edward,' a novel, 'Mordauat,' or Sketches of Life, Character, and Manners in various Countries,' and an edition of Smollett's works, with a memoir prefixed by the author, in which the personal character is said to have been adorned with many estimable and pleasing qualities; the knowledge of the world which he had acquired in foreign travel caused his society to be much courted; and his conversation, aided by a countenance full of expression, was distinguished by the same tone of moral sentiment, as well as by the same shrewdness of remark and caustic humour, which appear in his writings. He died at Richmond, near London, in 1805.

A complete edition of Dr. Moore's works in seven volumes, with an apparently accurate Memoir of his Life, by Robert Anderson, M.D., was published in Edinburgh, in 1820.

MOORE, SIR JOHN, a lieutenant-general and knight of the bath, one of the most distinguished British officers of modern times, was the eldest son of the author of 'Zeluco.' He was born at Glasgow in the year 1761, and received his first commission in the army at the age of fifteen years. The success of his campaigns formed his rapid advancement; and before he found the earliest occasion of proving his personal merit, he had already been some years a lieutenant-colonel, and had also sat in parliament for the Lanark district of boroughs. It was in the descent of the British troops upon Coruna, in 1794, in concert with the patriotic Paul, that Moore first distinguished himself; and in subsequent services, in the West Indies in 1796, in Ireland during the rebellion of 1798, and in the disastrous expedition to Holland in the following year, in which he received two severe wounds, he fully established for himself the reputation of an officer of the highest order. A more suspicious duty now awaited him; and in the expedition to Egypt in 1801, with the rank of major-general, he commanded the reserve of the army, and highly distinguished himself at its head. For his services in this expedition, which was not without some sacrifice, he was deservedly created a knight of the bath.

On the recommencement of hostilities, after the short peace of 1802, Moore was usefully employed, by his own desire, in a camp of instruction on the Kennet coast, in training the British forces in several of the arts of war; and in the Peninsula: a field destined to witness some of the most striking events of the war against Napoleon. On the 21st of April, 1805, he was promoted to the rank of lieutenant-colonel, and was driven into the French army by Sir David Baird, and to land at Corunna, where the greater proportion, composed of troops already in Portugal, was to be found. Moore was elated by this failure during the following year, and accordingly began his march from Lisbon in October, 1806, when he had scarcely entered Spain before the defeat and destruction of the Spanish armies at all points on their northern line utterly extinguished the prospect of a successful campaign. Moved by this reverse, Moore decided to withdraw; and, crossing the Pyrenees, and driving the French forces back through Almeida, by which his infantry had advanced, was impelled for artillery, he had imprudently been induced to send his cavalry and guns, under Sir John Hope, by a circuitous route through Badajoz; to the north, a long tract of country still divided him from the troops which had landed under Baird at Corunna; and with forces thus widely disjoined, he found himself exposed to the assaults of victorious and rapidly advancing French armies of immense numerical superiority. In this critical position, he remained some time on the spot, before he was convinced of the desirability of the contest to retreat into Portugal, and goaded by the sanguine temper of the British ambassador in Spain, Mr. Frere, to advance, with assurances that the presence of the French troops were already yet preserve Madrid from falling into the hands of the enemy. This move was soon dispelled so much of the ambassador's illusions: yet the intelligence was followed by some indefinite movements on the part of the British general against the advanced French army, which only succeeded in ascertaining that the whole of the disposable French in the Peninsula were gathering to surround him. Rejecting all hope of the defence of Portugal, he commenced a rapid retreat not too precipitate, retreat to Corunna: the sufferings and disorders of which, conducted as they were in the depth of a severe winter, and through the mountainous region of Galicia, will long be remembered in our military annals. Its disasters were closed, on the 16th of January, 1809, by the battle of Corunna, in which the troops, though previously to
all appearance exhausted and disorganised, were reanimated, by
the zeal and of their gallant leader and their own native valour, to
inflict a heavy failure upon their pursuers.
They triumph was dearly purchased by the loss of their
commander; the circumstances of whose death may challenge
examples of heroism in recent and modern times, with the
last moments of an Emissary of God.
He probably had little desire to survive the mental agony
which he had suffered in so disastrous a retreat; he ex-
pressed great satisfaction that the enemy were beaten; he rec-
mained hopeful to die in that way; and his expiring words breathed a
hope that 'the people of England would be satisfied — that
his country would do him justice.'
The operations of the memorable campaign, by which
Moore had so successfully been involved after the event with all the virulence of faction by conflicting parties, who either desired to shift the blame of failure from the
government on the general, or to transfer it from him to his
employees. It was indeed the question, which must
determine Moore's claims to the character of an able com-
mander, been impartially treated even to this day. The
noble and graceful virtues of his private life, his lofty and
generous sense of honour, his chivalrous courage, his for-
gotten hope of himself, and his enthusiasm for the service of his country, even his enemies have been unable to
deny. In stations of subordinate command, he had also
unquestionably displayed very considerable talents, and a
perfect acquaintance with the science of his profession. But
under the pressure expressly applied to them, the higher
command in the field; and the fact whether he possessed the
highest qualities of military genius must be tried by his
conduct in that arduous service. He was placed in a posi-
tion he utmost difficulty; with an army, which, though full of
conquests, was young in action, and not insured to pri-
vation; with an inexperienced staff, and a commissariat
wretchedly defective; without the means of obtaining either
information or supplies, in a country where warfare has, in
all ages, presented peculiar difficulties; called upon
to aid a nation as full of brilliant defects as his own
as its rulers were of imbecility and treachery; and opposed to
armies ably commanded, thoroughly organised in every
department, long seasoned to warfare, and immensely supe-
rior in numbers. These were difficulties under which any
but the commander of first-rate ability and unshaken con-
fidance in the resources of his own comprehensive intellect
was sure to sink; and that Moore was not found equal to
them is no more a subject of reproach upon his genius and
gallantry than such form of insanity as the genius of a Fabius or a Wellington. He wanted in fact
that perfect undoubting trust in himself, in every adversity, which
is characteristic of the greatest commanders, and be-
longs to the very highest order of minds. He disbelieved in
his power to exhibit a single example of calculation.
From the first to the last, he desponded of fortune, and fore-
saw only disasters: he hesitated only in vigorous action,
and decided upon nothing but failure. The Duke of Welling-
ton has generously said, that he could discover only one
error in Moore's campaign, in not providing for retreat when
he advanced against Soult: but the neglect of preparation
for an orderly and gradual retrograde movement through the
strong country of Galicia was only indicative of the same
absence of all hopefulness, which had already pronounced
Portugal itself indefensible.
How the events of the following campaigns refuted this opinion need not here be said; but
Moore, in his despair and dread of responsibility, abandoned
every thought except the preservation of the army.
The description of his retreat is insufficient to redeem all the errors, if such there were, which had
attended his career; and it should ever be gratefully re-
membered to his glory, that, when there were those under
his command at Corunna, barely numbered with the French for obtaining permission to embark
unmolested, he indignantly spurned the proposal, as un-
worthy of a British army which, amidst all its sufferings,
and never known defeat. He welcomed indeed a battle as
the supply of hereditary charms, before the French, or
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The personal history of Sir John Moore has been written
at some length in a memoir contained in the third volume
of 'The Life of Moore,' by his brother, in 2 vols.
1834: but elaborate investigations of his last cam-
paign may be found in the judicious 'Narrative' of his
brother (London, 4to., 1809), and in a criticism on it in
the second volume of "The Gentleman's Magazine,"
Sir John Jones's 'Account of the War in Spain and Portugal,
and in the first volume of Colonel Napier's 'History of the
War in the Peninsula,' which the author, a zealous and
intelligent partisan, has endeavoured to glorify the eulogy of Moore, and to the able defence of his operations.

MOORISH ARCHITECTURE, otherwise the Mores-
que style, that variety of Saracenic or Mohammedan archi-
tecture practised by the Arabs or Moors of Spain, and of
which many examples exist at present in the Peninsula.
Granada, &c. [Alhambra], still attest both their skill and
taste. Although some have spoken very slightly of this
style as exceedingly fanciful and capricious, by others it has
been rapturously extolled as the most poetical and fair-
ylike species of architecture, and usually characteristic of a
refined, luxurious, and imaginative people; and although
it must be confessed that it is not reducible to any fixed rules,
it is evident that it was formed according to consistent prin-
ciple of taste, and that it is marked by a strong national
physiognomy. One of its most striking marks is the
horse-shoe arch, or, as it might with more propriety
be termed, the crescent arch, because it resembles that
symbol of Mohammedan faith, and was therefore in all proba-
ble cases an imitation of the Moslem style, which may be
permitted, at once and naturally accounts for a form that is
also very unlikely to have suggested itself, or to have origi-
nated in any purpose of construction; so far therefore
this hypothesis of ours—for we have not borrowed it from
any one else—has something like a plausible basis to rest upon.
Perhaps, too, the same religious symbol may be recognised
in the smaller curves or scallopings which frequently serra-
re or indent the outline of the arch itself, and from which,
no doubt, were borrowed the cups that form the trefoils,
 quatrefoils, &c. In Gothic architecture, so in Moslem,
out of respect to the symbol of Islamism.*
To the crescent or horse-shoe arch, again, we should point as having directly suggested the crescent or bulky dome, so character-
ise a form of that feature in Mohammedan countries.
The outline or section of the latter accords so strikingly
with the curve of the other (the one being constructed
at its base, the other at its span), that we can hardly suppose
it to have been a merely accidental coincidence, especially
since it is hardly to be supposed this form would be
wise than by some intention of the kind; and more particu-
larly if the dome of Santa Sophia is to be received as the
prototype for such feature in Mohammedan architecture.
So far from its being altogether capricious, this style appears
a model of intense mathematical and practical calculation,
although they cannot be said to be perfectly architectural,
or to have been dictated by constructive principles.
It is true the bulky dome does not exactly belong to Moorish
architecture, but rather to the latter Mohammedan, still
we may be excused for referring to it in our estimate of the
game generally; and we may further remark, that domes of
such shape bear some analogy to that of the Oriental tur-
ban, which form of head-dress may possibly in some degree
deceive to a taste in favour of a similar-shaped covering
or head to a mosque or other building: and we may observe
that the term Glaiv, or head, is employed by the Russians
in the meaning of a dome or cupola.

Although the horse-shoe arch is a peculiar, by no
means a feature in the style, or employed to the exclusion of other forms of arches; on the contrary,
there are several varieties, comprising the pointed horse-
shoe, and others, as is shown in the annexed figures.

Fig. is an example of the quatrefoil arch in form,
leaving the centre c on the diameter of the arch raised
above the chord or spring of the curve (the dotted line), and
consequently the curve itself is greater than a semicircle.
The same figure further exemplifies some differences of
application, the same outlines, but the draughtsman has
oomhike the Alhambra, in 1877, 880, as the earliest instance of it who c date can be depended
upon with certainty.

* Whether the pointed arch was actually borrowed from Saracen architec-
ture or not, it was certainly practised in that style long before our European
Gothic arose. It was common in the Mohammedan structures of Cairo in the
tenth century; and Heratius refers to the Moslem Tulum, erectied by Abn
boush the 18th, in 1877, 880, as the earliest instance of it who c date can be depended
upon with certainty.
on columns, the other without columns; besides which it illustrates other variations; for on the side B the head of the arch is closed over a square-headed aperture not wider than the span or chord; whereas on the side A the opening between the columns is as wide as the diameter of the arch itself in its greatest width through the centre c.

Fig. 2.

Fig. 2 is an instance of a pointed crescent arch, it being struck from two centres, which, as in the other case, are elevated above the line of the impost, or spring, from which the curve commences. This figure also exhibits two varieties of decorations, both of them by scalloping; one half being scalloped on the intrados, or edge of the arch itself; and in the other, the extrados, or outer circumference, being so cut, or more properly speaking, the edge of the face of the wall within which the arch recedes; of which kind is the gate in what is called the Casa del Carbon at Granada.

The next example is of what may be called the cusped or scalloped arch, strictly so termed, the outline being produced by intersecting semicircles, similar to the trefoil-headed compartments in our Gothic windows; but beyond that general resemblance, which certainly goes far to confirm the opinion that the Gothic style borrowed something from the Saracenic, the character is altogether different, not only because it is here the whole arch which is so shaped, instead of merely a subdivision within a larger opening, but also both on account of the external moulding following the same form, and of quite a different mode of decoration. In Gothic architecture the spandrels, or triangular spaces between the soffits, are panelled with spayed surfaces uniting in the centre. Arches of the kind here shown occur in the sanctuary of the great mosque at Cordova, where they rest upon columns which both in their capitals and shafts bear considerable similarity to Corinthian ones, except that they are shorter and without bases, and are therefore very different from the slender pillars peculiar to Arabian architecture.

Fig. 4 exhibits an example of such pillars, and another variety of Moorish arches (from the Court of the Lions in the Alhambra) very unlike any of the preceding specimens, it being circular-headed, and stilled, that is to say considerably more than a semicircle, its height is far more than the breadth, but, instead of contracting downwards, like the horse-shoe form, it is continued directly to the impost, whereby the arch or semicircle has the appearance of being raised or stilled, and made higher than the arch itself would be. It also exhibits another peculiarity which the Arabs seem greatly to have affected, namely, corbeling, or resting arches upon brackets which serve as their imposts; owing to which such arches have the appearance of being suspended over the opening below which becomes wider and the support or pillar slenderer in proportion to the projection given to the corbels.

The above will suffice to show the principal varieties of which we have chiefly attended to the form of the arches themselves, without attempting to show detail and decoration, by which it would be impossible to do any sort of justice upon so contrived a scale, although it may serve for mere explanation. As supplementary however to what has been said, it should be observed that one characteristic of the style that whatever their shape, or however applied, arches are generally placed within a square-headed panel or compartment, variously ornamented, and frequently surrounded with a margin or border similar to the square label in Grecian architecture (see Gothic Architecture, page 326, cts.) as an instance of a highly enriched compartment in which the arch is set). Sometimes there are two margins or labels.
and the space between them is filled up either with inscriptions or other decoration. This mode however was confined to large arches, not supported upon columns, but forming an opening that flung the eye to the sky and it was for such purposes that the crescent arch was chiefly used, particularly for entrances to mosques. These were further distinguished by the breadth and richness of the archivolt or architrave surrounding the arch; and which was sometimes equal to the radius of the semidiameter. In most instances the whole archivolt was uniformly decorated; in others only at intervals, or on the alternate voussoirs or arch-stones, some idea of which may be obtained from B, fig. 5.

Pillars are in general of exceedingly slender proportions, almost to apparent insecurity, and certainly by far too much so to satisfy those who acknowledge no other standard of beauty than classical architecture. Yet the lightness thus produced is extensively adopted in the character of Chinese architecture, where, owing to the limited poverty of the forms themselves, and the style of embellishment, it degenerates into finniness; whereas in the Moorish or Arabian style the lightness of particular forms tends rather to be upheld itself; but merely momentarily as it were, being again lost when attention is diverted from it to particular parts. It is on this account that Hessemer assigns so very high a value to Arabian decoration, as being strictly ornamental and strikingly characteristic.

Ornament have some prevalence in the decoration of Arabian decoration is the use of inscriptions evidently with reference to their ornamental effect. So far there is a very striking analogy between the practice of the Moslems and that of the ancient Egyptians: if the latter covered the walls of their temples with exceedingly elaborated inscriptions, we too less profusely with sentences; and the characters of their ordinary writing, elegant and fanciful in themselves, were as studiously ornate and calligraphic as possible; and so well do they harmonise with the rest, as to become to the embellishment, and to have sufficient value as such independent of their meaning. Neither was the effect of colouring and gilding wanted to set off the inscriptions in the most brilliant manner. In short, even by those who consider much blood to have been in false taste, architectural ornament must be allowed to have been carried by the Arabsians to a very high pitch; and although it may be too florid, too prodigal, too inflated, and overlaid with ornament, it well deserves to be studied, if not to be copied, as many ideas may be derived from it, for novel combinations both of forms and colours. And in this study we may here point out Mr. Owen Jones’s splendid work on the ‘Alhambra,’ and Hessemer’s ‘Arabisch Bauverzierungen;’ in both of which publications the plates exhibit the original colours.

Lattice or open trellis-work was another fertile source of ornamentation in the Arabian style. This species of ornamental work is supposed by some to have been derived from netting suspended before apertures in order to exclude insects; and in Arabian architecture it certainly partakes far more of the character of a network than Gothic tracery does, the interstices being smaller, and the design filling the whole of one aperture; whereas in the Gothic style the ornamental tracery is confined to the heads of windows. Besides which, the character of Arabian tracery—if we venture to say it—is altogether different, it being composed of straight lines, frequently so disposed as to form stars in some parts of the design. As far as an idea of the peculiarities of the style in this respect can be formed from a single specimen, the example here annexed (on the authority of Hessemer) of a portion of a window in the mosque of Hakim at Cairo, may be of some assistance. The pattern is rich and playful; and notwithstanding that, although regular, it appears at first sight to be rather complicated, will be found to be composed of merely a repetition of the same forms, yet producing a constant variety, according as the lozenge or the star is fixed upon by the eye as the centre from which the rest of the pattern diverge.

Of perforated battlements and pamparts, this style furnishes some exceedingly rich and tasteful specimens, although not among the remains of Moorish architecture in Spain. Several of them are exceedingly intricate and decorative also, and may therefore, almost without exaggeration, be compared to lace-work as seen against the sky. Of this kind are the pamparts of the mosques Lashar and Akmer at Cairo, which in some parts have perforated battlements of fanciful outline rising above the general parapet of open work. Curves, forming pointed horse-shoe arches, occur in some of the patterns; further than this it is impossible to pretend to describe them, except it be to remark that the stone-work is very slender, and the open spaces large in proportion, and that the ribs or stems of which the former is composed have the resemblance of being interwoven, one passing alternately before and behind the next, after the fashion of wicker-work.

Equal fancy and diversity of invention are shown in the devices of mosaics and pavements, many of which appear excessively rich and elegant, but are generally to be very simple in principle: for instance, some patterns exhibiting octagons, stars, and other figures, are produced merely by series of zigzag lines intersecting each other at right angles. Different combinations being obtained according to the point of the zigzags are turned from or towards each other. Among the other ornaments which mark this style, the honeycomb fretwork and stalactite-like drops, or pendants of ceilings and roofs, deserve to be mentioned; also the small star-shaped aperatures cut in a sloping direction through the domes or vaults over baths, for the purpose of admitting only a subdued degree of light. These
Latter must be allowed to be a highly pleasing and ingenious contrivance; and if, in regard to the other enrichments, there was oftentimes too lavish a prodigality, it was almost uniformly accompanied by a powerful degree of the poetical and picturesque.

The above are the principal characteristic elements of the style generally, but all of them do not enter into every design. Domes and minarets [Minarers, for instance, are features almost confined to mosques and other religious edifices. Instead, too, of being employed singly, domes were occasionally introduced in great profusion, there being, besides, altogether one, a number of blind arches, so timed according and at others contrasting with it in shape. Variety and contrast were further greatly increased by the lofty and slender forms of minarets being opposed to the swelling curves of domes; owing to which combination, buildings in this style oftentimes exhibit a very striking picturesqueness of outline.

Such features however do not occur in the remains of Moorish architecture within the Spanish peninsula. Externally they are rather plain than all, remarkable richness: even the Alhambra itself, gorgeous as it is in its courts and halls, bears on its outside less the character of a palace than of a fortress composed of irregular masses of building and square towers of various dimensions, forming an irregular edifice, and impressing the eye with a more character and impressive. A certain severity and solidity likewise distinguish the mosque at Cordova, which belongs to the earlier epoch of the style, it having been erected in the first century after the Moors had established themselves in Spain. It consists of an elevated oblong building, exceeding 620 feet from north to south, including a spacious court at its north end or side. The interior presents almost a forest of jasper and other marble columns, upwards of six hundred in number, and dividing the plan into eleven aisles in one of which was the mosque, and very much resembles the Girf-five minarets of the other.

In that division of the building appropriated to the imans and chiefs was the great kibla, or sanctuary (in which the Koran was deposited), an octagon covered with a dome supported by a single block of marble, with spires and put-pit, and the mantles of the khalif’s seat. After the conquest of the city in 1236, by San Ferdinand, this mosque was converted into the cathedral, in consequence of which the character of the interior has been greatly injured by the erection of a Gothic choir in its centre. All a splendid work of a later epoch of the style, Cordova could once boast of the palace called the Az-zahir, erected about the middle of the tenth century by the celebrated Abd-el-rhaman III., the eighth Umayyad sovereign of Spain. Of this edifice, of which the distance from the city, nothing now remains to attest its former magnificence, except the descriptions given of it by Mohammedan writers, according to which it was adorned with four thousand marble pillars, and had walls and pavement of precious materials. The fountains which lead to the edifice and its fountains and baths might pass for mere Oriental hyperbolism, were it not that the evidence still afforded by the Alhambra, and by parts of the Alcazar at Seville, removes the suspicion of exaggeration; or rather, the exuberant beauties revealed to us by the latter structures greatly surpass anything the most florid description can picture to the mind. The Alhambra, the residence of the Moorish kings of Granada, is supposed by some to have been founded by Mohammed II., but all of light building, exceeding 620 feet from north to south, including a spacious court at its north end or side. The interior presents almost a forest of jasper and other marble columns, upwards of six hundred in number, and dividing the plan into eleven aisles in one of which was the mosque, and very much resembles the Girf-five minarets of the other.

The chronicles of that country point out, it is true, an encroached nobleman named Julian, who is said to have secretly invited the Arabs to invade the country; but this account is not consonant with the fact, such an enterprise would have been altogether inconsistent with truth. The geographical position of the peninsula, its genial climate and reputed wealth, the necessity of giving employment to the orders of Berbers who were daily flocking to the standard of the Arabian generals, the spirit of discord reigning in the Gothic monarchy, and the professed assistance of the Jews, who, under the reign of Roderic’s predecessors, had been subjected to the most cruel treatment, are no doubt among the causes which led to that striking event.

On the 5th of April, 711, the expedition of the Moors from Africa, made up of about two hundred thousand, according to the Moslem historians and about thirty thousand, according to the Christian, crossed the strait of Gibraltar, and under the command of Tariq, son of Muza Ibn Nassy, the Arabian vicerey of Africa, landed with a small band of followers at the foot of the Rock Calpe, which received afterwards his name (Jebel-Tarrak or Gibraltar), and nearly the same time the Christian fleet of Africa was fought on the banks of the Guadalete, which put an end to the Gothic empire of Spain. Cordova, Granada, Jativa, Malaga, Toledo, then the capital of Spain, were either speedily reduced or opened their gates to the conquerors, and before Misa, who was now hastening from Africa with the heat of considerable forces, could land at Algeciras, his lieutenant Tarrak was the master of the wealthiest cities and the most extensive provinces in the peninsula. On the arrival of Misa, the king of the Visigoths, with the news of the certain crags of the Asturias, was subdued with the style which characterised Arabian conquest.

1st Period, A.D. 711-756.—GOVERNORS OF MOHAMMEDAN SPAIN.—During the first forty-six years after the conquest of Spain, the territory was divided into a number of principalities, which were held by the viceroys of Africa, and not infrequently raised to command by the voice of the people or the will of the army. Their number was twenty-one, including Tarak Ibn Zeyd, the first instrument of the conquest, and Ibn Erratic, who was also the first of the line in the title of viceroy. The governorship was assumed by Sanhed, and the duration of the government was forty years without a break. Their names and chronology are as follows:—

Abd-el-salit, son of Misa, who, on his father’s death, whether he was summoned in 714 to receive the charges brought against him, remained entrusted with the command, followed up the conquests made by his father. He subdued Luzitania, invaded Navarre, and thus solidated the Arabian empire of Spain. After a generous
ment of nearly two years (716), he was assassinated by the orders of the khilaf Suleymán, while performing morning prayers in the mosque of Seville, then the seat of Arabian government.

Ayyûb Ibn Abû Bakr was one of the officers entrusted by the khîfat with the execution of the order, and was later the affairs of the country for six months, until the arrival of the governor of Al-haur Ibn Abd-al-rahman, a.d. 717.

Al-haur made a successful incursion into Gothic Gaul (718), and gained considerable spoil; but his severity and his tyrannical executions, which fell alike on the natives and on the Arabs, excited great discontent against him. The complaints of the people reached the court of Damascus, and he was deposed at the end of 718.

As-sam Ibn Malik was then the next general appointed to govern Spain. Under his command the Moslems penetrated once more into Gothic Gaul, took Coraçonne and Narbonne, and were on the point of reducing the important city of Narbonne; but a defeat occurred under their walls which obliged them to return to Spain. His new administration, in which the Arabian governor himself and thousands of his bravest warriors fell, took place in May, 721.

Abd-al-Rahman, his successor in command, advanced into Spain, and met with the Moslems in a battle during which he made some trifling incursions into Gaul. On his return from one of these expeditions (in May, 725), he died a natural death.

Hodhchây Abî Abdallah governed Spain until the arrival of the Muslim army who had been four years and a half without making any conquests. He was deposed in 725, and succeeded by Abîthân Abî Aba Amsa, better known to the readers of romance as Munuza.

Abîthân, who under the preceding governors had been the scourge of the Gallic province, and received in his attacks, but his authority was only acknowledged a few months, for he was replaced in 727 by Hodhchây Ibn Abâ-abwas, who was himself soon displaced to make room for Alhâthâm Ibn Obyd, and after him the governor of the principal officers in the army, was deposed in 728.

Abd-al-rahman, the predecesor of Abasah, and the same who after the battle of Toulouse led back into Spain the remains of the invading army, was next appointed by the Khalif to command in Spain. His new administration was signalised by acts of justice; he punished those local governors who had been guilty of oppression, and restored to the Christians the lands which had been taken from them. In his military operations he was no favourite among the Moslem army which had yet trodden the plains of the Continent, and he advanced as far as Tours, where he was met by Charles Martel. The issue of the contest is well known; the Moslem and were defeated after a most bloody engagement, in which were killed two thousand of their general and his bravest soldiers remained on the field of battle, and the victorious progress of the Arabs was once more stopped in the heart of France (733).

Of the succeeding governors of Mohammedan Spain, viz. Abd-el-melek Ibn Kat, who arrived from Africa and held the reins of government for three years, until he was deposed; Obkhab Ibn Abâ-hejâ, who kept it until 741; Bulkb Ibn Bashar, Thâlabah, Hudâm Ibn Dîbrar, and Thuebah, little is known except that through their private quarrels and hatred of his two predecessors he was not popular among the Arabian tribes, and that their Spanish empire was brought more than once upon the very brink of ruin.

Yusuf Al-fahri was the last governor who ruled over Spain in the name of the Eastern khilafis. Elected by the inhabitants of Damascus, as successor to the governor of the same city, he governed the government for nearly ten years, during which Mohammedan Spain continued to be a prey to civil war. Yusuf had to contend with Samil, Aasim, Husayn Al-ayyali, and other competitors for the possession of the throne. Damascus was, however, reoccupied by the Byzantines, and the government conducted with as much success as the other provinces.

Abd-al-rahman Ibn Muawiyiah, escaped from the general massacre of the Beni Umayyah in 748, and, after wandering for some time in Egypt and Barbary, landed on the coast of Spain in the early part of 755. He was received with open arms by the inhabitants, who detested the yoke of the Abbasides, and after defeating in two pitched battles (May and September, 756) the generals of the khilaf, he made his triumphant entry into Cordova, in December, 756. Spain now ceased to be a dependency of the Eastern khilafis, and was continued to be governed by the potesty of Abd-al-rahman, who received the surname of Al-dâhilleh, or the Conqueror. His reign was long and prosperous. The Christians, profiting by the civil dissensions of the Arabs, had extended their territories, but his efforts were soon again to restore the former conditions of Asturias. Cordova, the capital, was enlarged and embellished by Abd-al-rahman, who surrounded it with walls and conveyed water to it. He began the building of the great mosque [Cordova], and formed ship-yards along the coast; he is moreover said to have been the first to transplant the palm and the pomegranate into the congenial climate of Spain; and he encouraged science and literature in his states. This good king died on the 29th of September, 798, after a reign of thirty-four years and one month.

Abd-alrahman was succeeded by his son Almusic (the benevolent), the youngest of Abd-al-rahman's twenty male children, succeeded to the empire by his father's appointment. His reign, although prosperous, was of short duration. He died in May, 800, and was succeeded by his son Al-haur, who, considering themselves injured by their father's will, tried to enforce their claims by arms; but, being defeated in every encounter, they were soon compelled to make submission. In his expeditions against the Christians, Al-haur was equally successful. He defeated the Count Decon, king of Asturias (791), to sign a most humiliating treaty. His generals (793-4), penetrating far into France, seized on Narbonne, which they plundered and burnt, advanced as far as Coraçonne, defeated Duke William, one of Charlemagne's lieutenants, and returned laden with immense booty, the fifth part of which Hisâm applied to the completion of the mosque begun by his father. Hisâm died in June, 796.

Al-hakem I., surnamed Al-lâlíqi (the father of cruelty); son of Hisâm, succeeded his father. His reign was extremely unquiet. No sooner did his uncles hear of Hisâm's death than they again asserted their right of primogeniture; but their attempts proved unsuccessful, for Suleymân was deposed and killed near Valencia, in 799, and Abdallah only obtained the regency by the death of his rival in 801. [CANDIA.] After this signal act of tyranny Al-hakem received the surname of Rubâdhi (the of the suburb). He died in May, 822.

Abd-al-rehaman II., surnamed Al-wasâati (the middle one), succeeded his father Al-hakem. He had at first to contend against his great-uncle Abdallah, who, leaving his place of confinement in Africa, again tried the fortune of war in Spain. He was however defeated. In his transactions with the Christians, Abd-al-rahman was still more fortunate than his predecessor, and the Moslem army destroyed the Franks in 827; a Mohammedan fleet burned the suburbs of Marseille in 839; and he fought with success against the Scandinavians, vikingur, who, in 844-5, appeared for the first time on the coast of Spain. His internal administration is justly considered one of the most prosperous in the history of the Koran: cities and towns were built, roads made, and canals dug for the benefit of agriculture; he was likewise an enthusiastic lover of science and literature, which he encouraged with unusual liberality. As the monarch died, universally regretted, in August, 852.

He was succeeded by his son Mohammed I., whose reign was anything but glorious. At war with his own subjects, he was unable to stop the progress of the Christians, who, under Alphonso III., began to make successful inroads into the very heart of the Moslem dominions. To his hereditary states of Galicia and Asturias that enterprising monarch added the rest of Leon, Old Castile, Estremadura, and a considerable portion of Lusitania. To these military dissas-
ters must be added a drought of one year's duration (867), which terminated in a pestilence, an earthquake which swallowed up several towns (881), and another piratical invasion of the Northmen (880-1). His reign lasted 34 years and 11 months. Mohammed died in July, 886, at the age of 65.

His son and successor Al-mundhir, being unable to contend with Kalib, a daring rebel, who in his father's days had driven him from Cordova and the neighbouring districts, was defeated and slain, after a reign of one year and eleven months, in July, 888.

Abdallah, his brother and successor, had not only to contend against the rebel Kalib, but to take the field against his rebellious father-in-law, and Kaisim was defeated in a pitched battle near Calatrava, in 889. With the latter he was equally successful; after a short campaign he defeated (895) the forces of the two princes, both of whom fell into his hands. Mohammed of Cordova, who was content in a dungeon and strangled by his orders; Kaisim was spared. Abdallah died in October, 912, after a reign of 25 years, appointing for his successor his grandson Abd-elrahim III, the son of Mohammed.

Abd-el-rahim III, surnamed An-missir lidin-illih (the defender of the faith of God), may safely be pronounced the greatest monarch that the Spanish Arabs ever had. When still young, the mildness of his temper, his generosity, and his love of learning had made him the favorite of the Christians, so that not only were in every respect fit for the management of public affairs, his appointment was received by the nation with unfigned joy. Abd-el-rahim's first care was to purgse the country from the rebels, who under the reign of his predeces- sors had filled the best districts. Of these the most powerful was Kalib, who, assisted by the Christians, extended his sway over the best portion of Mo- hammedan Spain: he was pursued from fortress to fortress, his army cut to pieces or dispersed, and himself obliged to wander as a beggar on the mountains of Aragon, where he met with an obscure death; and although his two sons Suleymán and Jaafar attempted some time afterwards to revive the war, their plans were completely defeated, and their expeditions, which were still attached to their cause, were obliged to capitulate (914).

In his expeditions against the Christians, Abd-el-rahim was equally successful. In 938 he gained a signal victory over Ramiro II, king of Leon, and in 940 he defeated, near Segovia, that monarch, the Christian princes, and schools, the formation of an extensive library within his palace, the construction of roads, canals, and aqueducts, all attest his taste for luxury, his love of the arts, and his unceasing activity. Of the justice of this sovereign the Mothomadan writers have said, approaching an example, that of his son Al-hakem to succeed him in the empire, his youngest son Abdallah presented the nomination, and entered into a conspiracy to deprive the favoured brother of his life. The plot however was discovered: Abdallah was arrested, and, not being in the state of rebellion of the mountains of Aragon, he was condemned to death and executed (950). After a prosperous reign of upwards of 50 years, Abd-el-rahim died, on the 16th October, 961, in the 73rd year of his age.

The success of the people was highly celebrated, and the Al-saad ibn ibn-llah (the who seeks for the help of God), and who to the many brilliant qualities of his father united an unbounded love for literature. Al-hakem's reign was one of comparative tranquility; little or no war was waged against the Christians; the fury of the population in Africa were protected rather than increased by conquest, so that his whole attention was directed to the promotion of science in his states. His reign indeed has been inappropriately called 'the golden age of Arabic literature in Spain.' He founded schools, endowed colleges, and by his unbounded liberality attracted to his court the most learned men of every country.

He formed at Cordova a public library called 'the Library of Merwan,' the unfinished catalogue of which is said by the Arabian writers to have filled forty-four folio volumes. Al-hakem died in October, 976, after a reign of upwards of 13 years, and was succeeded by his son Hisham, who was then under eleven years of age.

On the accession of the youthful Hisham II, surnamed Almugatt bilahl (he who is protected by God), to the throne, Abd al-Azm Al-mansur, who had been the intimate friend of Abd-el-rahim and Kaisim, sought the succession of his sovereign and ruling in his name. He confined Hisham to the seraglio, and taking into his hands the ad- ministration of the kingdom, he assumed all the insignia of royalty. Hisham's name is burlesqued into Amunis, in order to call Al-mansur a usurper, and to number him among the kings of Cordova. But if his ambition was great, his talents made him equal to the task: he was brave, generous, and just; and his wars with the Christians show that he was an able general. During his reign, and to have directed no less than seven and twenty expeditions into the very heart of the Christian dominions, which he seems to have entertained the idea of reducing entirely to the sway of Islam. In 983 he took the important fortress of Gormaz (983), which was captured by the Christians, and had it razed Coimbra, and in 979 he stormed and burnt the citadel of Leon, the capital of the Spanish monarchy; he was even as far as Santiago, which he took in 985, and precipitated within the very precincts of the shrine of Compostella, that is to say, into Cordova to be melted into lamps for the great mosque.

In Africa too Al-mansur considerably extended the limits of his empire. The six and twenty years of his adminis- tration, or rather reign, constitute one of the most brilliant pages in the history of Mohammedan Spain. Al-mansur died in August, 1001, on his return from an unsuccessful expedition, the only reverse during his long career of triumph, some say from grief, others from wounds received in battle, leaving the administration of the realm in the hands of his eldest son Abd-el-rahman, who still retained his sovereign in confinement, and ruled as absolutely as his father. But Abd-el-malek did not possess the briilant qualities of Al-mansur; in his expeditions against the Christians he was unequalled; his ideas were comprehensive, and his administration was not good. He died in 1019, in Cordova, probably from the effects of poison, after administering the affairs of the khilafate for six years and four months.

He was succeeded in command by his brother Abd-el- rahim, whose policy and ruling in the next year, 1020, his brother, assumed all the power, while Almugatt led a pros- titute life within the walls of the seraglio. But he was killed, with what he held, the ambitious minister aimed at royalty itself. He prevailed upon Hisham, who was childless, to give him the throne, and he was crowned as Hisham III, the king of the Almoravides, the chief Altın of which, for Mohammed, a prince of the blood, repaired to the frontiers, assembled an army, invested Cordova, and Abd-el-malek having been deserted by his followers, was murdered, and crucified by the victor's order, on the 17th of January, 1019.

The apparent motives of Mohammed's rebellion seems to be to release his sovereign from the dependence and regency in which he had been held by the sons of Al-mansur, and, without any attempt to form a republic, but by the authority firmly established by the franchise, the Almoravides, than out giving that Hisham was safe and secure, his condition of confinement, was dead, he caused himself to be proclaimed in his stead, and assumed the titles of Khalif and Almugatt bilahl (the directed by God). He got rid of his books, and used the treasures of the king to procure himself a powerful adversary, Suleymán, also a member of the royal family, who, at the head of the Afnian guard, took the field against him, defeated his troops, and made Hisham prisoner. Abd-ul- rashid Cordova a few months afterwards, when he fell a victim of the fury of the populace, who tore him to pieces, and set his head to the camp of his rival (Aug. 1019). Suleymán, surnamed Almugatt bilahl (he who imitates God's protection), administered the affairs of Mohammed; but the other authors suppose that Hisham was secretly put to death by his orders. But the
power of the Umayyad dynasty, and indeed of the Omman-
median empire of Spain, was fast decaying. The govern-
ors of the provinces, refusing to acknowledge the authority of a cen-
tral government, were possibly too many in number to be taken
all allegiance to the caliphs of Cordova. The as-
tent inheritance of the khalifah was cut up into a thousand petty
kingships, which, being isolated and weakened, fell
an easy prey to the attacks of the Christians. The throne
of Cordova itself was occupied by nearly a hundred
Suleymán was defeated and slain by Ali Ibn Hamud (1016),
who was himself assassinated in the bath by two of his Sla-
vonian eunuchs (1017). Al-Kasim, and Yahya, the brother
and nephew of Ali, disputed the crown with Abd-el-rahman IV,
the last of the Christian rulers. Abd-arr-rahman V, the successor of
Mohammed III, who was killed in battle
in 1018, and lastly Hishâm III, occupied alternatively
the throne of Cordova for a space of thirteen years.

With Hishâm III (1013) ended the Khilafate of the West, and
the Muslim world passed on to that of Barcelona, divided into
as the seraglio of Hishâm II, held, the former, Almería and Murcia;
the latter, Denia. Cities, even of the second order, such as Car-
mona, Algeciras, Algecine, had also their rulers, the em-
peror of the Bent Umayyad, being divided as into many
kings as there were governments before. To detail
the history of these petty dynasties, some of which lasted nearly
a century, while others had but an ephemeral existence,
with here and there a dynasty of greater
scales, and immediately
after that a bloody civil war, most of the smaller states
were again blended into one or another of the great
kings, and that (at the end of the eleventh century) Omm-
medan Spain was divided among Mohammed Ibn Abd-arr-rahman,
king of Almería, Yahya, king of Toledo, Al-asman, king
of Saragossa, and Omar Al-mu'tamid, king of Badajoz and part
of Portugal.

During this period of troubles and civil war, a
considerable portion of Portugal and much of New Castile fell into
the hands of the Moors, and Valencia was under the rule of Foy-
varre, and the counts of Barcelona, suspending their own
anomasties, resolved to share in the spoils of their falling
rival. After a siege of three years Toledo was compelled to
 capitulate, and on the 25th of May, 1085, Alfonso entered
the ancient capital of the Goths, which, with the city of
New Castile soon followed the fate of its capital. Alfonso
pushed on his conquests, and was going to invade the do-
minions of Al-mu'tamid Ibn Abdâb, the most powerful
sovereign of Mohammedan Spain, when a religious and polit-
ical revolution changed the aspect of affairs in the Pen-
insula.

Empire of the Almoravides, 1099-1146.—Towards
the middle of the eleventh century, two men, named Yahya Ibn
Ibrahim, and Abdallah Ibn Yâsîm [Almoravides], the for-
mers, a pilgrim from Mecca, where he learnt divinity, and juris-
prudence, the latter a distinguished theologian, succeeded
by their combined efforts in rescuing some of the African
tribes who dwelt beyond the chain of Mount Atlas from
the state of gross ignorance in which they lived, and who
were now in the same situation as the Berbers in the
Morubitas, or Almoravides, which signifies men consecrated
to the service of God. Abdallah now assumed the title of
Almorab, and was succeeded by Abî Bekr, who, leaving his na-
tive deserts, undertook the conquest of northern Africa. His
cousin Yusuf Ibn Tashfin subdued Fez and the greatest
part of Mauritania, and in 1073 the power of the Almor-
vides was universally acknowledged throughout northern
and part of central Africa. To this monarch the Omm-
medan princes of Spain had recourse when pressed by the
victorious arms of Alfonso; and Yusuf, whose ambition knew
no bounds, eagerly seized upon the opportunity of extending
his conquests. He crossed the strait at the head of a pow-
erful army (Aug., 1086), and meeting Alfonso near Badajoz,
under a flag of truce called for by the Moor's envoy
(Oct., 1086), which, being followed by other successes, had
the effect of checking the progress of the Christian king.
But if the Moslems of Spain were by this time a safe
protection from their common enemy, they had soon to lament
that they ever yielded to their countryman for crown
or, struck by the fertility and pleasing aspect of the Peninsula,
with his native deserts, the wild conqueror turned
his arms against the very people whom he was called to
protect, and succeeded, partly by fraud and partly by vio-
ence, in establishing his supremacy in Spain.

Yusuf, the first monarch of that race, died in Marocco,
in September, 1106. He was succeeded by his son Ali, who,
in 1108, defeated near Ucles an army of Castilians, and slow-
ly, and with infinite pains and expense of life and
money, undertook the conquest of the whole of Andalusia.
The important city of Saragossa was wrested from the Mos-
lems, and the north of Spain for ever freed from their sway.

To Ali, who died in February, 1143, succeeded Tashfin Ibn Ali, under whose reign the Christians made great pro-
gress. Oligarchy of Christians, the war of the Nations,
against the attacks of the Almohades (another sect of
enthusiastic Africans, who were then contending for power),
Tashfin had no leisure to attend to his possessions across
the sea, and Spain was left to its own resources. Tashfin
perished in July, 1149, at Oron, where he was besieged by
a host of Almohades.

Ibrahim Abû Ishâk, the last monarch of the dynasty
of the Almoravides, succeeded his father, but his reign
of eighteen years is notable for his known inability to resist the rising
to the power of the Almohades, who were wresting from his arms,
for ever, the city of his capital, the city of Marocco.
On the surrender of that place, in 1146, he was brought to the presence of Abd-el-mu'men, the general of the assal-
ing host, who, instead of exacting a ransom for his pris-
ners, reduced, and in a few months after, fell
in Mount Atlas, and soon spread over the whole of Africa.
By making his followers believe that he was the twelfth
imâm of the race of Ali, and the Mehdi, or director, who
was to teach mankind the path of salvation, and cause
the Mahommedan state to become an effective
machine for inveighing against the vices and corruption of the Alma-
vides, and promising Paradise to those who should fall in the
contest, he attracted numerous prosetyes to his stan-
dard. In 1121, after associating with him in the empire a
promising youth named Abd-el-mu'men, he marched against
the Almoravides at the head of considerable forces.
In 1122 he defeated their army, commanded by Abî Bekr.
In the following year he gained no less signal a victory.
Marocco, Fez, and other important cities were subdued in 1125
by his lieutenant Abd-arr-rahman, and in 1149 the whole
of northern Africa acknowledged the spiritual and temporal
yoke of the Almohades.

Mohammed died in 1129. He was succeeded by Abd-
el-mu'men, who was eager to add the possessions of his
African conquest. This was easily accomplished by
means of his generals; but as he was preparing to cross
the straits and take the command of his African bands
against the Christian kings, death surprised him in the
month of March (May), 1130.

He was succeeded by his youngest son, Yusuf Abû Yakib,
who appears at first to have cultivated the arts of peace.
It was he, in 1171, built in Seville the famous mosque and
the magnificent square tower belonging to it, which forms
at present part of the cathedral. He built also a number of
boats on the Guadalquivir. In 1173 he defeated Alfonso VIII,
king of Castile, and, after laying the country waste and
taking several fortresses, returned victorious to Africa.
He again crossed the sea in 1184, and landed in Spain,
where he remained until the moment of his death (July, 1185).
Mohammed Ibn-Abdallah, surnamed Amnisris ibnildilah (the rebel of the religion of God), was the next prince of the race of the Almohades who occupied the throne of Mohammedan Spain, which was every day being reduced to narrower limits. No sooner was Mohammed on the throne than he made a last effort to regain the possession of those countries which had been lost by his ancestors. In May, 1211, he crossed the strait with an army, the largest perhaps that Africa ever poured on the shores of Spain (for we are told that it amounted to several hundred thousand men), and encamped on the summit of that mountain chain which divides New Castle from Alhucemas. He was met by the combined forces of the Christian princes and thousands of foreign volunteers, whom a crusade proclaimed by the Pope Innocent III. brought to their help. The day was fatal to the Almohades; the Almohades were defeated and the battle of Las Navas may be considered as one in which its immediate consequences involved the ruin of the Mohammedan empire in Spain. Mohammed died in Morocco, in July, 1213, not without suspicion of poisoning.

The reign of Yusuf II., surnamed Abu Yakub, who was only eleven years of age on the death of his father, was a scene of continued trouble. He died without issue, in January, 1224. His successor, Abu-malik Abu-el-wahab, lasted but a few months afterwards (1224) at the hands of Abdallah Abu Mohammed, surnamed Al-adel, who himself was strangled in October, 1227.

Almamun Abul Ali was not more fortunate. He had to contend in Africa against his relative Yahya, who disputed the throne of Spain in favours of a Moorish chieftain, Ibn Hadid, by name, who himself proclaimed king of Mohammedan Spain, and ultimately succeeded in wresting that country from the Almohades. Almamun died in 1227.

The power of the Almohades was now fast declining. Mohammed, the successor of Almamun, strove in vain to re-establish his supremacy in Spain: he was obliged to quit that country, and leave it in the hands of his adversaries, who divided it among themselves. Abu-Yezan held Toledo and the surrounding country; Ibn Husain obeyed in Aragon and part of Andalucia; and Mohammed Ibn Alahmar ruled despotsly over Jaen and the best part of the province of Granada. Occasionally at war with each other, the Almohades contested their borders with the Christians. Cordova, the proud capital of the Mohammedan empire, surrendered to the victors in June, 1236; Valencina capitulated in September, 1238; Denia in May, 1244; and during the year 1246 all the fortresses on both banks of the Guadalquivir, from Jaen to the gates of Seville, fell into the hands of the Christians.

Mohammed Ibn Alahmar, king of Granada, became the valet of Ferdinand III., who in 1248, assisted by his powerful subject, wrested from the Moslems the important city of Seville.

Fourth Period. 1238-1492. Kingdom of Granada.—

By becoming the valet of Ferdinand, the new king of Granada, Mohammed Ibn Alahmar, insured peace for his dominions as long as Ferdinand lived. However, on the death of Alonso X., surmounted the learner, who succeeded his father in the throne of Castile, a desultory warfare was protracted on both sides, which ended in a truce in 1266. Ibn Alahmar died in January, 1273. He was succeeded by his son, Mohammed II., under whose reign another attempt was made by the Africans to re-establish in the heart of Spain the supremacy of Islam. In 1275 Ibn Yusuf, king of Fez and Marocco, crossed the straits at the head of considerable forces, and, after gaining some advantages, but he was soon compelled to retire to his own dominions. Mohammed, king of Granada, likewise attempted to regain part of the territories lost by his father, but after a reign of twenty-nine years spent in continual war with the Christians, he died without accomplishing his object, in 1302.

Mohammed III., surnamed Abu Abdalla, his son and successor, was an unfortunate monarch. He had not only to contend against his own subjects, who revolted at Granada and Alhucemas, but he was obliged to face the invading territory of the Christians, who, in 1308, snatched from him the important fortress of Gibraltar. On his return to Granada, after an unsuccessful attempt to relieve Almeria, which the king of Aragon had invested (1309), he was the victim of a popular conspiracy, and obliged to resign his throne to his brother Nasser.

The commencement of Nasser's reign was propitious. The siege of Almeria was raised; and Ceuta, which had been in the hands of the Africans, and had become one of the keys of the Levant since the fall of the city was restored by his generals. But the same incessant mob which had raised him to power, now deprived his deposition. In 1314 the people of Granada rose and proclaimed Ismail Ibn Faraj. Nasser went out against them, but, having been defeated and besieged in his palace, he was obliged to resign and retire into private life.

Ismail Ibn Faraj, surnamed Abu-el-walid, a prince of the blood, showed great abilities both as a warrior and as a statesman. Following the example of his predecessor, he took Gibraltar, gained (1319) a most signal victory over the Christians commanded by Pope, Infante of Castile, and his uncle John, both of whom remained dead on the field of battle. Martin and Baza were taken in 1325, and the castillans' empire was confined to the shores of the Mediterranean. But the consummation of his conquests was the death of his father.

After the death of Ismail, his son Mohammed IV. was unprepared for the government of an empire in which the commencement of his reign was unprosperous. Othman, the captain of his guards, revolted, and proclaimed Mohammed Ibn Feraj. The Castilians (1328) seized on Vera, Olbera, Ayamonte, and other fortresses; and on the king going out in person to stop these designs, he was wanted by an army dispersed. The rebel Othman, who belonged to the royal family of Fez, having obtained reinforcements from Africa, took Algeciras, Marbella, and Ronda. But towards the end of his reign fortune proved more favourable to his arms. In 1330 he retook the city of Algeciras; and in 1332 he recovered Gibraltar in 1330, and succeeded in reducing all the rebel governors to obedience. However, as he was preparing to cross over to Africa on a visit to Abu-l-hasan, king of Morocco, who was assassinated at Gibraltar in 1333.

Yusuf Abu'l-hejaj, who attained the throne in 1333, and whose death was at Granada, was immediately raised to the throne. In the interval of peace he seems to have given his unreserved attention to the administration of justice, to the encouragement of mechanical and other useful arts, and to the promotion of the general welfare. During his reign the Africans under his引导 were enabled to complete their conquests, and to gain the prize of the victors. The loss of Algeciras in 1342, and that of many important towns in 1344, followed this most signal victory, and the limits of the kingdom of Granada were thus considerably narrowed. Like most of his predecessors, Yusuf fell by an assassin. In the month of December, 1342, he was stabbed while at prayers in the mosque by a madman.

Mohammed V., the eldest son of Yusuf, inherited the virtues and abilities of his father. At peace with the Christians, he devoted himself to the cultivation of prosperity and welfare of his subjects, but rebellion, as usual, came to thwart his good designs. Some daemen-
tainted chieftains, whom the severity of his judgments had displeased, turned their eyes to his brother Ismail, and in the year 1329 attacked Mohammed’s palace, massacred the guards, and rushed into the royal apartments. Finding their victim gone, they tumultuously proclaimed Ismail their leader.

Ismail II. did not reign long. Scurcly had he occupied the throne for one year, when he himself fell a victim to the same fate as his unfortunate kinsmen, for he was one of those who had assisted in raising him to the throne, but who now besieged him in the Alhambra, made him prisoner in a sally, and had him put to death in July, 1360.

The usurper Abu Said did not long enjoy the fruit of his triumph. Being the son of the Cruel, King of Castile, and with the dethroned monarch Mohammed V., whose authority was still acknowledged at Ronda and the neighbouring districts, and seeing that he could not well resist the young fugitive, he fled to Seville, to do homage to the crown of Castile, and to hold his kingdom thereafter as an hereditary fief. Having obtained a safe conduct, he repaired to Seville with a small escort, and presented himself before the Castilian king. But either the riches which were bestowed on his escape, or the prejudice of his elder brother Yusuf, who had lost much of his power and influence, worked against him, and Pedro, awake the avarice of that prince, or, what is more probable, Pedro was in secret intelligence with Abu Said’s rival: the fact is, that, in violation of the rules of hospitality, the unfortunate monarch was put to death, and his body was dismembered.

By the death of the usurper, the throne of Granada devolved upon the legitimate sovereign. The remainder of Mohammed’s life was troubled only by one unimportant revolt, which was speedily suppressed. He took Algeciras in 1370, but drawing the town and eighty pieces of gold.

Yusuf II., surnamed Abu Abdallah, succeeded to his father. Scarcely however was he seated on the throne, when he narrowly escaped falling a victim to the rebellion of his son Mohammed, who, by accusing his father of being a flusterer, and the Christian interest a losing one, was a means of retrieving his necessities. The sedition having been appeased, Yusuf invaded Murcia (1391), but without much success. He was more fortunate in 1394, when the grand-master of Alcañiza, who had been to him a faithful assistant, submitted to him, and his body of cavalry was cut to pieces with his men, and himself slain. Yusuf died in 1395, with symptoms of poison.

No sooner had Yusuf expired, than Mohammed VI., the same son who had conspired against him, seized on the seceding party which had assisted in raising him to the throne, and a large portion of the frontier fortresses on both sides, the palace of Pedro, the marchioness of Salobreña, and a great number of other subjects and prisoners, Abu-l-hasan, the son of Abu Abdallah, surnamed Aguerir, or the left-handed, succeeded his father Yusuf. His first care after taking the reins of government was to renew the truce with the Christians, a circumstance which, united to his haughty and overbearing temper, made him exceedingly unpopular with his subjects. For several years, in fact, his reign was distinguished by a series of public amusements, he became so odious, that an insurrection broke out at Granada, his palace was invested and forced, and he had to escape to the court of his kinsman, the sultan of Tunis, in 1426.

The vacant throne was filled by Mohammed VIII. At the head of an army furnished him by the king of Tunis the dethroned monarch appeared the ensuing year in Andalusia, entered Granada, besieged the usurper in his palace, and beleaguered him in 1478. But although he pressed his force on the throne a second time, for Yusuf Ibn Alahmar, a descendant from the first kings of Granada, made an alliance with John II., king of Castile, and, having defeated the troops of his rival in 1435, marched on Granada, and entered the capital without opposition, while Mohammed fled to Malaga for refuge.

Yusuf IV. was immediately hailed king, but after a short and turbulent reign of six months, he died in 1435, and Mohammed, the dethroned monarch, who resided at Malaga, was proclaimed for the third time. Not even then was the country quiet. The alarmed king, having summoned his nephew, Mohammed Ibn Othmin, raised a commission among the people, seized on the Alhambra, took Mohammed prisoner, and confined him to a dungeon, where he passed the remainder of his days.

The usurper was usurpatively proclaimed under the name of Mohammed IX., but a new competitor for the throne, whose name was also Mohammed Ibn Ismail, and who was supported by the Castilian monarch, seized on the fortress of Montefrio, and maintained himself there in spite of all the exertions of Mohammed. During four or five years the kingdom of Granada was exposed to all the horrors of a civil war, increased tenfold by the devastating irritations of the Christians. At last, in 1454, the rebels, who had thus long sustained the ruin of the Moorish empire, having received reinforcements from John, king of Castile, and Abu-l-hasan, defeated the royal troops, and triumphantly entered that capital, from which the Moorish king was fortunate enough to escape in disguise.

This rebellion against the kingdom of Ismail, was then received without opposition, and reigned for twenty-one years in comparative tranquillity, and without the frequent revolts which had precipitated so many of his predecessors from their thrones. But the existence of the Moorish kingdom of Granada was threatened by a new revolt. In 1460, the inhabitants of Gibraltar, of the limits of the Moorish kingdom, now bounded by the mountains of Elvira and the sea. A peace was at last concluded in 1465 on condition that the king should hold his kingdom as a fief of Castile, and pay an annual tribute of 12,000 pistoles in gold. Mohammed died in 1460.

At the death of Ismail Ali Abul-hasan, the eldest son of Mohammed, succeeded him, but the state of affairs grew every day worse. In 1470 the governor of Malaga revolted, and did homage to the king of Castile. Granada, the capital, and even the harem, became the scene of those commotions and disorders that hastened the ruin of the Moorish empire. The sultana Ayesha, mother of Abu Abdallah, her presumptive to the throne, entertained a mortal hatred towards another of the king’s wives, a Spanish lady called Zoraya, and mother of two princes. At that time the two powerful states of Aragon and Castile were united, and the doom of the kingdom of Granada was sealed. The taking of Zahara (1481) by the generals of Abul-hasan, was the signal of a war of reprisals. The city of Alcântara, one of the bulwarks of the kingdom, was reduced in 1482; and the ensuing year several important fortresses opened their gates to the conqueror. In the meanwhile the city of Granada was the scene of popular commotions and civil war. The court was divided into two hostile factions—that of Ayesha and Zoraya, the two wives of Abul-hasan. The tribe of the Thurgis or Turgis (Torgira) supported the former; that of the Deni Serriyar (Abenserracs) the latter; one held the Alhazyn, the other the Alhambra; and the streets of Granada were stained with the blood of its inhabitants. Although Abul Abdallah succeeded his father, the Moorish king was himself taken prisoner by the Christians near Lucena, in April, 1453. Abul-hasan regained momentous possession of his capital in 1484, but he was soon disturbed by Abu Abdallah, who, having obtained his liberty again, dismembered the Moorish state.

At last the people of Granada, leaving the father and son to fight their own quarrels, appointed Abdallah, surnamed Zogul, or the brave, to distinguish him from his nephew, called Assaghir, or the small, to be their king. In the meanwhile Ferdinand was pushing his conquests. In June, 1484, he besieged and took Alora and Setenil, and defeated the Moors in two partial engagements. In 1495, Romila, Marbella, Coin, &c., fell into his hands: Loxa surrendered in 1497, and the siege of Granada, and the taking of Malaga. But the successes of Ferdinand did not awake the Moors to a sense of their danger, or induce them...
to put an end to their civil dissensions; for, profiting by the absence of Zagal from his capital, Abu Abdallah As-saghir marched upon Granada and usurped the throne.

This monarch, who is better known in the Spanish chronicles by the name of Boabdil, was the last king of Granada. In the spring of 1491 Ferdinand invested that capital, and after a siege of nearly a year, the standard of the cross waved on the red towers of the Alhambra. Thus ended, after many vicissitudes, an empire which had lasted for nearly a century.

Government, Institutions, &c.—The government and institutions of the Spanish Arabs may be said, with very few exceptions, to have been modelled upon the Eastern kingly systems. That was natural, and depends upon the all-power, possessed entire spiritual as well as temporal supremacy: he administered the government with the advice of his muizzar, or council of state; the office of hajab, or prime-minister, corresponded in the nature and variety of its functions with that of a Turkish grand-vizier. The provinces were governed by walis, or military commanders; and the administration of justice, for which there was no other base than the Koran and the traditional decisions of the companions of the Prophet, was placed in the hands of the Muftis, or learned interpreters of the Koran, in whom appeal, revoke their sentence. The sultan selected his successors from among his progeny, and not unfrequently associated one of his sons in the empire during his lifetime.

But although the principles of government were the same as in the East, and the vices of Mohammedan constitutions as prominent, yet the position of the Spanish Arabs, sur- rounded as they were by enemies, contributed to give to their institutions a vigour and solidity which they never possessed in the East. The khilaf of Cordova supported a large military force, always ready to take the field, and a numerous fleet to defend the coast of their empire from any maritime invasion. Agriculture and trade were fostered by means of wise and paternal regulations; populations increased; the revenue, which is computed at five millions sterling—an enormous sum for the time—enabled the khilaf of Cordova to surround their throne with a magnificence and splendour unparalleled elsewhere in the eastern capitals of the Mohammedan world.

Sciences: Literature: Arts.—It is now universally acknowledged in Europe that the Arabs succeeded to the sciences of the Greeks; that at a time when ignorance and barbarism prevailed through every part of the Roman empire, the Arabs, almost the last persons comprehended in the name of mankind, and that by a singular revolution in the history of nations, Europe became indebted to her Mohammedan invaders for the first lessons of science and learning. With what ardour and success every branch of knowledge was received by the East, we must admit we have perceived in various articles of the present work [Arabic; Abdallahif; Avempace; Asia; &c.]; it will now suffice to say, that to the Western Arabs especially, and to their settlement in a corner of our continent, we owe the preservation of most of the sciences cultivated by the Greeks.

The first conquerors of Spain, like those of the East, were a rude and illetterate people. It was not till the times of Abd-el-rahman, the first of the Beni Umeyyah (A.D. 135, A.D. 756), that any attention was paid to the cultivation of letters. That monarch and his successors founded colleges, formed public libraries, encouraged literary pursuits by their example and their liberality, and by their successive oratory. Thus the study of the sciences was introduced into their states, and continued to flourish to a later period in Spain than in the East. The limits of this sketch prevent us from taking a complete survey of Arabian literature; we shall therefore omit theology and grammar, the favourite and most usual studies of the mu'tazilites and al-ash'ariyites, and give a view of the sciences which the Spanish Arabs cultivated with the greatest success.

Poetry has always been the favourite pursuit of Eastern nations, and by the Arabs indeed it was cultivated with an ardour which amounted to passion; and Arabia is said to have produced more poets than all the rest of the world together. The taste was rather increased than abated in Spain, and the catalogues of Casiri show to what extent the muses were courted, since not only war, love, and satire, but grammar, theology, rhetoric, and even the abstruse sciences often form the subject of their compositions. Their poems consist of idylls, elegies, epigrams, odes, satires, and almost every other species of poetry which we have received from the Greeks and Romans, except epic poetry, which they never attempted. Besides these, the Spanish Arabs are considered as the inventors of a sort of idyll called maahahah (a word meaning in Arabic 'the variegated'), from the nature of the composition, which is a description in the most vivid colours of a woman's beauty, a flower, or any similar object. The most distin- guished among the poets of Mohammedan Spain are, Yahya Ibn Hudheyel and Ahmed Ibn-abd-rabbihi, who flourished in the ninth century; Yahia Ibn Al-hakem Al-ghazal, who wrote in 910 a poem called Defeat of Spain by Musa; Abd Taliib of Alcuin, who acquired the honorable surname of Al-mu'tenmbabi (the inspired); Ibn Abdun, who wrote the 'History of the Kings of Badajoz' in verse: Al- mustamad Ibn Abab, king of Seville; Almamir, king of Granada; and many others, whose poems have lately been translated by Mr. Wevers.

The historians of Mohammedan Spain are equally numer- ous, but their merits are generally not great. The best of them give us meagre statements of facts, unaccompanied by any reflection. We are informed, for instance, that Abii Beker Al-rasieriz, who flourished towards the end of the ninth century; Ibn Hayyan, who wrote a general history of Spain in 60 volumes; Mohammed Al-muddahifer, king of Badajoz, who left a history of his own times, equally unhistorical, and announces the introduction of illustrious Moslems; Ibn Bashkwil of Cordova; Ibnu-l-Abbbr of Valencia; and the vizier Ibnu-l-Kistaib, who wrote several valuable works on the history of the kings of Granada.

But it is in the physical and experimental sciences that the Spanish Moslems most excelled. From the estab- lishment of the Umeyyah dynasty, the greatest attention was paid to the study of mathematics, and all the other exact sciences. The works of Dioscorides, Hippocrates, Galen, Aristotle, and others, were translated by the Moslem writers, who procured them in Constantinople, brought to Cor- dova, and translated. Among the most eminent professors of philosophy, the following are particularly distinguished: Averroes (or rather Abii Abdallah Asaghir, who died A.D. 1198). Abdelmalek Ibn Zohr (commonly called Abkenohor), and the famous Ibn Bajib, or Aven- pace. Their knowledge of botany was considerable, and likewise that of medicine and chemistry, in both which sciences the Arabs added very considerable results, and were far more distinguished. A Spanish Arab, a native of Toledo named As-zarkal, improved the astrolabe, and invented an instrument for observing the motions of the heavenly bodies, which was long known in Europe by the name of an inventor.

The useful arts of life also engaged the attention of the Arabs. Agriculture, horticulture, and planting were encouraged by their kings; and the canals and other works for the irrigation of the land, which are so extant in the plains of Murcia, Valencia, and Granada, sufficiently prove their skill in this branch of art. The mechanical arts and manufactures were likewise carried to considerable perfection. The use of writing-paper was introduced by them into Europe; gunpowder was improved and first used by them in war; and there is every reason to suppose that to them belongs the honour of the discovery of the mariner's compass.


MOORS AND MUSULMANS. One of the districts into which the province of Bengal is divided. Its limits are ill defined, it is not possible to describe them with accuracy.

The district occupies the central part of the province, and is intersected by the Jellingby river, one of the most western branches of the Ganges. The population of the district,
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cluding the capital, was estimated in 1801 at 1,969,672, about two-thirds of whom were Hindus, and the remainder were chiefly Mohammedans.

The most valuable products of the soil are silk and indigo. The manufacture of these commodities and the manufacture of jute are the chief pursuits of the people. The export of cotton is also considerable.

Mr. Motion proposed to limit the number of the electors in the capital to 1,000.

MOORSBAD, the capital of the district, and long the nominal capital of Bengal, is situated in 24° 11' N. lat. and 88° 15' E. long., on the Bhagirathi, the most sacred branch of the Ganges, and is consequently one of the chief ports of the Ganges. The city was originally called Mucksoobad, which was changed for its present name in 1704, when Mooreshed Khoy Khan transferred it to the seat of his government from Deccan. It is an open town, and the buildings extend on both sides of the river through eight miles of its course. It is a remarkably ill-built town, presenting a great assemblage of mud and straw huts, placed without any regard to order, and intermixed with numerous trees. Near to the river there is a large flour mill, and along the river bank, that the city may be pronounced one of the most in appearance in all India. The most conspicuous building in the town is the residence of the nabob, a modern house in the European style, and the palace is in character with the general aspect of the place.

MOORSBAD, or more properly Cosimbazar, a town about one mile to the south, which may be considered its port, is a place of immense traffic, and especially in the months of March and April, when the taffetas, a native manufacture, are exported in great quantities, the town is crowded with boats bringing and conveying away merchandise: the river is not navigable during two or three of the driest months in each year. The number of houses of all kinds in 1814 was about 30,000, and the result of the computation usual in Bengal of eleven individuals to every two houses, the population of the town was 165,000. The city is the head-quarters of a circuit court embracing the surrounding districts of Bogipore, Purseah, Dinasegor, Rungapore, Rajeshahally, and Sindh.

MOOSE, or MOOSE DEER. [DEER, vol. viii., p. 351, et seq.]

MORAL SENSE is a name which, occurring first in Lord Shaftesbury's Inquiry concerning Virtue, and afterwards in Bishop Butler's Analogy of Christianity, was generally employed to denote the feelings with which we regard men's actions and dispositions. These feelings are known also by the name of feelings of moral approbation and disapprobation. This last name is frequently used, and is at some time more, and at other times less, advocated as a substitute for the phrase moral sense.

The phrase moral sense is objectionable, first of all, because the feelings for which it is proposed as a name have no analogy whatever to the external senses, from which the phrase is borrowed. The phrase therefore tends to give a wrong notion of the thing for which it is a name, an objection which is of itself altogether fatal to the use of the phrase, and for the purpose of which it is borrowed.

But there is yet another objection which is more important than the last. The phrase moral sense, as well as the phrase moral faculty, and the word conscience (which is applied only to those cases in which the object of the feeling is moral approbation and disapprobation), and other similar phrases and words that might be mentioned, tend to convey a notion of a separate independent principle in man from which he derives directly his moral judgments and feelings. And accordingly, in the works of some of the chief moralists, and the writings on morals to adopt this notion. The moral sense, or moral faculty, or conscience, is spoken of as something implanted within man by God, through which he instinctively distinguishes between moral good and evil, virtue and vice, and approves or disapproves of the actions of himself and of the actions of others. This notion of moral sense is external to all the observations that the text refers to. This notion of the moral sense, inasmuch as it is the moral sense, is the author of the excellent treatise De Locis Theologicis, and was a great reformer of the schools, from which he banished many futile and absurd questions.

While yet a youth, Morales translated a portion of the Pinax of Table of Cebes. But a religious enthusiasm rose...
MORALITIES, or MORAL PLAYS. [English Drama. I.ii. 667-685, 696-709.]

MORALS is a word used in several different senses, which it is desirable to distinguish. 1. It has been employed, together with the expressions moral philosophy and moral science, to denote the whole field of knowledge relating to the moral life. This is the meaning in which it is most generally used. 2. It also denotes, in the narrower sense, the practical part of moral science, including the knowledge of the right and wrong conduct, or the sciences of ethics and moral philosophy, being another department. This is in every way the most convenient use of the word, and is now generally sanctioned by custom. In this sense the word morals, it is convertible with ethics and with deontology, a word which, used by Mr. Bentham, indicates the subject-matter of the science it denotes than any word derived either from the Latin moror the Greek ethos (ethos), and which has also the advantage of being formed analogously to psychology, and to the names of most sciences. 3. Morals and ethics are at the same time names for that branch of moral science corresponding to the science which has just been spoken of the art of performing one's duty, or (as it is generally described) the art of living a good and a happy life. The art and the science being coextensive, and differing only in this, that the art is regarded as the result of a certain disinterested application of the same term to both conceptions.
Moral is, in current conversation, synonymous with morality; thus denoting not only the science and the art, but also what is the subject-matter both of the one and of the other.

For the purpose of giving a brief general account of morals, considered as the science of man's duty.

Morals then is a name for the science which teaches what it is man's duty to do and not to do, or (changing the phrase) what he ought and ought not to do; or, again, what it is right and wrong to do. Usually these pleasures and pains are understood as such that he should do, or lastly, that is virtue, which, on the most general view possible of the tendencies of a disposition or an action, conduces most to the happiness of mankind. That which, of any two acts thus viewed, conduces the less to this happiness, it is his duty not to do; or he ought not to do, or it is wrong for him to do, or lastly is vice. So, absolutely and unconditionally, of any disposition or action which tends, on the whole, to cause unhappiness. It is generally supposed the duties of morality are the science.

Two questions now arise, to which, before we proceed further, some sort of answer must be given. The answers to these questions, accordingly, by supposition follow: from two sciences from other sciences with which it is often more or less confounded, viz. mental science, or psychology, and theology, and also to point out the relations in which it stands to these sciences. The two questions are, what does human nature consist of, and what renders the pursuit of human happiness man's duty?

We shall answer the second of these questions first. It is man's duty to strive to increase the general amount of human happiness, because he knows, both from the adaptation of the law of nature to the creation of man, and the revelation of God's will, that God desires the happiness of mankind. The full and detailed establishment of this proposition belongs to theology, in its two departments of natural and revealed religion. Thus morals connected with religion are different, and we are not to consider here the means which have been more or less confounded, and this has taken place principally in two ways. God having revealed, in a general manner, the assignment of rewards and punishments, and, instead of treating them as something extraneous and accidental, have introduced them as essential parts of a moral system. Man has nothing to do with these rewards and punishments further than to determine what are the dispositions and actions to which they are respectively assigned; and this is determined altogether independently of the rewards and punishments themselves. Thus the way in which the provinces of morals and theology have been confounded (and here the confusion is complete) is by deriving all duty directly from the revealed will of God. Those who consult the Bible only, as being the depositary of God's revealed will, for a complete enumeration of their duties, clearly reject morals as an independent science, and merge it entirely in theology. It is needless to observe that the Bible, which, as Mr. Burke observes in a well-known passage, 'is not a code of the whole system of morality,' (Mr. Burke is not the only modern who uses this expression) 'is not a code of the whole system of human laws. As such, as the rules of living, and as the laws of God... man could not mistake his way,' cannot take the place of, any more than it can be superseded by, a science which systematically treats duty on the principle of conduciveness to the general happiness of mankind.

The question, what does human happiness consist of? remains to be answered.

And here too we can only generally indicate the mode of answering the question, rather than provide in detail the answer itself. Man is so framed as to derive his pleasures and pains from objects; these pleasures and pains are of two different kinds, physical and intellectual, in the last division being included the pleasures and pains of sympathy, and also those derived from the feelings of moral approbation and disapprobation. This is a mode of obtaining happiness by an act of the will, or by a change of the object of the will, or a state of the object of the will. These pleasures and pains are the simulation of desire, or the satisfaction of desire, the satisfaction of desire, or the simulation of desire.

Much confusion has been made between mental and moral science, first by treating the moral feelings (as they are called), or the feelings of moral approbation and disapprobation, as the immediate object of moral science; and secondly, by supposing these feelings to have no connection with conscience and moral sense, to be the only and all-sufficient criterion of morality or duty. The consideration of these feelings, as of all other feelings, belongs to mental science.

So far as they contribute to increase the number of human beings who come to the knowledge of God, the pursuit of human happiness, as moral science, is considered with this object in view. So far, on the other hand, as the proper direction of these feelings is concerned (which belongs to the act of education), it is clear that the enumeration and explanation of duties should be preliminary to the treatment of moral science. So far, on the other hand, as the proper direction of these feelings is concerned (which belongs to the act of education), it is clear that the enumeration and explanation of duties should be preliminary to the treatment of moral science.

Dr. Paley happily expresses it, 'a system of morality, built upon instincts, will only find out reason, and this is not an end in itself, but a means to an end, and that end is the good of mankind. It will invariably be found that whatever of good exists in any moral system professing to be founded on something else is really (though its authors imagine otherwise) derived from this source.' But if this be the case, it will be seen how important it is to inquire what this source is, and to determine whether it be properly called the moral sense

Much of the way in which human happiness consists of is due to the actions of others. There are three ways in which human happiness consists of: the actions of others; the actions of self; and the actions of nature. The actions of others contribute to human happiness by making the world a better place to live in. The actions of self contribute to human happiness by making the world a better place to live in. The actions of nature contribute to human happiness by making the world a better place to live in.

The man who has a moral sense is the man who is happy. The man who has a moral sense is the man who is happy. The man who has a moral sense is the man who is happy. The man who has a moral sense is the man who is happy. The man who has a moral sense is the man who is happy.
called benevolence leads to innumerable actions which, under innumerable different circumstances, it is man's duty to perform; and the name therefore stands as a general name for all these actions. To attempt to analyze and separately all these actions would perhaps not be practicable, and certainly not be desirable. Certain subclasses of them may be named, in explaining the beneficial tendency of the general disposition, or in (other words) the reasons why it is in the act to promote this disposition. This latter explanation will necessarily comprehend a general view of the advantages of the different actions which the disposition tends to produce.

There are many different principles of classification on which the system of duties may proceed. It is perhaps not too much to say that all duties may be deduced, with a greater or less exercise of ingenuity, as corollaries from any one which has been previously established. Thus Wollaston, in his 'Religion of Nature,' deduces all man's duties from the duty of truth. Hobbes, again, in his 'De Cive,' derives all morality from the duty of preserving peace. It is clear that the mode to be adopted of treating the subject, or, in other words, the mode of classifying our enumeration of duties, is a matter entirely of convenience; and, more convenient or less convenient, we may adopt the division of duties which has been partly acted upon by Dr. Paley, and which is perhaps the division most generally resorted to by writers on morals.

We shall treat of a man's duties, first, as they regard himself, secondly, as they regard others. It is necessary to remark, in order to prevent misconceptions, that one duty is a duty towards oneself, and another duty is a duty towards others, not on account of its tendency to produce happiness or misery, but because it is incumbent on oneself, both simply from the accidental circumstance of oneself in the one case and others in the other being, as it were, the outward object of the action or disposition which constitutes the duty. Those acts of ours, to quote from Mr. Mill, 'which are primarily useful to ourselves, are secondarily useful to others; and those which are primarily useful to others are secondarily useful to ourselves.' (Analysis of the Human Mind, vol. ii., p. 234.) Much of the good resulting from the performance of what we call duties towards ourselves consists in our being enabled to do good to others; and together with the happiness conferred on others by the performance of our duties towards them, is the happiness caused to ourselves by the gratification of our feelings of sympathy and of duty, and the additional security that is gained for the good-will of others towards ourselves.

I. A man's duty to himself consists generally in the preservation of the life with which his Creator has endowed him, and in the improvement, to the greatest degree in his power, of the faculties which he possesses. The first part of this duty is altogether negative. A man must abstain from wantonly exposing himself to danger, or, in other words, he must be prudent, and he must refrain from suicide. For when man has adapted his created world to the production of general happiness, he learns at the same time that life has been given for that purpose; and in foolishly risking or in laying violent hands upon his own life, he tends so far to mar God's object. He throws away his own means of attaining happiness in the way in which God has willed that he should attain it, and he destroys also his means of promoting the happiness of others.

II. In considering a man's duties towards others, we would adopt the subdivision of duties towards men generally as men, and duties towards men as members of the same society. These last duties will be again subdivided into duties towards members of the same political society or state, and duties towards members of the same family.

1. The duties towards men generally as men, or towards mankind, may be comprehended under the general names of benevolence or kindness, courage, sincerity, and humility.

In benevolence or kindness are included sympathy, or a general disposition to assist our fellow-men; pity, or kindness towards those in distress, and towards inferiors; gratitude, or thankfulness to those whose own means serviceable to others, turns pity to good account; gratitude; and charity, in the sense in which it is used by St. Paul, or the disposition to judge kindly of others' conduct. The vices opposed to sympathy, pity, generosity, gratitude, and charity, are selfishness, baselessness, cruelty, avarice, ingratitude, and malevolence or wickedness. Slanter is one principal form in which the last-mentioned evil disposition displays itself. The cultivation of the virtues comprehended under the name benevolence, is, of course, as difficult, as it is obvious and immediate, bearing on the happiness of others. At the same time it is not to be forgotten that happiness accures to the benevolent man himself from the gratification of his feelings of sympathy, and the joy doing good to others deprives others do to good.

Courage is valuable, as tending to give effect to our benevolence. It must not exist in such excess as to lead a man to adventure a great risk for a disproportionately small advantage. Perfect courage in this manner is a dead virtue, but Mill indeed has treated of courage as a particular form of prudence, a mode of treating of it which we cannot think proper.

Sincerity comprehends truth in words and honesty or justice in conduct. The manner in which the possession of these virtues, or the absence from the opposite vices of lying and cheating, is recommended by general utility, is obvious. Without the general observance of truth and honesty, men would have no confidence in one another, and there would be no safety, or at least no security of property. Mill indeed has treated of courage as a particular form of prudence, a mode of treating of it which we cannot think proper.

It remains to speak of humility. This is perhaps not so decidedly a virtue as its opposite, pride, is a vice. The evil of this last vice is manifest in its tendency to destroy others, and to diminish our disposition to do good. Tolerance of others' opinions, and reverence towards superiors as intellectual and moral worth, are forms of humility; and the advantage which is done both by others for which, when they exist, are fruitful of much good both for oneself and others.

2. The duties towards men as members of the same political society or state resolve themselves into the general dispositions of patriotism and obedience. The first is a virtue, the value of which has been often greatly overrated, and which is very apt to degenerate into the faults of nationalism. But nevertheless it is a virtue. As the general happiness is best pursued by each individual making his own happiness his own chief object, and again by certain body of individuals making the pursuit of their separate interests their chief object, patriotism properly so perverted, or the desire to benefit one's own country so long as this is not done in such manner as to injure other countries, is one valuable means of promoting the general happiness of mankind.

Of obedience towards authority in a state, and to the laws, it belongs to morals to speak only in the most general manner. The filling up of detail belongs to political science. The
science having determined what laws ought to be enacted, on the ground of conduciveness to general happiness, men have an obedience to them, without reference to their individual goodness, but for the sake of maintaining political society generally, and of preserving to men all the advantages which political society yields.

3. The duties towards others who are members of the same family consist altogether in affection which manifests itself differently according to the different family relations. Thus we speak of conjugal affection, paternal and maternal affection, filial affection, and fraternal affection. Conjugal affection implies fidelity. The proper exercise of the paternal and maternal affection is practical charity, but it may be said generally to show itself best in the proper education of the children. Into filial affection gratitude and reverence largely enter. Fraternal affection differs from friendship only in the peculiar relation under which they feel each other.

Thus have we given a brief general summary of man's duties. We have said nothing of duties towards God, which are generally made to form a separate division in treatises on morals, because we consider them, as so many others, as depending on God's special commands, and thus differ from the duties which we have enumerated, as we which come to know by observing their tendency to promote general happiness, belong to the separate duty of religion; in the other cases, it is a true, practical duty, but it may be said generally to show itself best in the proper education of the children. Into filial affection gratitude and reverence largely enter. Fraternal affection differs from friendship only in the peculiar relation under which they feel each other.

Also the duty of kindness to the inferior animals must be considered as the natural, the second sort of duty, which has been incultated. The pain which we believe that God wills shall not be inflicted upon us, men must believe too that he wills shall not be inflicted on other animals which he has created. The pain of which animals are susceptible we suppose to be of the same sort as that which men are susceptible; at least we have no means of conceiving any other sort of pain. And inasmuch as no different circumstances are introduced, there is no need for a separate division wherein to treat of our duties towards the animals.
lectual character. This was a glory the more enviable and rare inasmuch as it is derived solely from the services which he rendered to his country.


MORATIN, LEANDRO FERNANDEZ, son of the preceding, a greater dramatist than his father, and also one of the Arcades of Rome under the poetical appellation of Indiano, was born at Madrid, on the 17th of March, 1760, began to versify at six or seven years of age, and obtained at the age of eighteen a second prize or accessit from the Spanish Academy for his heroic poem entitled 'Tomás de Moraim,' the success of which, he secretly availed himself of the few leisure moments which he could steal from the mechanical occupation of a jeweller, to which his father had bound him, in order to divert his mind from poetry, and save him from the evils of poverty. Fortunately, his daily wages of eighteen reales (about 3d. of our money), which he gained by his humble occupation, enabled him, after the early loss of his father, to support himself and his mother. But soon losing her also, Moratin joined an uncle, who was a jeweller of the city, with whom he entered into business with the name of Leon, and learned, such as Melon, and Fathers Estain and Navarrete.

Directed by these distinguished individuals, his muse was further encouraged by the above Society with another accessit, and his 'Arca Poética,' a satire, which was required to be by the academical programme, against poetsasters. It is in fact a short Ars Poetica, far more methodical and critical than the previous metrical compilation of rules by 'Juan de la Cueva,' but it has been superseded in its turn by the more acute and didactic 'Poética' of Martinez de la Rosa, in 1827.

At the suggestion of Jorellanos, Moratin became secretary to Cabarrús, a high statesman and financier, who was sent, in 1786, by the Spanish government to Paris. On his return in 1789, he was a young poet, most modest and witty prose, the intruders into Parnassus, in his anonymous 'Derota de los Pedantes,' written in the fashion of the 'Viaje al Parnaso' of Cervantes. In the same year, the celebrated minstrel of his ode to the new king, Charles IV., with a small pension; but he was at last raised to independence by a much greater patron, 'El Príncipe de la Paz,' the great favourite of both king and queen, once the arbiter of the whole Spanish empire in both hemispheres, and now forgotten, though still living—Godoy. To Moratin's credit, it ought to be remembered, that he never kicked, as so many did, the fallen political lion.

But in 1790 brought out on the stage his play of 'El Viejo y a Niña' (which shows the consequences of great disparity of age in marriages), his first and most licentious drama. In 1792 followed 'La Comedia Nueva,' or 'El Café,' a very comic satire against stage absurdities and bad taste, which cannot but be translated on account of its local and national fusions. About this time Moratin travelled through France, England, Belgium, Germany, Switzerland, and Italy, both to observe society and the art of reflecting on it. He returned in 1796, and in 1798 he published his translation of Hamlet, which is a complete failure. More fortunately afterwards, he produced in 1803 'El Barón' (or the Impostor), which though not one of his best performances, eclipsed the similar piece of 'La Lugareña orgullosa;' in 1806, he represented, in the hypotetical young lady preparing herself for the cloister in order the better to carry on her intrigues; in 1806, 'El Si de las Niñas,' the subject of which also is a female who defeats all her mother's attempts at restraint, and the object of her previous instructors. It was represented twenty consecutive days, reprinted four times in the same year, and afterwards translated into many languages.

Elated by his popularity, Moratin was preparing some new pieces, when the suspensions of the Inquisition, which were then in force against him, checked his ardour. Although powerfully shielded by Godoy, he was last year 'Escuela de los Maridos,' Moliero's 'École des Mariés' (admirably adapted to Spain and modern times), was not represented till the 17th of March, 1812, under Joseph Bonaparte, who made him the royal librarian. On the restoration of Ferdinand in 1814, Moratin's property was seized, and himself reduced to actual starvation. Still, before the close of that year, friendship and gratitude, the prominent features of his character. induced him to prepare, for the benefit of the actor Blanco of Barcelona, 'El Medico a Pájaros,' a piece which was modelled, with proper adaptations, on Moliero's 'Médico maigré lui.' Beloved as he was in his country, the offer of official and consecrated persecutors made him leave it in 1817 for Paris, where he lived with his eldest friend Melon, till the restoration of the popular Spanish constitution in 1820, when he returned to Barcelona. After editing here his father's works in 1821, as stated in the preceding, he discovered the 'Bachiller Posadilla,' nor the follies of which, far from being exhausted, is discontinued by the author just before the appearance of the exuberant Lope de Vega and his prolific school. At the end of 1825 Moratin's health began to decline. Accompanied by Silvella, he returned in 1827 to Paris, where he died on the 21st of June, 1828, and was buried near Molére's monument in Père la Chaise.

Although a lyric poet of equal genius and more taste than his father, and though he had the credit of having improved the blank verse (verso libre) so suitable to the Spanish ear, Moratin's life is not the history of his work. Although he lived, and his plays are sometimes reprinted, and translated, it is chiefly to the control of judgment, deprived L. Moratin of that original freedom and national richness and freedom which are necessary for one who would aspire to be a first-rate poet. He is very roughly handled by the Foreign Quarterly Review (vol. ii., p. 595), but he is indulged, commented on, and translated into a fifth-rate collection, (vol. ii., p. 147). Galiano ('Atheneum,' 1834, p. 371), in his attempt to steer a middle course between the two critics, after acknowledging that L. Moratin 'accurately portrayed the manners and forms of Spanish society,' lowers his praises: 'El menos trecho de su existencia ha sido brillante. Moratin was a poet of firm and interesting plots.' Indeed, Moratin was the great object of former dramatists, L. Moratin was, perhaps, the only poet of his time that the public and his patrons desired to read, and the class of society. It would be out of place here to touch on the dispute between the classical and romantic schools, in which the two Moratins were involved.

The poetical works of L. Moratin have been purchased in 1824 by his friend Arnao, the greater part of them were published in Paris, in 1825, and reprinted by the same, in 3 vols. 12mo, in the following year. Part of this collection, 'Poesías Líricas de L. Moratin,' were printed in London by Calero, for Salva, in 1 vol. 12mo., 1825.

The splendid edition, in three thick vols. 8vo., by the Spanish Academy in 1836, of the 'Obras de Don Leandro Moratin,' was reprinted in 1835, at Barcelona, without the 'Orígenes.' This edition of 1836 does not comprehend 'El Auto de Páez Logros,' which appeared with notes under the name of the 'Bachiller Gines de Posadilla,' nor the following works, which remain in MS.: a translation of 'Canadea,' a fragment of his own life; 'Viaje a Inglaterra e Italia.' 'Catalogo de todos los Escribientes Españoles del género escénico,' in 'Balneario,' vol. i., 1833; various criticisms of dramatic compositions; abbreviations of which are rendered in the following years. The entire correspondence with Jovellanos; Llaguno, Cea, Forner, Signorelli, Conti, and others. All these works were being collected in 1831 for the press, by Salva and Silvella.

L. Moratin, the founder of the foundation of his fame, numerous editions have appeared. ('Obras de Martinez de la Rosa, vol. ii.: Cortegano, Juan Critical de D. L. Moratin, Barcelona, 1833; Revilla, Juan Critical, de D. L. Moratin, Sevilla, 1833; Brunet, Supplement au Manuel du Dramaturge, 1824; and C. H. Senior's Catalogue of Spanish Books, 1835.')

MORAVIA (in German, Maschren; in Slavonian, Morva) is a German province of the Austrian monarchy, situated between 48° 40' and 50° 25' N. lat., and 15° 10' and 17° 10' E. long., including in these limits Austrian Silesia, &c., an extent along the whole north-eastern frontier, and with
which it forms one province. It terminates in a point towards the north, and is bounded on the north-east by Prussian Silesia and Galicia, on the north-west by the Prussian counties of Glaz and Posen, on the south-east by Hungary, and on the south-west by Lower Austria. Its area is rather more than 10,000 square miles (of which Austrian Silesia is nearly 1800 square miles). The population was in 1853, 2,060,000, and in 1864, 2,110,146, of whom 470,000 belong to Austrian Silesia. The population of the province is into eight circles, viz. Olmütz, Brünn, Iglaú, Znaym, Hradisch, and Pernau in Moravia, and Trosch and Troppau in Silisia.

Atmo. and Climate.—Moravia is divided from Bohemia by a chain of mountains called the Bohemian-Moravian chain; from Prussian Silesia by a part of the Sudetic, called the Gesenke, or the Moravian chain; and from Hungary by the much higher and wider Carpathian mountains. Moravia is thus shut in by mountains on the east, north, and west; it is open towards the south, in which direction the Morava takes its course towards the Danube. The interior is traversed by other chains, so that more than half of the country is mountainous. One of the most remarkable of these latter chains is the range extending from Brünn to Olmütz, and thence eastward. It contains numerous caverns and hollows, the best known of which is the Malsche, sixteen miles north-east of Brünn, 500 feet long, 200 feet wide, and 960 deep, in the midst of a forest. The mountains however enclose fertile valleys, and the lower part of the province, about the centre and towards the south, consists of fine extensive plains, the soil of which is extremely fruitful. The Morava rises at 900 feet above the level of the sea, declining rapidly towards the south. The rivers are numerous: the largest is the Marsch, or Morava, which gave to the country the name which it has borne ever since the end of the seventh century. The Morava branches at the mouth of the Morava, and forms the boundary between Austria and Hungary, falls into the Danube above Presburg. There are no lakes properly so called, but numerous mere or ponds abounding in fish, of which there are 468 in the circle of Znaym alone, the total surface of which is said to be nearly 100 square miles. Moravia is subject, from the inequality of its surface, to considerable variation of temperature; but notwithstanding its elevation and northern latitude, it enjoys a milder climate in the Moravian than in the Bohemian provinces. The greatest heat in summer is 95°; in winter the mercury sometimes falls to 16° (Fahrenheit). The mean annual temperature at Olmütz is 48°.

Natural Productions.—The animals are horses, oxen, sheep, and swine. The people are especially fond of the feathered game and domestic poultry, especially geese, of which great numbers are exported. With respect to the productions of the soil, Moravia is one of the richest provinces of the empire. Of corn it has on the whole more than sufficient for its own consumption, especially an abundance of very fine wheat. Very large quantities of rye, barley, and oats are grown. Flax is the most important product, and it is nearly equal in quality to that of Prussian Silesia. Hemp is cultivated in great quantities, and Linseed, issued for manufactures, is also grown. The silk-worm is reared in large quantities, and sugar is made. The climate of Moravia is mild, and by order of the Emperor a law was issued prohibiting the laying out of new vineyards. The forests furnish vast quantities of timber for building and fuel, potashes, gall-nuts, &c. The pastures are extensive in the mountain districts. The mines are of great and various importance; some lead and silver are worked, but they were neglected in the troubles of the fifteenth and sixteenth centuries, and have not been resumed. At present iron, sulphur, vitriol, slimes, alums, coal, marble, pipeclay (meezerchunk), and some precious stones, pastes, &c., are worked.

Manufactures and Trade.—The woolen, linen, and cotton manufactures are very flourishing, and on a large scale, and furnish supplies for an extensive export trade to Germany, Hungary, Austria, Italy, and the Levant. The manufacture of thread is likewise considerable. Dyeing is carried on at Brünn, which is particularly celebrated for dyeing Turkish red. Moravia enjoys also the benefit of a great transit trade. The imports are colonial produce, wool, Vienna silks, Russian furs, tallows, wine, oil, porcelain, glass, &c.

Religion, Education, &c. The inhabitants are partly of Slavonian and partly of German origin, the former being about three-fourths of the whole. In 1823 there were 425,000 Germans, 1,399,000 Slavonians, 27,358 Jews, and 90 Gipseys, all professing the Roman Catholic religion, except in the Circles of the Convent, who are Lutherans, who have 54 churches; 14,000 Calvinists, with 17 churches, and the Jews have 54 synagogues. The Roman Catholics are under the archbishop of Olmütz and the bishop of Brünn: Silesia is under the bishop of Breslau. There is a university at Olmütz, re-established 1827; gymnasiums in every circle, for the study of the higher branches of learning; and about 1500 schools in the towns and the country, in which 130,000 children are educated. The charitable institutions, such as hospitals, asylum, for the blind, &c., are numerous.

History.—Moravia was subdued by the Quadi and Marcomanni during the existence of the Roman empire. When the Quadi went with the Vandals to Spain in 407, the country was occupied by the Sojri, the Rugi, the Heruli; and, about 546, by the Lombards, when a kingdom of Moravia, more extensive than the present province, was established and conquered by Charlemagne, who compelled Salmants, the king, to be baptized. After numerous vicissitudes, Swietopolk united all the tribes, and formed a kingdom, which is said to have been confederated not only Moravia, but Bohemia, Misnia, Brandenburg, Pomerania, Lusatia, Upper and Lower Pannonia, and Dalmatia. This prince died in 894, and was succeeded by his three sons. By disjunctions between them, and unsuccessful wars with the Boi (Bohe-nia), Moravia was much weakened and lost its independence in a great battle in 907. It was often a prey to the Hungarians, Poles, and Germans, and after many changes became subject to the kings of Bohemia. In 1327, when the emperor Ferdinand I. succeeded to the crowns of Hungary and Bohemia, Moravia was added to the possessions of the house of Austria, with which it has ever since been united. There are many considerable and flourishing towns in Moravia, some of which have been already described [Austerlitz; Brünn; and others; Olmütz; Troschau; Troppau; Znaym] will be described in their order. There are also other flourishing towns. In the circle of Olmütz is Sibenburg, a municipal town belonging to the Prince Liechtenstein, and, by a concession of Emperor Charles VI., has 500 inhabitants, who carry on flourishing manufactures of woolen cloth, linen, canvas, calicoes, and stockings. Prosznit, likewise a municipal town, belonging to Prince Liechtenstein, is situated on the river Plozza, in the province of Moravia; it has 825 inhabitants, and is a market town. It is the chief town. It has four suburbs and several churches. There are manufactures of fine cloth, kerseymere, and linen, several brandy distilleries, and the greatest corn-market in Moravia. The population is nearly 9000. In the circle of Brünn is Nicolsburg, the chief town of an extensive lordship belonging to Count Dietrichstein: it has a palace, with a library of 20,000 volumes, a fine cathedral and several other churches, a gymnasium, &c. It has about 12,000 inhabitants. Esgrab, which has a magnificent palace, the usual summer residence of Prince Liechtenstein, with one of the finest and most extensive parks in Germany, in which there is a celebrated tower in the Oriental style, 216 feet high, the finest orangery in Germany, and an immense collection of trees and plants. Esgrab has 1800 inhabitants. Iglaus, the capital of the circle of the same name, is a well-built walled town on the river Iglaus. It has 6 churches, a gymnasium, a well-endowed hospital, flourishing manufactures of woollen cloths, and large ironworks, particularly in corn and hops. The population is 14,000. The celebrated fortress of Spillberg, in which State prisoners are confined, is in the circle of Brünn.

Moravian Mountains. [Germany.] MORAVIA, or MORAVIAN BRETHREN, a congregation of Christians descended from the Bohemian bro-
than, who were a branch of the Hussites. [Hess, John.] The Bohemian brethren disentangled from the Calvinists, and refused to subscribe to the articles of covenant, besides that party and the council of Basle in 1433. They then formed themselves into a distinct community, called 'the brothers' union,' and as they were obliged to live in seclusion through fear of persecution, they were called by their enemies 'Griechenbumer' or Tragodians. They looked upon the Scriptures as their rule of faith, rejected transubstantiation, and were very strict in their discipline, excluding the vicious, the scoffers, and the worldly from their communion. They established among themselves a superintendence called the Bohemian synod, which consisted of several individuals, who were distributed into three classes, the begin-
ers, the proficient, and the perfect. They had their bishops, seniors, presbyters, and deacons, who administered their civil as well as ecclesiastical affairs. Like the Quakers they refused to do judicial service.

When the great Reformation took place in Germany, the Bohemian brethren sent envoys to Luther in 1522, who approved of most of their doctrines and discipline, and although he did not himself subscribe to the articles of faith, yet he said that it might be tolerated as it was. (Mosheim, Ecclesiastical History, sixteenth century, iii. 2.)

In 1547 most of the brethren were expelled from Bohemia by Ferdinand I., upon which they took refuge in Poland and Germany, and formed several congregations, especially at Marienwerder. They were united for a time with the Lutherans by the convention of Sendomir, but afterwards drew closer to the Calvinists at the synods of Ostrorog in 1560 and 1567, and adopted Calvin's creed, retaining their own discipline as that of the Old Quakers. (Ehren, Brevis Conspectus Doctrinae Pratrum Bohemorum, in Gerard's Miscellanea Groningiana, vol. vi.)

Under Maximilian II., those brethren who had remained in Bohemia and Moravia enjoyed full toleration, and they formed several distinct congregations. Among the greatest of these, and the only one that received the name of Moravian brethren. But in the subsequent Thirty Years' war, their settlements in Bohemia and Moravia were utterly destroyed, and, after various migra-
tions, their descendants were settled in 1722, by Count Zinzendorf, at the town of Herrnhut, in the province of Saxony, where their colony took the name of Herrnhut, from a hill in the vicinity called Hutsberg. They then established themselves as a new community under the name of the United Brethren, in which Protestants of every denomination were admitted, without being obliged to renounce their respective creeds, but on condition of conforming to their rules of discipline, which were derived from those of the Bohemian brethren. Since that time the community of the United Brethren has spread through Germany, Holland, the United States, and other Protestant countries. Wherever they have formed a new and distinct settlement, they have enforced their regulations of civil and religious discipline upon all the members of the community. The number of their adherents is considerable, and they number about in towns among people of different communions, where they form small congregations and have their own meetings. The Moravians do not assume to constitute a separate sect, and whenever they have been required as a body to state their creed, they have professed a general adherence to the confession of Augsburg, and their preachers, without pledging themselves to all its articles, reject any doctrine which is utterly repugnant to it. They avoid discussions on the spec-
cular questions, on the manifestations of God in Christ, and consider the life, sufferings, death, and merits of the Saviour as the foundation of their faith. They look upon the Scriptures as the revelation of God. They also believe that the Spirit of God continues to unfold the meaning of these books to men by his church, by these, regulating their conduct, and they make a practice of in-
voking it in circumstances of doubt and uncertainty, before coming to a determination. Each community, represented by its elders, presbyters, and deacons, provides for the spir-
ituai wants of the members by fict churches, schools, hospitals, and other public establishments, and the funds for these objects are raised partly by subscriptions and partly by rates levied on the householders. In other respects every family in the community carries on its private affairs, and maintains its wealth and properties. The erroneous notion of their having community of goods arose from the circumstance that some of their first settlers in North America, being few and forlorn among strangers, found it convenient for a time to put their earn-
ings into a common stock.

The principal settlements of the Moravian brethren are

Herrnhut in Lusatia, which is still their head establishment;

Niesky, in the same province, where they have a college, as well as at Gnadenfels in Silesia; Christiansfeld in Holstein;

Neuwied on the Rhine below Koblenz, a flourishing settle-
ment in a beautiful situation; Mammern, in the canton of Neuchatel in Switzerland, where they have an institution for boarders; Zeyt near Utrecht; Fulneck in Yorkshire;

Fairfield in Lancashire, Ockbrook in Derbyshire; Gracehill in the county of Antrim in Ireland; Sarepta in Southern Russia near Tchernigov; Eton and Nazareth in Penn-
sylvania, in the latter of which places they have a college; and Salem in North Carolina.

One of the principal objects of the Moravian institution is to send out missionaries among the heathen. They have missionsaries among the Caiffens and Betchouanards of South Africa, among the Delaware Indians and the Cherokee Indians in North America, among the Eskimans of Labrador, and among the negroes of the West Indies. The Moravians are sometines, in their dress, and, like the Quakers, reject all gaudiness and ornament. Pro-
miscuous assemblages of the two sects are forbidden among them, as well as plays, games, and dancing. They have however church music and singing. The unenfringed heretics, by their admission to the communion of single brethren, under the superintendence of an elder, and there are likewise houses for single sisters and widows. Marriages among members of the society must be sanctioned by the elders. They wear no mourning for the dead, but, after making a short, happy release from earthly bonds, their expression on such an event is, that the deceased is gone home to the Lord.

The Moravians in general bear a very good character: they seem to have realised, better than any other Christian sect, that piety and charity; they are not exclusive, and the differences which exist among the various Protestant sects seem among them to be smoothed down and almost obliterated. They are not very numerous. In a long and very minute article concerning them in the 'Encyclopedia Americana,' under the heading 'United Brethren,' it is stated that there are not more than 14,000 professed members in Europe, and about 4000 in America. But these members are independent of a much larger body of Protestant reformers, called the Brethren of Peace and Liberty, who, without having subscribed their articles of discipline, or forming part of their congregation, either live along with them, or are connected with them, and receive instruction from their preachers, besides the converts whom their missionaries have made among them. Each has written a history of the Moravian or United brethren.

MORAY, or MURRAY FRITH, is a gulf of the German

Ocean, bounded on the north-west by the counties of Ross and Cromarty, and on the south-east by those of the Forth and Humber. Its greatest breadth is 47 miles, and its breadth 36 miles. The gulf extends nearly in a straight line from Kessock Ferry, opposite the town of Inverness, to Tarbet Ness, on the north-western extremity of Ross-shire, a distance of thirty-two miles.

Midway between these points is the entrance to the frith of Inverness, or the gulf of Moray, which may be considered as the frith at its entrance. At Inverness the breadth is a mile, and not much more at Fort George, in consequence of the channel being just there narrowed by Chanonry Point. The frith of Inverness, or the gulf of Moray, extends from the head of Loch Beauly. At the head of this loch is the estuary, or embouchure of the glass, and the north-eastern extremity of the Caledonian Canal unites with it a little to the west of Inverness. Vessels of large burthen come up to Inverness, where the anchorage is safe. The length of the gulf is of great value. In the year 1834 this frith had 19,556 barrels cured at Banff, the principal part of what had been taken in the Moray Frith. The Gaelic name of the Moray Frith is Farar, or Varar; the latter of which names applies to other counties.

(Map of the Shires of Ross and Cromarty in the New Statistical Account of Scotland; McColloch's Stat. Acct. of Brit. Empire.)
The northern side of the department is occupied by the lower slopes of the Monts d’Arrée, part of the great Armorican chain: a range of low hills branching off from these, leading running north-east, cuts the valleys of the Oust and Blavet. The whole department belongs to the great district of the primitive rocks, which occupies the north-western extremity of France. The only metal procured is iron; some authorities add lead, but there are no lead-mines known. A few wroth. All of them are rivers. A few wroth. And there are eight furnaces for making pig-iron, and eight forges for making wrought-iron. The fuel employed is charcoal. Slate is quarried, and rock crystal, potters’ earth, and a kind of sand which resembles emery are procured. There are considerable salt-mines in the marshes along the coast, and a number of mineral springs.

The rivers run from north to south, and from the proximity of the mountains in which they rise, to the sea, are comparatively small. The Ille has its source in this department, flows into the adjacent department of Finistère, and at its mouth forms the boundary between the two. The Blavet rises in the department of Côtes du Nord, enters this department on the north side, and flows to Pontivy, where it becomes navigable. From thence it flows south-west into the sea opposite the island of Rost, whose whole course is about 70 miles, of which 34 miles are navigable. It receives the Est and the Scorff, the latter just at its mouth, which forms the haven of Port Louis. The Aural and the Arz, two gulfs of the Bay of Brest, near the Aural, is a more important stream than any of the foregoing, touches the boundary at its junction with the Oust, and after flowing about 5 miles along the border, has the rest of its course (of about 24 miles) within the department. It is navigable in all the part of its course by the people of the department. It rises in the department of Côtes du Nord, and entering this department on the north side, flows south-east past Rohan, Josselin, and Malstroit (where it becomes navigable), into the Blavet; the last six or seven miles of its course are on the border of the department. Its whole length is about 70 miles, for 24 miles of which it is navigable. The Lie, the Trinité (which receives the Due), the Claye, and the Aff flow into the Oust; the Aff forms for some distance the western border of the department.

The canal from Nantes to Brest enters this department on the east side near Rieux on the Vilaine. The summit-level of the part between the Vilaine and the Blavet has a length of a mile and a quarter; the length of the canal from the Blavet to the summit-level is about 65 miles, with a rise of nearly 400 feet obtained by forty-two locks. The length from the summit-level to the Blavet is not more than 7 or 8 miles, with a fall of 300 feet obtained by eighteen locks. The canal, from the summit-level to the Blavet, has a mean slope of 1 in 800, and is navigable for sheep and cattle. After leaving the Blavet the canal follows the valley of that river into the department of Côtes du Nord.

The inland navigation of the department is thus given in the Government report:—Vilaine, 235 miles; Oust, included in the navigation of the canal from Nantes to Brest; Aff, 4 miles; Arz or Arz, 3 miles; Blavet, 9 miles; upper part of the Blavet, called Canal of the Blavet, 37 miles; Scorff, 9 miles; canal from Nantes to Brest, 80 miles; total 168 miles.

There are seven Routes Royales, or government roads, having an aggregate length of 348 miles, viz. 186 miles in repair, 56 miles out of repair, and 64 miles unfinished. The principal road is that from Paris to Lorient, which is made from the gate of the town of Groix, (Ille et Vilaine), and entering this department on the east side, runs by Plœrmel, Josselin, Locminé, Baud, and Hennebont. Roads run from Vannes to Nantes (Loire Inférieure) by Muzillac and Roche Bernard; to Dinan (Côtes du Nord) by Port de Ploërmel, and Quimperlé; to Guingamp and Lannion (Côtes du Nord) by Locminé and Pontivy; to Quimper and Brest (Finistère) by Avaray and Hennebont; and a branch of the last-mentioned road runs to Port de Ploërmel. These roads, and all others, are kept in fair repair: the by-roads and paths have an aggregate length of nearly 3000 miles.

The air of the department is temperate but moist.
prevail along the coast. The valleys which intersect the hills on the north side of the department are frequently very fertile: and there are extensive plains along the coast, which produce abundant harvests. The wide bights which are characteristic of Bretagne form more than a third part of the whole department. About 650,000 acres (above one-third of the whole department) are under the plough. The grain chiefly cultivated is rye; but buckwheat, millet, oats, and a little wheat are also grown. These strong oats are obtained by the peasants, lentils, flax, and hemp are extensively cultivated. There are about 42,000 acres of orchards and garden-ground: the fruit chiefly grown is the apple, which is used by the drapers, and there are about 1,700 acres of vineyards, from which a little wine of ordinary quality is produced. The woodlands have an extent of about 85,000 to 90,000 acres. The meadow-land comprehend more than 176,000 acres, beside nearly 30,000 acres of heath or pasture-ground. Strong draught horses, horned cattle, and sheep are numerous. A government stud is kept up at Lanconnet or Langonnet. Bees are numerous, and their honey is considered excellent. The rivers and the coast abound with fish; and the coasts are likewise frequented by great numbers of water-fowl.

The department is divided into four arrondissements, as follows:

Area in
Sq. miles
1831. 1836.
Vannes. S.E. 633 119,774 125,898 74
Pontivy. N.W. 660 98,976 101,345 49
Lorient. 129,452 133,307 48
Plœrmel. N.E. 643 86,314 89,193 61
2709 433,522 449,743 229

In the arrondissement of Vannes are—Vannes (pop. in 1831, 8682 town, 10,395 whole commune; in 1836, 11,623 commune) [Vannuz], on the coast, with the town of Morbihan; Sarzeau on the Scorf (pop. of whole commune 6126), on a peninsula which called the peninsula of Ruis, between the gulf of Morbihan and the mouth of the Vilaine; Musilac, near the mouth of the Vilaine; Roche-Bernard and Rieux, on that river; La Gacilly, on the right bank of the Gourin; Sarzeau on the Queugnebret (pop. 3561 commune), between Vannes and Rochefort. Sarzeau is chiefly inhabited by fishermen. In the peninsula of Ruis, near the town, are the castle of Suscinio, built by Anne, the last duchess of Bretagne, and the village of St. Gildas de Ruis, of the monastery of which Abelard was abbot. La Roche-Bernard was formerly one of the nine baronies which sent deputies to the states of Bretagne. It is the centre of a grazing district in which many cattle are reared; the inhabitants manufacture pottery and trade in linens.

In the arrondissement of Pontivy are—Pontivy (pop. in 1831, 4112 town, 9596 commune; in 1836, 6378 commune), on the Blavet; Baud (pop. 5120 commune), on the Yvel; Le Bocq, on a small feeder of the Yvel; Guenstern, on the Scorf; and Le Faouet and Gourin (pop. 3626 commune), on the Elle or its affluents. Pontivy owes its origin to a monastery founded here, a.d. 660, by St. Joas, brother of the Bishop of Jaisnel, one of the early kings of Bretagne. The town was in the feudal ages capital of the duchy of Rohan; it consists of two parts—the old town, in which are the remains of a castle belonging to the dukes of Rohan, and the new town, which consists of a few streets. There are fine barracks, a theatre, and a house for the sub-bishop, a dyer's house, and some pleasant promenades. During the Imperial régime the town of Pontivy bore the name of Napoleonville.

In the arrondissement of Lorient are—Lorient (pop. in 1831, 14,396 town, 18,322 whole commune; in 1836, 18,975 commune) [Lorient]; Port Louis (pop. 2024 town, 2591 whole commune), and Hennebont (pop. 3360 town, 4477 whole commune), on the Blavet; Plouay (pop. 3816), between the Blavet and the lovely river of Artz, with its affluents; Roquefort (pop. 3724), on the river Auray; and Pluvigner (pop. 4584), between Le Faouet and the Blavet. Port Louis was built by Louis XIII., in an advantageous situation for trade, at the mouth of the Blavet, to which, as well as to the town, the name of Port Louis was given. The peninsula is in the middle of the bay and is defended by fortifications and a citadel which command the approaches to the town and the entrance of the port. The inhabitants are engaged in trade and in the sardine or pilchard fishery; a good deal of garden-ground is cultivated in the vicinity.

During the Revolutionary period Port Louis was called Port Liberté. Hennebont was antiently a place of great strength, and derives interest from the gallant defence which it made here by Jean de Montfort, son of Jean de Montfort, an archbishop, against the forces of Charles de Blois, competitor with her then captive husband, Jean de Montfort, for the ducal crown of Bretagne. [Bretagne.] The antient massive walls still remain in tolerable preservation; they form turrets and machicolations of which are in some places almost entire; one of the antient gates is used as a prison. There is an antient Gothic church at Hennebont, but not within the antient walls. During the Revolutions the river Le Roche-Bernard was in and around the town sustained considerable damage. A large church and convent near the town were almost entirely destroyed; and of the abbey de la Joie, a fine building in the vicinity, only the fortified entrance and some beams remain. The town is the residence of a bishop, on the site of an antient fort. Many interesting buildings and religious houses were destroyed during the Revolution. There is a Carthusian conven near the town, where repose the remains of several of the royalists who perished in the battles of Quiberon. An interesting slab is inscribed to their memory. The altar of St. Anne in this conven is much restored by the neighbouring peasantry. Near Auray, on the coast, is the great Celtic monument of Carnac. [Carnac.]

In the arrondissement of Plœrmel (pop. in 1831, 2271 town, 4851 whole commune; in 1836, 324 commune), and Mauron (pop. 4229), on the Duthenc, on the river La Trinité; Rohan, Jesselin (pop. 2435 town, 2654 whole commune), and Malafret (pop. 1657 town, 1751 commune), on the river V. A. de Gourin and Gourin; Plœrmel was formerly a town of consequence; the dukes of Bretagne sometimes held their courts there, and many of them were interred in a Carmelite monastery of which the walls alone exist. Plœrmel was seated on the tides of the river, but these, by the ebb and flow of the tide, are considerably damaged. There is a Gothic church connected with an Ursuline nunnery, which has some fine-stained-glass windows, and the tombs of two of the dukes of Bretagne, removed from the walls of the town. The tombs are finely sculptured, and are in a perfect state.

There are at Plœrmel a high school and an agricultural society. The townsmen trade in linen, corn, thread, butter, paper, leather, and cattle. Jesselin has the patronage of the Earl of Olivier de Clisson; the grey walls are on the summit of a lofty rock overhanging the river. Near the castle are many antient houses and an antient Gothic bridge. The castle received several additions from Anne, the last duchess of Bretagne, when she was married to Henry V. and was besieged by the English, in 1450, and the antient walls sustained considerable damage. There are another church in the town, half ruined. There is a 'penitentiary house' capable of receiving five hundred persons, designed for those who are desirous of returning for awhile to meditate upon their sins. Between Jesselin and Plœrmel between these towns and above the river there is a field called 'cause of the duchy of Quiberon,' and lying between the mouth of the river V. A. and the coast, and intersected by the small feeder of the river called the river Boffin. The mountains here are rich in heath and moor, and abound with sarsdine and pilchard fishery. The soil is more deficient in this district than on the whole of the coast of France; there is no flax, hemp, or cotton, and a great deal of poor corn, thread, and tallow are produced, and are exported to the countries of Britany and the coast of France. There are great quantities of flax, hemp, and tallow produced, but the fibre or mull as it is called, is exported to the countries of Britany and the coast of France.
the military census of 1828-29 who could read and write, was fourteen in the hundred, the average of France being thirty-nine. In early times this department constituted the territory of the Veneti, by far the most powerful of the maritime states of this part of Gaul. Some portions along the border of the department may have belonged to the neighbouring nations, the Osismi, the Curiositi, the Redones, and the Nannetes. The Veneti possessed almost the only havens that offered a secure shelter along a considerable extent of coast, and this advantage, with their superior skill in maritime affairs, enabled them to acquire the sovereignty of the nation. They regularly resided in the coasts, and tax the tributary. They used vessels of small draught of water, suited to the shallows which they had to navigate, and which took little damage when left afloat by the receding tide: with their lofty stern and prow, and the general strength of the coast, they enabled them to ride out the tempests to which they were exposed. In these vessels the Veneti carried on a trade with the British Islands and with other parts. Their towns and name Narbo, in which is still retained the Sola, mouthed into the sea, surrounded by banks and shallows, which, being covered by the flood-tide, admitted of no assault by a land-force, and, being left by the ebb, kept off the attacks of a hostile navy. Confiding in the extensive confederacy of the Veneti, Belloq, a Roman by birth, and of no small skill and in the advantages of their situation, they ventured to bid defiance to Caesar (a. c. 56). But the extraordinary genius and resources of the Roman general overcame all obstacles, and enabled him to achieve the reduction of the Veneti to the primary obedience; and Munda (Cic., De Veneto, c. 7-16.) In the Roman division of Gaul, the Veneti were comprehended in the province of Lugdunensis Tertia. The town of Dariourium, or as it is variously written, Dariorium or Darthorium, was the capital of the Veneti, and assembled, a little to the north of Narbo, the chief of that nation. It is represented by the modern Vannes, which has risen from its ruins; but it is probable that the site of the ancient town was two or three miles from Vannes, at a place called Dauville.

Bagry, volatile, and generous to profusion, and with a mind as full of care as it was free from regard for detail, he was an object of amazement to all who knew him. But the spirit of adventure and inconstancy, of courage, ingenious expedient, and adventurous stratagem, Peterborough was equally fitted to dazzle in society and in the field. But, both for civil and military life, his qualities were more bright than solid; his actions were the result of an inordinate passion for fame; and in the gratification of this pursuit, his means were as unscrupulous as his appetite was greedy. With strong impulses of patriotic feeling, therefore, he was often regarded of his country's good; with the persuasive qualities of a diplomatist, he wanted the dignity and consistency of a true statesman; and with undoubted genius for war, he displayed the qualities of an admirable partisan rather than those of a great general.

A lively sketch of the character of Peterborough will be found in Horace Walpole's 'Catalogue of Royal and Noble Authors.' The political and military actions of his life are to be gathered from Burnet's 'History of his own Time'; from the 'Account of the Earl of Peterborough's Conduct in Spain,' by Mr. Ripon, and from Mr. Carlyon's 'Memoirs.' A full account of his whole career is contained in the modern compilation of the 'Lives of British Military Commanders.'

MOR, SIR THOMAS, born in Milk-street, London, in 1698, was the son of Sir John More, one of the justices of the court of King's Bench. He was educated at St. Anthony's School in Threadneedle-street, under Nicholas Hart, a person of some celebrity in his day, and about the fifteenth year of his age, went to Oxford. Here he gained a reputation for eloquence and oratory, and in the house of Cardinal Morton, archbishop of Canterbury, where he became known to Colet, dean of St. Paul's, who used to say, 'there was but one wit in England, and that was young Thomas More.' He came to Oxford. He had rooms in St. Mary's Hall, but carried on his studies at Canterbury College (afterwards Christchurch). Here he studied Greek under Groccy, which was then publicly taught in the university; though not without great opposition. During his residence at Oxfrod, he became the intimate friend of William Burnet, who resided there during the greater part of 1497 and 1498, and formed an intimate friendship with More, which continued during the whole of his life. It was also at Oxford that the greater number of his English poems were written. Some of his later works of verse and translation, which are known by the name of 'The Irishman's Sacrifice,' are spoken of by Ben Jonson as some of the best in the English language.

After More left Oxford he prosecuted the study of the
law, first at New Inn, and afterwards at Lincoln's Inn, and some celebrity for his legal knowledge. He was appointed reader at Furnivall's Inn, where he delivered lectures on the law for three years; and about the same time he also delivered lectures at St. Lawrence's Church in the Old Jewry, on the work of St. Augustin, 'De Civitate Dei,' which was sold by the London bookseller, John Hales, for thirty-six guineas. It is said that he thought of taking orders; but he finally relinquished this intention, and was called to the bar, though at what time is uncertain.

More appears to have soon acquired an extensive practice. He was appointed one of the under-shipers of London, which at that time was an office of considerable importance, since the under-shipers was judge of the sheriff's court, which then possessed far greater jurisdiction than it does at present. More was considered one of the most eloquent speakers of his day; and his reputation became so great towards the latter part of the reign of Henry VII, that it is said that there was no case of consequence before any court of law in which he was not engaged as counsel. About the same time he was elected one of the burgesses of parliament, in which capacity he was also granted a seat which had been demanded by Henry VII. for the marriage of his eldest daughter. In consequence of this opposition More incurred the displeasure of Henry VII, a prince who never forsook his anger, and he was obliged to go into exile soon afterwards, More bad determined to leave the country.

After the accession of Henry VIII, More was called upon to take a still more active part in public affairs. In 1514 and 1515 he was sent, in conjunction with Tunstall, master of the rolls then in vacancy, and afterwards bishop of Durham, to Burgundy, on business of considerable importance. In 1516 he was made a privy-counselor, and received from Henry marks of the greatest favour. So great a favour had he become, that the king used frequently to come to his house unexpectedly, and spend the day with him.

About this time More composed his 'History of Richard the Third,' and his 'Utopia,' the work by which he is most known to modern readers. It is written in very good Latin, and was published first at Louvain in 1516, and at London in 1518. The Latin version is said to have delineated More's ideas of a perfect commonwealth, which is placed in the imaginary island of Utopia. The society which is supposed to exist in this island is constructed on the principle that no one in the state shall have a right to separate property, since separate property is said to involve the unequal distribution of property, and thus occasions great suffering to those who are obliged to labour, and mental deprivation to those who live on the landed property. It is difficult to determine whether the opinions expressed in the 'Utopia' are to be considered as More's real sentiments.

In 1519 More resigned his office of under-shiper, and in 1521 he was knighted, and made treasurer of the Exchequer. He was extensively employed in various public missions to France and the Netherlands; and he bitterly complains to Erasmus, in many of his letters, of being obliged to leave his friends and his books to discharge what were to him the most disagreeable commissions.

In the parliament which met in 1523 More was chosen speaker, and in the discharge of his duties he offended Wolsey, who endeavoured to injure him in the king's opinion. Henry however still continued to show the greatest marks of favour to More, and, as a proof of his esteem, appointed him, in 1525, chancellor of the duchy of Lancaster.

On the downfall of Wolsey, More was made chancellor, on the 25th October, 1529. He discharged the duties of his new dignity with the greatest impartiality and integrity, and was strongly disliked by his bitterest enemies, who endeavoured to bring against him the charge of not upholding the true exercise of power. The only charge ever brought against him was first promulgated by Fox, in his 'Martyr's History,' and copied by Burnet, in his 'History of the Reformation.' According to these writers, More was guilty of great enormities when he was chancellor; but even if this were true, it could not justly be brought as a serious charge against More's character in an age in which all parties that had the power persecuted their opponents. But we have, on the contrary, this testimony of Erasmus, that 'whilst More was chancellor no man was hanged for an unpertinent dogma,' which is confirmed by More's own express declarations in his 'Apology,' published in 1533, after his downfall from power, when he was surrounded by enemies, and his assertions, if false, could have been easily contradicted.

More continued chancellor till the 16th May, 1532. Henry had doubtless advanced More to the chancellorship with the hope that he would assist him in his divorce, and marriage with Anne Boleyn, and therefore pressed him strongly to bring about the annulment. The pope, however, sincerely attached to the Roman Catholic Church; he looked with a certain degree of horror upon a project which was denounced by the supreme head of the Church, and therefore begged Henry to excuse him from giving an opinion on the case. More was therefore placed in a difficult position, and it bad become evident that Henry had determined to effect the divorce, and would soon require the active co-operation of his chancellor. More asked and obtained permission to retire from the office.

From this time Henry, who never seems to have resented any former friendship when his purposes were in the least degree thwarted, appears to have resolved upon the destruction of his old favourite. More was originally arrested in the bill of attainder which was passed against Elizabeth Barton and her accomplices; but damage it was certain that this case was so clear, that his name was afterwards omitted. The court party however soon found an opportunity of gratifying their vindictive master. By a law passed in the same month, More was also accused of two crimes, viz., the refusal of an oath, and the doing of a public service without his consent, as being a public lawyer. The first was committed before the Tower; and the same year two statutes were passed to attain More and Fisher [Visher] of imprisonment and loss of goods. More remained in prison during thirteen months, and in 1534 he was committed to the Tower; and in the year 1535, he was brought before the king's council, and refusing even to induce him to take the oath and also to subscribe to the king's ecclesiastical supremacy; but as he refused to do so, he was, at the end of that time, brought to trial for high treason. He appears to have been indicted under the statute alluded to above, which was in high treason to do anything to the prejudice of Henry's lawful marriage with Queen Anne, and also for refusing to admit the king's ecclesiastical supremacy; and although the evidence against him appeared strong, and his conduct and guilt appeared to be clear, he was nevertheless condemned to death. He was beheaded on the 28th of July, 1535, and met his fate with intrepidity and even cheerfulness.

More's character was singularly faultless. His sweetness of temper and amiable disposition are frequently mentioned in his letters, and his fidelity and integrity are peculiarly marked. His annals were composed to inculcate the principles of the Christian religion. All his inhabitants, male and female, applied their leisure to liberal studies and profitable reading, although piety was their first care. No wrangling, no angry word, was heard in it; no one was able to commit fault without being sufficiently discovered and an- cored; and it was his love of truth alone which preserved his death. In private life his conduct was exemplary; he was a kind husband, an affectionate father, and a faithful friend.

Erasmus, who often visited his house, says, that 'with him you might imagine yourself in the academy of Plato. But I should do injustice to his house by comparing it to the academy of Plato, where numbers and geometrical figures, and sometimes moral virtues, were the subjects of discussion, and were more immediately connected with the exercise of the Christian religion. All its inhabitants, male and female, applied their leisure to liberal studies and profitable reading, although piety was their first care. No wrangling, no angry word, was heard in it; no one was able to commit fault without being sufficiently discovered and an- cored; and it was his love of truth alone which preserved his death. In private life his conduct was exemplary; he was a kind husband, an affectionate father, and a faithful friend.

MOR 402 MOR
Hannah was from the beginning the most remarkable of
the group. She wrote verse at a very early age, and in
1773 was prevailed upon to publish a pastoral drama,
which was entitled 'The Search after Happiness.' In the
next year she published a regular tragedy on the story of
Regulus, and two Tales, in verse, and her turn being then
thought by her friends to incline to the drama, means were
taken to obtain an introduction for her to Garrick, by whom
she was highly favoured. This introduction was followed
by the acquaintance of Dr. Johnson, Burke, Sir Joshua Reynolds,
and other persons who at that time formed what was con-
sidered the best literary society of London. During this period
she contributed towards a number of tracts, 'Percy' and
' The Fatal Falsehood,' with other pieces.

Such was the beginning of the life of Miss Hannah More.
But educated as she had been with a deep impression of
the truths of the Christian religion, the life which she now
led appeared to be a thing unlike the life she had
formerly fitted a creature with such glowing and peaceful
before it as those which Christianity opens to man. She therefore
determined on forsaking the drama and retiring from Lon-
don to devote herself to a life befitting better, as she thought,
the principles on which she was founded. In the next
transient state she produced her 'Sacred Dramas,' a publi-
cation more favourably received perhaps than her former
works. By the year 1786, when she was full forty years of
age, she had effected her plan for retiring into the country;
and much to the regret of her friends, who had been
acquainted with her her life at this place was passed in cir-
cumstances made easy by the profits of her various publica-
tions, which were considerable, and in the enjoyment of the
kind treatment which had been common to most of them.
The work in which the serious turn which her mind had taken first manifested itself was her 'Thoughts on the
Manners of the Great,' 1789; which was followed in 1791 by her 'Estimate of the Religion of the Fashion-
able Sex.' In 1793 appeared a pamphlet on 'The Education
of Modern System of Female Education.' Not long after
the appearance of this work there was an intention, which Port-
tus, then bishop of London, is supposed to have greatly
promoted, of committing to her the education of the Princess
Christian of Denmark and Sweden. But the project was
not led to the publication of her 'Hints towards forming
the Character of a young Princess,' 1805. Then came what has
perhaps been her most popular work, 'Celia's in Search of
a Wife,' very entertaining as a novel, and full of marks on moral
behaviour. And in which we find fully displayed the kind of character which, to the mind of
Miss More, it appears desirable that our young country
women should possess. In 1811 her 'Practical Piety'
appeared in 1812 her 'Christian Morals,' in 1813 her
'Essay on the Character and Writings of Saint Paul,' a
far bolder undertaking than any in which she had previously
engaged, and if she failed to satisfy those who wish to see
so grand a subject treated by a masterly mind, full as it
must be of varied learning and possessing the inestimable
rare discrimination, and of literary analysis, such as is rarely
granted, she has failed only where no one hitherto has been
successful.

We ought not to omit that she was the writer of one of the
first of what were called the 'Cheap Repository' tracts. She
called it 'The Shepherd of Salisbury Plain.' It may
be regarded as, if not the best, one of the best of its class.

Age had now come upon her with some of its infirmities.
In 1828 she left Barleywood, the place in which many years
she had been spent, and moved to Cleeve Court, near Chel-
sea, where she continued till her death on the 7th of September,
1833, with very many to honour her and many also to love her;
who looked up to her as one of the great reformers of the
manners of English society, one who had been successful in
the right of Christianity, or, in other words, the
right of the Christian scriptures to have a larger share than
it had been the wont to allow them in forming the charac-
ter and directing the course of human beings while in this
state of their probation. She was buried at Wighton, near
to the grave of Locke.

MOREA, the antient Peloponnesus, a large peninsula

MOR
London, 1551, by Bishop Burnet, and more recently by
The Life of Sir T. More has been written by his son-in-
law, Roger, who married his favourite daughter Margaret;
by his great-grandson T. More; by Hoddeston, London,
1552; by Cayley; and by Sir James Mackintosh, in 'Lives
of Eminent British Statesmen,' published in Dr. Lardner's
Collected Cyclopaedia.
MORE, HENRY, was born at Grantham in Lincoln-
shire, in the year 1614. He was sent to Eton, and afterwards
to Christ's College, Cambridge, which he entered at the
age of seventeen. At college he devoted himself with
great zeal to the study of philosophy. He had been selected by
his schoolmaster, one of the humblest persons of his class, who
had the care of the charity-school at Stapleton near Bristol,
but who, some time after the birth of his daughter Hannah,
removed to Bristol, where he had a private school. There
were other daughters, and the family soon began to be taken
notice of as one in which there was a display of talent that
was unusual, so that some exertions were made by persons
to whom they were known, and the sisters became early in
life established in a school for the education of girls, which
came to fame for many years the most flourishing establish-
ment of the kind in the west of England.

MORE, a

M OR
forming the southern part of Greece, and united to the mainland by the isthmus of Corinth. Its shape has been compared to that of a mulberry leaf, and its coast, being deeply indented by numerous gulfs and inlets, forms a multitude of capes, headlands, and promontories. It is bounded on the north by the gulfs of Lepanto and Patras, on the west by the sea of Cephallonia and Zante, and farther south by the gulf of Arcadia on the south, by the Messenian and Laconian gulfs, and on the east by the gulfs of Nauplia and Aegina. North of the island of Amorgos, North of the Dorian coast, the greatest length of Morea from the point of Drepanum on the straits of Lepanto, to Cape Matapan, its most southern promontory, is 140 miles, and its greatest breadth, from the capes of Riza and Porer to the coast of the Peloponnesus, is about 125 miles, but the breadth is much less in other parts. Its area has been vaguely estimated at 8800 English square miles (Thiersch, État actuel de la Grèce), but it probably exceeds considerably 9000 miles.

The eastern part of the table-land is traversed by numerous ridges of hills, which enclose spacious basins, some of them like crater, being so surrounded by mountains, that the water at the bottom, being unable to find a visible outlet, forms marshes and small lakes, some of which have been dammed up by the inhabitants for the purpose of irrigating vineyards. The surface of the land has been compared to a number of saucers with snipped borders placed by the side of each other on a table. This is especially the case in the eastern part of the table-land; but on the opposite side the valleys have a more narrow character, and are prolonged toward the sea. The most powerful Alpheus and its tributaries, until they merge into the lowerly plains of Elis. Towards the south the long valley of the Eurotas slopes down to the coast between two ranges of mountains, which detach themselves from the eastern wall of Elis, and present on its western side two basins of the table-land, one of Malea and Tamarar. Westward of the valley of the Eurotas is the valley of the Parniassus, in Messenia, running likewise from north to south between the ridges of the Taygetus on the east and Mount Taygeton on the west.

On the north side the table-land of Morea is separated from the maritime district of Achaia by a range of mountains known to the ancients by the names of Erymanthus, Lymne, and Cyllene. North of the coast to the level part of the isthmus of Corinth, where the town of that name was built. To the eastward a chain of mountains, detaching itself from the central high land, runs through the peninsula of Argolis, which stretches far into the sea between the coast and the 'Argolid gulf.' South of this range is the plain of Argos, watered by the Inachus. Farther south a narrow strip of land extends between the central high land and the sea, along the western coast of the Argolid gulf. The slope of the table-land is much more abrupt on the western coast than on the eastern.

For the description of the surface of the county see ACHAEA, ARCADIA, ARGOLIS, ELIS, LACONICA, and MESSENIA.

The highest summits of Morea, Taygetos in the south, and Cyllene in the north, are reckoned to be somewhat above 7000 feet. The highest summits along the northern and eastern coasts are dry, or nearly so, in summer, but form rapid torrents in the winter. The atmosphere of Morea is generally pure, the landscape beautiful, and the general situation of the mountains afford good pasture, and although the forests have been sadly wasted, still many parts of the mountains are covered with fine pines and oak trees. The country, imperfectly cultivated as it is, produces corn of various kinds, wine, oil, figs, currants, olives, and various kinds of sheep. There are no roads, properly speaking, through the peninsula, but only tracks for horses, and some narrow Turkish causeways through the low grounds. The principal towns are—Patras, on the north coast; Gasteinuri, Argos, Nauplia, and Monemvasia, on the west coast; Koroni and Kalamata, on the south coast; Monemvasia, Nauplia, and Argos, besides the islands of Spezia, Hydra, and Poros, on the east coast; and the towns of Mistra, Tripolitza, Katerina, Kalavrita, and Andritzena, in the interior. For the actual statistics of Morea see Greece. Kingdom of

The ancient history of Peloponese forms part of the history of Greece. After the destruction of the Achaean league by the Romans, b.c. 146, the peninsula formed part of the Roman province of Achaea. It remained subject to Rome till the division of the empire. It afterwards changed to the Eastern or Byzantine emperors till the beginning of the thirteenth century, when the Latins or Franks having conquered Constantinople, the Venetians obtained for their share several islands of Greece and a considerable part of the Peloponnesus, with the towns of Corinth, Argos, Nauplia, and others. In 1453 it was then that they gave the peninsula the name of Morea, from the quantity of mulberries ('more' in Italian) which it produces.

Towards the end of the fifteenth century the Morea was conquered by the Turks, who became the masters of the peninsula. In 1684, war having broken out between Venice and the Porte, the Venetians sent an armament, which conquered the peninsula [Morosini], to which they gave the name of a kingdom, subject to Venice, and its legal and political institutions were left as they had been under the Venetians. The Morea forms an essential part of the kingdom of Greece.
paige of 1759, so disastrous to the French, and also on the Rhine, whether he was recalled to oppose the Austrians.

On Bonaparte's return from Egypt, Moreau professed and rendered him his services in effecting the revolution of the 18th of Brumaire, and almost immediately afterwards received the command of the armies of the Danube, under the weight of which he marched to the Rhine; at whose head, at the close of the year 1800, he won from the Austrians the sanguinary and decisive battle of Hohenlinden. The first consul loaded him, on his return to Paris, with encomiums: but Bonaparte and Moreau were ever too eager on the same score of ambition, to pursue their career without dangerous collision. Bonaparte affected to speak of the victor of Hohenlinden as 'the retreating general;' Moreau retaliated with bitter justice by terming the first consul 'a general at ten thousand men a day.' And when he was invited to become a member of Napoleon's new legion of honour, he openly refused, with the contemptuous sarcasm—'The fool! does he not know that I have been enrolled in the ranks of honour these twelve years!'

But the impetuous spirit of Moreau was no match for the ascendant genius and fortune of his rival; and in the beginning of 1804 a charge which pretended to implicate him in the royalist conspiracy of Pichegru and Georges Cadoudal was sufficient to decide his fate. He was condemned, without a shadow of evidence, to an imprisonment for two years, in which he vindicated the idea of the universal, biographical, and geographical dictionary; for the accomplishment of which he had collected a considerable stock of literary information. He knew also several languages, and was assisted by several friends, who procured him the Monument Anatomique, and on which he published his first volume, in 1804, in one vol. fol. 'Grand Dictionnaire Historique et Critique de Louis Moret,' of which one of the most remarkable and notable articles are the most complete; the geographical are the most defective. Moret also published a 'Réductions Nouvelles du Levant,' on Traité de la Religion, du Gouvernement, et des Coutumes de Perse, Arméniennes, et Garaies, published also by the P. G. D. C. C.' (Père Gabriel du Chano Capucin).

The admirable retreat through the Black Forest and the brilliant campaign of Hohenlinden must ever be sufficient to place Moreau among the ablest commanders of a period which produced every variety of military talent. He was a military genius, a politician, a general, active and varied, than a general of very daring and enterprising genius. His mental qualities in other respects partook of the same characteristics; and he wanted the necessary decision to cope with the energy of his great rival, as much as he lacked the skill to conceal his own ambition and envy under the shallow pretext of opposing a republican virtue to the despotic projects of the First Consul. In person Moreau has been described to us as rather under the middle height, and of dark complexion; his manners were grave, sometimes repulsive, but his mind and nature was courageous, humane, and benevolent. The only blot on his honourable career was his junction with the enemies of his country. For this shameful step, to which he was probably seduced by ambition or revenge, excuses have been made by his friends, who say that he have identified the cause of the allies with that of French liberty, and who forget that he had never been a royalist; that if he had any political principles, he was professedly a republican; that he could have no dreams of democratic freedom to indulge for his country in the camp of the allied sovereigns; and finally, that he had pledged himself to afford his aid in shedding the blood of his fellow-countrymen and antient companions in arms. 'What singular character is it, which in less than two years, a company he had formerly fought under the tricoloured flag, and whom he now found in the Russian service, 'has brought you and me together under the banners of the Caesar?' 'Singular it doubtless is,' answered Jomini; 'but there is this difference between us—that I am not a Frenchman.'

MOREL is an estatable genus, called by botanists Mortella esculenta. It springs up in orchards, woods, and under walls, early in the spring and summer, and is believed to be the chief cause of scurvy. The country people in Germany are so persuaded of this, that they formerly set fire to woods in order to obtain a crop of morels, of which they are very fond: at last the practice was put down by law. This fungus has a stalk from one to three inches high, a spherical head of from the size of a pigeon's egg to that of a swan's, hollow, pale brown or even grey, and deeply pitted all over its surface, the depressions being separated by raised anastomosing lines. The plant has a small smell and an agreeable taste, and is employed for various purposes of cooking, both fresh and dried. In the former state it is most commonly stewed or stuffed with forcemeat; in the latter it is employed as an ingredient in sauces. In this country it is of rather rare occurrence.

MORELLES. [Mexican States.]

MORELL, THOMAS, born at Eton in 1703, studied first at Eton College, then at Cambridge, where he became a fellow of King's College, and in 1743 took his degree of D.D. He was a distinguished classical scholar; he edited several tragedies of Ainsworth and Dryden; and has made English translations of the 'Prometheus' of the former, and of the 'Hebeva' of the latter. He also edited several editions of the Greek Lexicon of Hederick, and of Ainsworth's Latin Dictionary. His other works are—1, 'Thesaurus Graecae Philologiae,' 4to, 1762; republished since, with considerable additions, by Dr. Maltby, Cambridge, 1815; 2, 'Annotations on Locke's Essay on the Human Understanding;' 8vo, 1793; 3, 'A Sermon on the Death of Queen Caroline, by George II,' 8vo, 1793, and other sermons. Dr. Morell died in 1784.

MORENA, SIERRA. [Spain.]

MORE'RI, LOUIS, born in Provence in 1643, studied at Aix and Lyon, and became doctor of divinity. He compiled the idea of a universal, biographical and geographical; for the accomplishment of which he had collected a considerable stock of literary information. He knew also several languages, and was assisted by several friends, who procured him the Monument Anatomique, and on which he published his first volume, in 1804, in one vol. fol. 'Grand Dictionnaire Historique et Critique de Louis Moret.' Although its contents are miscellaneous, the biographical part, both in respect of quantity and execution, exceeds the rest. Moret's Dictionary, considerably enlarged, and the idea of subsequent biographical dictionaries. Moretineri undertook a new and enlarged edition of his Dictionary, of which he published the first volume, but the second was not entirely printed when the author died in 1869. His constant application had consumed 34 years. Numerous editions of his Dictionary, considerably altered, revised, and enlarged by several editors, among others by Leclere and Bayle, have appeared; the last is that of Paris, 1759, in 10 vols. fol. Notwithstanding its many imperfections, Moret's Dictionary is still a useful work; the genealogical articles are the most complete; the geographical are the most defective. Moret also published a 'Réductions Nouvelles du Levant,' on Traité de la Religion, du Gouvernement, et des Coutumes de Perse, Arméniennes, et Garaies, published also by the P. G. D. C. C.' (Père Gabriel du Chano Capucin).

MORETON HAMPESTEAD. [Devonshire.]

MORGAGNI, GIOVANNI BATTISTA, was born at Forlì in 1643. He studied medicine at Padua under Alimenti and Valvasor, and in 1671 obtained his doctor's degree. He afterwards went to Venice and Padua, to study chemistry and natural philosophy, and in 1715 he was appointed chief professor of anatomy in the University of Padua. He died in 1771, having been elected a member of all the chief scientific societies in Europe, and having received the highest honours from the contemporary popes and the sovereigns of adjacent nations. Morgagni's chief works are, 'Adversaria Anatomica prima,' Paduana, 1761 (for all subsequent work see ii. 343) says there is scarcely anything which is not new, or at least more clearly described than it had been previously. Five similar collections of miscellaneous observations were afterwards published under similar titles, and in 1719 they were all pruned and abridged, and bound in one volume, amounting altogether to twenty, which were published together at Venice in 1762. He edited also the life and works of Valsalva, his former preceptor and friend, whose opinions he constantly and warmly maintained. But Morgagni's chief work, the work which he first published in his eightieth year, 'De Sedibus et Causis Morborum per Anatomiam Indagatis,' Venice, 1761, in 2 vols. folio, which contains records of an immense number of observations on morbid anatomy, and which conferred nearly as great benefit on pathologists as the works of Haller conferred on physiology. It has been since frequently republished and translated, and is still a standard work of reference.

MORGARTEN. [Zur.]
During the reign of Charles V. the Moriscos enjoyed comparative tranquillity. The attention of that monarch was too much absorbed by the foreign wars in which Spain was at the time engaged, to give him leisure to meditate reforms to Spanish policy. But, in 1556, Philip II. was on the throne, an able and successor, the forced conversions had again to encounter their most violent persecution. It was suggested that as long as the Moriscos preserved their manners, dress, and language, different from the Spaniards, their conversion would not be legitimate. Accordingly by the progreso (royal decree), dated September 1556, it was declared that the new Christians should in three years learn the Spanish language and entirely forsake their native tongue; that books written in Arabic should be seized and burnt; that instead of the Moorish and Christian names they should adopt Spanish names; that all their baths should be pulled down so that their wives should walk the streets unveiled; and that the men themselves should forsake their Arabic names and surnames, and call themselves after some saint of the Roman calendar, in the Christian fashion.

This outrageous injustice and violation of everyright which is dear to man again drove the Moriscos to despair and resistance. They rose in the Alpujarras and proclaimed Fernando de Valor, a descendant of the royal family. When his revolt had lasted for seven years, was only put down by the talents and abilities of John of Austria (1570). As a punishment for their revolt, the baptized infidels were transported from Andalusia or dispersed among the Christian inhabitants of the interior of Spain. Naturally the natives, whom they had rebelled against, regarded them, on the one hand, as traitors, and on the other, as examples of their own surrender. It is impossible to relate to all the sorrows of humiliation and indignities, and it was perceived that neither force nor persuasion was sufficient to make them sincere converts, their general resistance not only continued, but increased so that the country was the scene of almost constant warfare. The nation was divided into Christians and Moriscos. The latter were regarded by the former as the most accursed of all races, and the former were regarded by the latter as licentious and in every respect inferior.

A treaty containing two such articles was soon deemed incompatible with the interests of the Christian religion, and scarcely had two years passed when it was openly infringed by Ferdinand. Fray Lazaro de Talavera, a monk, was appointed archbishop of Granada (1492), and received instructions not to spare any means for bringing the followers of Mohammed to the Christian faith, and the famous Ximenes was sent to lead the armies in the undertaking. At first the two prelates began their task with unambitious moderation; they preached the Christian doctrine, they published and circulated religious tracts, and used every means of persuasion to convert the Mohammedans. But these means were in itself inadequate, they had recourse to the device of claiming as members of the Christian community all those Mohammedans whose ancestors could in any manner be traced to have been Christians; and as their number was very considerable, thousands were seized and subjected to a compulsory baptism (1499). The insurrection violated, flew to arms in the Albaycin and other places of the kingdom of Granada (1500), but they were everywhere overpowered, and their rebellion becoming the pretext of a new and more decided persecution, orders were issued from the throne which the Moors should leave the country in a given time or receive baptism. The majority readily submitted to these terms, hoping to be freed in future from violence and persecution. The order was further extended to the Moriscos of Aragon, a province, which on account of the more liberal tendency of the institutions, the Moriscos had enjoyed comparative freedom, and the sentence was carried into execution, but not without resistance, especially in Valencia.

Once made Christians, at least in appearance, the descendants of the Arabs had to encounter a new and more formidable enemy. The Inquisition, instituted in 1232, under the pontificate of Gregory IX., had hitherto been considered only in the dominion of Castile. The legislated conversion and frequent relapse of the Moors of Andalusia were pleaded as an excuse for its establishment in Castile. The tribunal was invested with new and unusual powers, and its jurisdiction extended to the rest of the monarchy. It was provided to leave a corner of the Peninsula free from fire and faggot.

To detail the horrors, the persecutions, to which that execrable tribunal subjected its victims, would take us far from our object. The reader may consult Llorente's Histoire de l'Inquisition, and Priego's Inquisition Unmasked, in both which works he will find ample information on this subject. According to the former writer the number of victims who in the first thirty-seven years experienced the rigour of that tribunal amounted to 204,413, of whom 15,000 were publicly burned.

Morillo, 'one of the names of the Golden Eye, Clangula vulgaris.' [FELIGULINA, vol. xii. p. 8.]

Mório, De Montfort's name for Casuarina Equitata.
Arabic, and that the Jews of our days write Portuguese and German with their own letters; 2dly, the respect in which Arabic characters are held by all Mohammedans, owing to the Koran being written in them; and 3dly, the wish to conceal from the eyes of monks and inquisitors their prayers and tracts concerning the Mohammedan religion; all of which they performed notwithstanding their outward show of Christianity. It is likely also that books were written in this dialect for fear that Arabic would not be understood by the people for whom they were designed; since it is well known that, owing to their long stay among the Christians, and to orders prohibiting them from conversing in Arabic, the Moriscos at first corrupted their language, and finished by entirely forgetting their native tongue, for which they substituted a mixture of Spanish and Arabic called alfají, which in aftertimes became so similar to the Spanish as to be easily understood by any person unacquainted with Arabic.

(Bible, De la Justa Expulsion de los Moriscos, Valencia, 1618; Marmol Carvajal, Rebellion y Castigo de los Moriscos del Reyno de Granada, fol. Marag, 1836.)

MORLAIX, a town in France, in the department of Finistére, situated at the junction of the little rivers Relec or Osen, and Jacc or Jarlo, on the road from Paris to Brest, 328 miles from Paris and 34 from Brest.

Morlaix (in Breton, Montroulois) is of ancient but unknown origin. It was appointed one of the frontiers between the dukes of Bretagne and the viscounts of Léon, and was subsequently taken and retaken by the English and French in the civil contests of Bretagne in the fourteenth century. It suffered in the religious wars of the sixteenth and seventeenth centuries, and in 1694, being besieged by Louis, was razed to the ground, and Breda and Wallis was appointed one of the frontiers between the dukes of Bretagne and the viscounts of Léon.

MORLAND, SIR SAMUEL. Samuel Morland was the son of the Rev. Thomas Morland, of Sulhamstead-Bannister, near Reading in Berkshire, and born somewhere about the year 1652. He received his education at Winchester school and Cambridge. He remained at Cambridge for many years. Soon after his departure from college, we find him sent on the famous embassy to the queen of Sweden in company with Whitelocke and a retinue of other gentlemen. Whitelocke, in his Journal, calls him 'a very civil man, and an excellent scholar.' On his return, Morland became assistant to Thurloe, the secretary of Oliver Cromwell. He also took a prominent part in the attempt to relieve the sufferers of the poor people of Piedmont, being appointed 'commissioner extraordinary for the distribution of the collected moneys' by the Protector, who also made him one of the clerks of the signet, in March, 1655.

Morland is said to have been privy to the plot usually known as Richard Will's plot, and, as it is so intimately connected with Morland's history, we give an abstract of the narrative as arranged by Birch in his 'Life of Thurlow,' although we think that it is far from being altogether supported by proper evidence.

In the beginning of the year 1659, Thurlow, Cromwell, and Sir Richard Will's formed a design of ruining King Charles II., if he should venture to come to them in their strongholds. The adventurers wrote several letters 'to invite him to come over in a single ship, with only his two brothers and a few more, to a certain port in Sussex, upon an appointed day, where they were promised to be received and supported by 500 foot at their first landing, and 2000 home within one day after.' This project was discussed in Thurlow's office, when Morland was at his desk apparently asleep: Welwood says that Cromwell, when he saw him, drew his sword, and was only dissuaded from doing him some personal harm by the intercession of Thurlow, who assured him that Morland had sat up two nights together, and was certainly fast asleep. Disguised at this proceeding, Morland immediately determined to divulge the plot to the king, which he did by means of a letter written by himself, which was afterwards published.

The king, being thus cautioned, answered, that 'he could not be ready so soon as the appointed day,' which gave the three projectors some apprehension and suspicion of the design. Not being satisfied with this answer, they contrived to make a suit to the king in the Parliament of majesty 'to use expedition, and not lose so fair an opportunity for his happy restoration.' The king answered, that he was not very well, or something that appeared so frivolous, that they hastily concluded their whole project was discovered, and they determined to have the matter legally disposed of. Under these circumstances Will's sent for Morland, who went, not considering it safe to decline the meeting, but took two pistols with him. At the appointed place, he was joined by another person, by whom he was conducted with the utmost caution into a dark and deep cellars, where, by the light of a candle, he saw Sir Richard by himself with a Bible before him. Sir Richard told him plainly that 'he had sent for him on account of the discovery of a secret of the most important nature, which could not possibly be known to more than three persons beside himself.' Then recounting the particulars, he laid his hand upon the Bible, and solemnly swore that he had not been the discoverer, and requested him to do the same. Morland told him, 'he was ready to do it, if another person, by whom he was conducted, would suspect him.' All this he did with such a remarkable presence of mind, that Will's was completely damped, and Morland escaped from further interrogation. In May, 1660, he went to the king at Breda, in Holland, who received him kindly, made him a knight, and soon afterwards a baronet.

Richard, in his 'History of England,' produces a letter from Sir Samuel to Will's, dated March 10, 1660, in which he expressly denies the whole of the above statement; but Morland's own testimony in his autobiography is to the contrary: if he did write it at all, it was probably intended merely as a means of safety from the wrath of Sir Richard Will's.

On the restoration of Charles he was made master of mechanics to his majesty, who also presented him with a medal as an 'honourable badge of his signal loyalty.' He was soon afterwards made a gentleman of his majesty's privy-chamber.

In 1677 he took a lease of a house at Vauxhall, for twenty-one years, from the heirs of Jane Vaux, the daughter of Guy Vaux, of gunpowder celebrity. This house was situated where Vauxhall Gardens now are. Two years afterwards, he had a pension of 4000l. settled upon him, but the remissness of his servants, who neglected the gardens, obliged him to dispose of it. He afterwards removed to a house at Hammersmith, near the water-side, where he died, December 30, 1695, and was buried in Hammersmith chapel on January 6 of the following year. The three last years of his life were spent very wretchedly. Poverty and loss of sight compelled him to rely almost solely on the charity of 'archbishop Tenison. In a letter dated March 5, 1694, he returns thanks for his kindness, 'which was far greater,' says Sir Samuel, 'than such a poor wretch as
I could only hope for. This letter, written when he was blind, is very rare, and, so far as I know, was never preserved in the library of Lambeth Palace. John Evelyn, in his Diary, gives an interesting description of him when suffering under this accumulated load of misfortunes:— 23th Oct, 1695. The archbishop and myself went to Hameramth to visit Sir Samuel Morland, who was a Morland, and he was in a mourning sight. He showed us his invention of writing, which was very ingenious, also his wooden calendar, which instructed him all by feeling, and other pretty and useful inventions of mills, pumps, &c., and the pump he had erected, that was in his garden, and he offered, with the inscription, and brings from a filthy part of the Thames, near it, a most perfect and pure water. He had newly buried 200. worth of music-books, being, as he said, love songs and vanity. He plays himself psalms and religious hymns on the theorbo, and, without looking, would say, 'Steel and iron, without bear the king.' His greatest invention, which Evelyn refers to was on a stone table fixed in the wall, and is still preserved; the following is a copy of it:— 'Sir Samuel Morland's well, the use of which he freely gives to all persons: hoping that none who shall come after him will adventure to incur God's displeasure for it.' In a little place cold water (provided at another's cost and not their own) to either neighbour, stranger, passenger, or poor thirsty beggar. July 8, 1695.'

Sir Samuel married three times; he was divorced from his last wife in 1688. The monuments of his two first wives are in Westminster Abbey.

It now remains briefly to notice his writings and mechanical inventions. From some correspondence between Morland and Evelyn, preserved in their collections of manuscripts in the British Museum, it appears that Sir Samuel, as early as 1666, had intended to publish a work on the quadrature of curvilinear spaces, and had actually proceeded to print a portion of it, when, by the advice of the latter, he was persuaded to lay it aside altogether. In the rough draft of a letter to Morland, dated April 7, 1666, in giving his opinion on the portion of the work already printed, Pell says, 'The love which I bear to truth and to the author of those papers does constrain me to desire that there be not a single unprinted word in the whole, and not yet yielded implicitly to his directions, but, in a letter written shortly afterwards, he furnishes arguments against some propositions in his own treatise: 'I should desire,' says he to Pell, 'to be altogether mute, and to submit to your judgement. I believe, reading a cup of cold water (provided at another's cost and not their own) to either neighbour, stranger, passenger, or poor thirsty beggar. July 8, 1695.'

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erroneous. Another tract by him, consisting of four leaves, and entitled 'The Count of Pagan's Method of Delineating all manner of Fortifications (Regular and Irregular) from the Compendium of a Master from France called Meneau, and transcribed into Heretocetonic Lines,' was published in 1672, in Venet's 'Military and Martial Discipline.' The 'Urni of Conscience' was written during his blindness, and is a very singular piece of composition: it contains reflections on the faults committed by men, which have prevented their happiness in life. By one of his letters to Archbishop Tenison, dated 23rd of July, 1688, and preserved in the archiepiscopal library at Lambeth, it appears that he once had an intention of publishing the first six books of Euclid for the use of publication.

Morland is said to have written a treatise on the barometer, which was answered by Lord North in another tract on the same subject. He is also said to have invented the expitant to heave up anchors, but he must be considered more an inventor than an expert in matters of art: the same remark will apply to various other performances, which have elsewhere been attributed to him.

In the library at Lambeth Palace is an autobiography of the latter part of his life, together with several other letters and books, which is from this original source that we have here given several particulars never before published. We have also made use of the biography of Sir Samuel in Chalmers's 'Biography of the English Poets,' and of Morgan's 'Dictionary of Biography,' considering that he had no foundation to rest on; as also of a separate account of his life, writings, and inventions, by J. O. Halliwell, Esq., which was published at Cambridge a short time ago.

Burney, the son of Henry Robert Morland, an indifferent painter, from whom he received his first instructions, but very soon surpassed his master. He first painted landscapes and one or two small conversation pieces; his favourite subjects however were domestic animals characterized in a most natural and agreeable manner. In the exhibition of the Royal Academy in 1791 he had a picture representing the interior of a stable, with horses, draymen, &c., larger than a half-length: it is an excellent performance, and may perhaps be considered as his masterpiece. Morley never played the violin, and was devoid of that faculty. Hawkins had a taste for what is now thought uncouth, and that Burney's prejudice against the early English masters occasionally blinded his judgment.

MORROM, Illiger's name for a genus of Alcidae, Fratercula of Birc, in the vol. ii. of C. F. A.

MORMOPS, Dr. Leach's name for a genus of Vesperitlions. [Cheiroptera, vol. vii., p. 24.]

MORNINGTON, GARRET, EARL OF, whose claim to be numbered and ranked high among the composers of the British lute was decided in his own time and for several generations afterwards. In 1680 he published the County of Meath in or about the year 1720, and advanced from the dignity of an Irish baron, which he inherited, to that of an earl, in 1760. Devoting much of his time to his favourite art, his life seems to have been quite domestic and devoid of the usual qualifications. He was struck, in following the page of biography; but success of a very decided kind attended his chief pursuit, and 'small indeed,' it has truly been said, 'is the number of professors who, by their works, have arrived at the same rank in the art as that so fairly gained and so incontestably possessed by the noble earl.'

All that we know of the early history of this distinguished nobleman is from a paper printed among the Miscellaneous of the Honourable James Burnington, in a volume published in 1739; and we are thus informed: 'A beautiful instrument, on which his father played tolerably well on the violin, and by his performance delighted the babe while yet in the nurse's arms. But even at that infantile period he seemed to be capable of distinguishing the difference between tolerable and excellent; for Dubourg, a celebrated violinist, being on a visit at the family seat, 'the child would not permit him to take the violin from his father, till his little hands were held;' but having heard the professor, he did his utmost to prevent the return of the instrument to his father. Nearly at the same age he could least time to every piece of music, and the most sudden changes in the measure were immediately perceived and followed by him. From sheer indolence he never attempted to perform on any instrument till he was fourteen years old. In his fifteenth year he obtained a bachelor's degree in 1588, and was sworn into his place as gentleman of the royal bed-chamber. He died, Dr. Burney supposes, in or near the year 1684.

Morley produced many compositions that are still well known, among which are, canzonets of different kinds, particularly for two voices, madrigals for five voices, and services and anthems, including the fine Pastoral Service published in Dr. Boyce's collection, the first that was set to the words of our reformed Liturgy. He also published Consort Lessons, made by divers exquisite authors, for six different instruments to play together, viz., the Viol, Lute, Pand. Cather, Bass, Treble, and Treble Flute, 2nd edition, 1611. He likewise collected and edited that collection so familiar to madrigalists, The Triumphs of Oriana, P. C. No. 963.

1601. In Queen Elizabeth's Virginical Book are five sets of lessons by Morley. But the work on which his fame is chiefly built is that alluded to above, A Plaine and Easy Introduction to In vnuerse, 1597, which was continued in use above a century and a half, and is still read and esteemed by most well educated musicians; for though it contains much that is become obsolete, and the language has lost the quaintness, amounting often to obscurity, of the period, yet it contains a number of verses on the subject, great acumen, a bold spirit, and much curious learning. It was translated into the German language by John Caspar Trast, a profound musician of the 17th century; and the scientific Florentine patrician, Doni, mentions the name of Morley as one of the men of style and music. Morley obtained of Queen Elizabeth an exclusive patent for the printing of music, under which William Barley published most of the music books that appeared during its continuance. This was granted in 1598, in lieu most probably of some bounty which he had been largely coming from the privy-purse of the discerning but parrison- monious queen.

Hawkins and Burney, it has been truly remarked, have in their histories failed to do justice to the compositions of Morley; in writing on him, he referred to himself in criticizing the productions of one of the earliest and greatest of our musicians. Neither has selected as specimens of his works the most original and agreeable of them all, the opera, amounting to a page of biography; but success of a very decided kind attended his chief pursuit, and 'small indeed,' it has truly been said, 'is the number of professors who, by their works, have arrived at the same rank in the art as that so fairly gained and so incontestably possessed by the noble earl.'

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for the church, and are to be found in the choir-books of St. Patrick's Cathedral. But he excelled most in what is undeniably our own national music, the glee. His four-voiced glee, "Here in cool grots," which gained the gold prize in a given by the Catch Club in 1729, is a work of first-rate genius—"is a masterpiece. "Gently hear me, charming maid!" another of the same kind, published in Warren's 25th collection, is, it has been truly said, "overflowing with taste and feeling." Glied, a song for four voices, has always been, and most likely will continue to be, admired for its brilliancy and skill; and "Oh, bird of eve," a glee for five voices, is, though short, one of the most elegant effusions that vocal harmony can boast.

'But,' it is remarked by a writer in the Harmonicon, 'honourable to Lord Mornington, considered as a man of genius, as were the praises bestowed on what we venture to call the offspring of his muse—praises wherein the succeeding age found fault with him. But, as for the glee that encircles his name derives its highest lustre from the sets of his own immediate progeny: one of the most accomplished statesmen of the period in which we live, and the greatest general that this or any age ever produced, owe to him their existence. And it is not fairly because we wish to give that probably to the forming of their minds, to his care of their education, they are indebted for that correctness of judgment and energy of action which have so much distinguished both.'

**Morosini.**

Morosini, an illustrious family of Venice, which had several doges and other distinguished individuals among its members. Paul Morosini, born in 1406, wrote an 'Apology' for the Venetian government, and other works. Andrea Morosini, born in 1618, in the year 1669, was sequested by the Venetian Government, and General-in-Chief of the army. His name is found in the 'History of Venice,' down to the year 1615. But the most illustrious of the family is Francesco Morosini, who was born in 1618, served in the navy of the republic against the Turks, and the year after was appointed to the command of the fleet (1651), and general-in-chief for the defence of Candia against the Turks. He made a most gallant resistance against very superior forces, and at last concluded an honourable capitulation with the grand-vizier Cospregli in 1669. [Candia.] On his return to Venice, having been made the subject of an inquiry, was fully justified.

In 1684, war having broken out again between Venice and the Porte, Morosini was appointed captain-general of all the forces of the republic. After sailing to Corfu, he attacked, and took the island of Santa Maura, and also the town of Prevesa on the coast of Epirus. In the following year he landed in the Morea with 10,000 men, took Coron by storm, and, being joined by the Mainotes, took Calamata, and defeated a Turkish army which was sent against him. In the year 1687, he defeated the Turks, and gained possession of Napoli after an obstinate defence. In 1687 he again defeated the seraskier in a pitched battle near Patras, and seized his standard. This victory was followed by the reduction of Patras, Lepe, Corinth, and the whole coast of Morea. Morosini landed at the Piramus and attacked the Acropolis of Athens. It was in this siege that a shell, thrown by the Venetians, fell on the Parthenon, where the Turks had deposited their powder, and partly destroyed it. The Turkish garrison then surrendered.

In 1688 Morosini landed on the island of Euboa, but was obliged to re-embark his troops, owing to the malaria fever having broken out in his camp. That same year the doge Giustiniani died, and Morosini, then absent, was elected in his place, retaining his command in the Levant, a thing unusual in the suspicious aristocracy of Venice. In 1689 Morosini returned to Venice; the senate in a body went to meet him at sea, and escorted him in triumph to the landing-place at the site of St. Mark's, the acclamation of the whole population. This was a proud day for Venice, the last day of triumph in her history of a thousand years. A few years after, Morosini, then old and infirm, was sent again to the Morea, when illness terminated his glorious career, at Navarino in 1693. A statue of bronze is erected to him in the hall of the Council of Ten. In imitation of the great captains of antiquity, the adjutant 'Peloponneseius' was added to his name. His tomb is in the church of St. Stefano at Venice, with the inscription, "Franciscus Morosini, gentleman, was infanted at Piraeus, Morosini, Moroeis, Moroideis, Moroxylic Acid, or Moric Acid, was dis-covered by Klaproth, combined with lime, on the bark of the Morus Alba, or white mulberry. It is obtained by decomposing the natural murxylate of lime by acetate of lead, and then decomposing this salt by sulphuric acid, and sulphate of lead being precipitated, the moroxylate and remains in solution. Some double are however entertained whether it is a peculiar acid.

**MORPHIA,** the first discovered of a numerous and important class of vegetable products, alkaloids, were converted into a state of combinations with a peculiar vegetable acid, the meconiac acid, and probably also with sulphuric acid.

Various processes have been attempted for obtaining morphia: the 'London Pharmacopoeia' directs a solution of opium to be decomposed by chloride of lead, by which meconate of lead and a little sulphate are precipitated, and hydrochloride of morphia remains in solution: by evaporating the precipitate, which, on standing and arcing, assumed by treatment with animal Charcoal; when again crystallized, and decomposed by ammonia, the precipitate obtained, which is morphia, is to be again converted into hydrochloride by dissolving it in hydrochloric acid and this, when again decomposed by ammonia, yields morphia in a state of conser-nate purity.

Another process consists in adding ammonium to a concentrat ed aqueous solution of opium, by which meconate of ammonia is formed, and remains in solution; while the morphia, with other narcotics, is separated by digestion in proof spirit at a temperature of about 120° or 130°, which dissolves most of the narcotics and colouring matter: the morphia is then dissolved in boiling alcohol, from which it crystallizes as the spirit cools.

Another method, proposed by Drs. Gregory and Robertson, is that of decomposing the aqueous solution of opium by means of chlorate of lime. Meconate of lime is thus precipitated, and, being regenerated by ammonia, is separated by digestion in proof spirit at a temperature of about 120° or 130°, which dissolves most of the narcotics and colouring matter: the morphia is then dissolved in boiling alcohol, from which it crystallizes as the spirit cools.

The properties of morphia are, that it is precipitated in a flocculent state, and after standing and stirring, presents a crystalline appearance: it is colourless, and its taste is bitter. According to Berzelius, it is insoluble in cold water; and boiling water dissolves rather more than 1-10th of its weight, the solution on cooling yielding crystals; the hot solution possees the alkaline property of turning turmeric paper brown. Morphia is soluble in 40 parts of cold anhydrous alcohol, and in 30 parts when it is boiling: it is dissolved also by the volatile and fixed oils, but in water it is nearly insoluble. Solution of pine and soda take it up more rapidly than any other alkaloid has been observed. When heated strongly, it emits a resinous smell, smokes, and burns with a lively red flame, and leaves charcoal.

The alcoholic solution yields crystals by spontaneous evaporation; they have a pearly lustre, and their primary form is a right rhomboedron.

Morphia has been several times subjected to analysis; the results are not very different from each other: its anhydrous state it appears to consist of—

<table>
<thead>
<tr>
<th>Equivalents of Hydrogen</th>
<th>18 or 6:33</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thirty-four equivalents of Carbon</td>
<td>204 71:83</td>
</tr>
<tr>
<td>Six equivalents of Oxygen</td>
<td>49 16:99</td>
</tr>
<tr>
<td>One equivalent of Azoic</td>
<td>14 4:94</td>
</tr>
</tbody>
</table>

**Equivalent** | 284 100°

The crystals contain two equivalents of water, or consist of—

| One equivalent of Morphia | 284 or 94:04 |
| Two equivalents of Water | 18 5:96 |

**Equivalent** | 302 100°

**Morphia but be alone affinit salts.**

The

as has
in dilute hydrochloric acid, and, after evaporation, allowing the salt to crystallize.

Hydrochlorate of morphia, frequently called muriate of morphia, is a colourless, inodorous, bitter salt, which crystallizes in plumose acicular crystals: it is soluble in 16 to 20 times its weight of water; and when boiling water is saturated with it, it forms large, silky-like crystals; if boiled, it is also dissolved by alcohol. Where exposed to a red heat, it is totally decomposed and disintegrated. It consists of—

One equivalent of hydrochloric acid 37 or 11:52
One equivalent of morphia 284 88:48

Equivalent 391 100

In the state of crystals it contains water, and appears to consist of

One equiv. of hydrochlorate of morphia 321 or 85:6
Six equivalents of water 54 14:4

Equivalent 375 100

Acetate of morphia is prepared by dissolving the alkali in the acid, and evaporating the solution so that crystals may form; these are not however very readily procured, and by the evaporation of the solution a part of the acid is sometimes dissipated; a portion of the acetate, suffering partial decomposition, is rendered insoluble in water.

The crystals are in the form of colourless radiating needles, which are very readily dissipated by exposure to heat; and, like the other salts of morphia, the acetate is decomposed by ammonia, potash, and soda, &c., the morphia being precipitated.

Acetate of morphia, supposing it to be anhydrous, is probably composed of

One equivalent of acetic acid 51 or 15:23
One equivalent of morphia 284 84:77

Equivalent 335 100

It has not been determined whether the crystals contain water.

Morpia combines with other acids to form salts; the mconeatate of morphia, which is the natural salt existing in opium, does not crystallize; it is soluble in water and in alcohol. Sulphate of morphia crystallizes in needles accumulated in bundles; it is soluble in about twice its weight of water. Balsam of morphia procured by supersaturating the neutral salt with sulphuric acid; the excess of acid is to be removed by water, which does not dissolve the salt. Nitrate of morphia is obtained by dissolving the salt in hot water, and adding nitric acid, which results in an orange color, which afterwards becomes yellow, and, by the continued action of the nitric acid, oxalic acid is procured; when however dilute acid is used, a neutral salt is procured in the form of stollated crystals. It is soluble in 13 parts of water. Morphia is dissolved in alcohol, dried in a vacuum or in radiating bundles, when the acid is in excess.

The general properties of the salts of morphia and the means of detecting their presence are, first, when nitric acid is dropped on crystallized morphia, a bright red or orange colour is the result; when morphia or any of its salts are acted on by a neutral solution of sesquioxide or sesquichloride of iron, a fine blue colour is the result, which disappears when an excess of acid is added, and reappears when it is saturated. Lassaigne proposes to detect the presence of morphia by means of the supersaturated solution at a temperature of 212°, and the residue treated with alcohol dissolves the salt of morphia, and probably some other matters which may have been mixed with it; by spontaneous evaporation of the alcoholic solution the morphia forms large crystals; if boiled, it is dissolved, and redissolved ammonia throws down a precipitate which is recognised to be morphia by its bitter taste, alkalinity, solubility in alcohol, and loss by the action of iodic acid. Other vegetable alkalies combine with iodic acid to form iodates; but when a solution of iodic acid is brought into contact with morphia or its salts, the liquid assumes a reddish brown colour, and exudes the peculiar smell of iodine, and its presence may also be detected by starch. According to Serullas, who proposed this test, a grain of morphia in 7000 grains of water may be detected by it.
in Chinese, which he had brought with him, was printed, after it had been carefully revised and amended the text. In 1811 a Chinese grammar, which he had prepared about three years before, was sent to Bengal to be printed, but after many delays, it did not issue from the press until 1815, when it was printed at Serampore, at the expense of the East India Company. In 1812 the Gospel of St. Luke in Chinese was printed, and by the beginning of 1814, the whole of the New Testament being ready for the press, the East India Company sent out a press and materials, and a printer to superintend the printing of the work. In 1813 the Oriental Translation Society took in hand the Rev. (afterwards Dr.) Milne to assist Morrison, and they proceeded with the translation of the Old Testament. In 1815 the Book of Genesis and the Psalms were printed. In the following year the Chinese dictionary was finished, and before the end of 1816 was printed by the East India Company at a cost of £1,500. In 1817 the university of Glasgow conferred upon Mr. Morrison the degree of D.D. The Anglo-Chinese College, for Chinese and English youth, which he had projected, was also commenced. He published in the same year 'A View of China for Philological Purposes' in English, and a translation of 'Morning and Evening Prayers of the Church of England' into Chinese. The translation of the Bible was completed in 1818. From 1810 to 1818 the British and Foreign Bible Society contributed the sum of 6,000l., at seven different times, to assist in the printing and publication. The Old Testament formed 21 vols. 12mo. The Book of Job and the Historical Books were translated by Dr. Milne, and the other portions by Dr. Morrison. Of the Psalms, Dr. Milne translated the Psalms of David, and Dr. Morrison the Psalms of Solomon, and the Psalms of the Gentiles, and from Hebrews to the end. In 1824 Dr. Morrison came to England, and was introduced to King George IV., to whom he presented a copy of the Scriptures in Chinese. During his visit he endeavoured to promote the study of the Chinese language in England. In 1810, when he married Miss Armstrong, of Liverpool, in 1826, and soon afterwards sailed for China. His time was now occupied in printing, in superintending the distribution of printed works, and promoting education. In 1832 he wrote to his friends in England:—'I have been twenty-five years in China, and am beginning to see the work prosper. By the press we have been able to scatter knowledge far and wide. In the midst of these occupations Dr. Morrison died, August 1, 1834, at Canton. His consolator, Dr. Milne, who died some time before, said of Morrison, that 'his talents were rather of the solid than the showy kind; fitted more for continued labour than to astonish by sudden brilliancy; but he had that fitness, which fitted him for a station where one false step, at the beginning, might have delayed the work for ages.'

The translation of the scriptures, the great object of Dr. Morrison's life, was given to the world 'not as a perfect translation, but merely as a model of what the word of God, through the medium of the Chinese, should be.' "Common words being preferred to classical ones." The authorised English version was followed. Dr. Morrison always explicitly stated that the Chinese manuscript in the British Museum was 'the foundation of the New Testament,' which he says, 'I completed and edited.'

The translators contemplated the improvement of their work at some future period, 'expecting that they should be able to sit down together and revise the whole.' This expectation was never realised; Dr. Milne died in 1822, and the correction of errors and the verbal alterations made by Dr. Morrison were not of great importance. The New Testament remains in much the same state as it was in 1814, and the Apocrypha, which was in the last part of his life, Dr. Morrison became more and more confirmed in the necessity of a thorough revision, and he anticipated the probability of this being effected by his son, who, however, on the death of his father, was selected to succeed him in the editorship of the New Testament. When Dr. Morrison left to his son the British Trade at Canton, and could not therefore devote his time to this object. It is no disparagement to Dr. Morrison to assert, that this revision of his work is necessary: it is the first version into the most difficult language in the world.

Two converted Chinese of literary abilities have given the following opinions of its merits. One of them says it exhibits a great number of redundancies and tautologies which render the meaning obscure." The other finds it 'exceedingly verbose, containing much foreign phraseology, so contrary to the usual style of books written in the Chinese language, that they cannot thoroughly understand the meaning, and frequently refuse to look into it.' These opinions are taken from a work entitled 'China, its State and Prospects,' by Mr. Medhurst, an active missionary who succeeded Dr. Morrison. The reader is referred to the recent review of the subject by Professor Kidd's 'Critical Essay' on Dr. Morrison's literary labours. In December, 1836, a committee of the British and Foreign Bible Society passed a resolution 'requesting the Directors of the London Missionary Society to take such steps to ensure such a revision of Dr. Morrison's work as appears to have been contemplated by the Dr. himself,' with a promise of defraying all the reasonable expenses of the work. In February, 1837, the committee resolved upon taking 'the recommendation of the Bible Society into their serious consideration, so as to secure a careful revision of the existing version, at as early a time as may be practicable.' Here the matter at present (August, 1839) rests.

From 1810 to 1836, 751,763 copies of works, consisting of eight million pages, were printed in the Chinese and Malay languages at Canton, Malacca, Batavia, Penang, and Singapore. This includes 2075 complete Chinese Bibles, 9970 New Testaments, and 31,000 separate portions of Scripture printed in Chinese.

(Medhurst's 'China'; 'Evangelical Magazine,' March and April, 1833. 'Memoirs of the Life and Correspondence of Robert Morrison, D.D., compiled by his widow,' to which is appended, 'A Critical Essay on the Literary Labours of Dr. Robert Morrison.' Morrison (Dr.)—Second Edition. Dr. Morrison: his life and labours, as a missionary to the Chinese (in the University College, 2 vols. 8vo., Lond., 1839."

Morruha, a genus of fishes of the order Malacopterygii and section Subbrachii.

The Common Cod-fish may be regarded as the type of this genus, occurring in the Haddock and several other species, all of which have the ventral fins pointed and situated under, or rather in advance of, the pectorals, three dorsal fins, two anal fins, and the chin furnished with a barbule.

The Common Cod (Morrha vulgaris, Cuv.; Gadus Morrhua, Linn.) is usually about three feet in length, but sometimes attains a much larger size, and weighs from sixty to seventy pounds. The upper parts of the head and body are of an olive brown colour, mottled with yellowish; the under parts and the lateral lines are white, and the fins are dusky. The proportions of a specimen three feet in length are as follows:—The length of the head compared with that of the body (not including the tail-fin) is as one to two and a half; the length of the body compared with that of the head; the first dorsal fin commences in a vertical line just behind the origin of the pectorals; the second dorsal commences in a line over the anal opening, and terminates opposite the hinder point of the first anal fin; the anal fin commences in a vertical line; the caudal fin terminates in the same vertical line; the tail is truncated.

The Cod-fish is an inhabitant of the northern seas. In this country it is found on all parts of the coast; and in the United Kingdom alone this fish, in the catching, curing, the partial consumption, and sale, supplies employment, food, and profit, to thousands of the human race.

The account of the mode of fishing, &c., given in that most excellent work 'The History of British Fishes,' is as follows:—'The Cod-fish is very remonstrant, a favourable circumstance for the fishermen, who experience little difficulty in taking them with almost any bait, whenever a favourable locality is ascertained. As these fishes generally inhabit deep water, from twenty five to forty and even fifty fathoms, it is with the greatest difficulty they are brought up; but when caught by means of a brand, long lines, baited with fish or three and a half feet distant from one another, and run in a straight line along their whole length and shorter and smaller cards called smois; the smots are six feet each, and placed on the long line twelve feet from each other, to prevent the fish from escaping by interting their heads between these shorter lines, or smois, are formed of separate threads loosely fastened together, to guard against the teeth of the fish. Some variations occur at different parts of the coast as to the number of hooks, the length of the smot and on the long line.
between two smoods is always double the length of the smood itself. Buoyy, buoys-rope, and anchors or grapples, are fixed to one each to the end of the long line. The hooks are baited with sand-launes, limpsel, wheel, &c. The lines are always laid off, as it is impossible that they could kill the fish, nor will the ends of the line, set after having been left for about six hours, or one flood or ebb.

An improvement upon this more common plan was some years ago suggested by Mr. Cobb, who was sent to the Shetlands by the Commissioners appointed for the Improvement of the Fisheries, as he has a certain distance of the hook (about twelve inches), which suspended and floated the bait so as to prevent its falling on the ground, by which method the bait was more freely shown to the fish, by the constant and variable motion produced upon it by the tide. In the old way the bait was frequently hid from the fish by being covered with seaweed, or was consumed by some of the numerous starfish and crabs that infest the ground.

The fishermen, when not engaged in shooting, hauling, or setting their lines, fish with hand-lines, armed with two hooks kept apart by a strong piece of wire: each fisherman manages two lines, holding one line in each hand; a heavy weight is attached to the lower end of the line, not far from the hook, which is baited with fish, and upon which the fish principally feed. These two modes of line fishing are practised to a great extent nearly all round the coast; and enormous quantities of cod, haddock, whiting, coalfish, pollack, hake, ling, torsk, and all the various fish are regularly caught by the general name of whitefish, are taken.

Of cod-fish alone the number taken in one day is very considerable; from four hundred to five hundred and fifty fish have been caught on the banks of Newfoundland in ten or eleven hours by one man. The number of fishing-vessels engaging in trading from the London market told me that eight men fishing under his orders off the Dogger Bank, in twenty-five fathoms water, have taken eighty score of cod in one day. These are brought to Gravesend in stout cutter-rigged rowing-boats, built for this traffic, with a large well, in which the fish are preserved alive; and of these a portion is sent up to Billingegeat market by each night tide.

Well-boats, for preserving the fish when taken at sea, came into use in the country early in the last century: they are said to have been first built at Harwich about 1712. The store-boats remain as low down as Gravesend, because the water there is sufficiently mixed to keep the fish alive. If they were to be hauled up to London, they are always taken in two boats, built for this traffic, with a large well, in which the fish are preserved alive; and of these a portion is sent up to Billingegeat market by each night tide.

In a natural state the cod spawns about February; and seven millions of eggs have been found in the roe of one female. The cod is in the greatest perfection as food from the end of October to Christmas. It may, in fact, be said of the whole of the family of Gadidae, that they are in their best condition for the table in the colder climate. The length of inches long, abound at the mouth of the Thames and Medway throughout the summer; as autumn advances they gain size and strength, and are caught, from twelve to sixteen inches in length, by lines, near the various sandbanks, where they are found by the channel. Whereas in the Medway and Thames, where they are found by the channel; and when larger, Tamlin Cod.

The Haddock (Mormhaua angulis), Cuv., a common fish in our markets, is of a smaller size than the cod, which it greatly resembles. In size it is the head, compared with that of the body, without including the tail, is as one to two and a half; the depth of the body is less than the length of the head: the fins are situated nearly as in the cod, but they are proportionally higher; especially the dorsal, which is pointed; the tail fin has its posterior edge emarginated. Its colour is usually paler than the common cod, the back is palish brown, the belly is silvery white, and the lateral line is black; a blackish patch is situated on the side of the body behind the pectoral fins, and sometimes extends over the back and towards the tail. The corresponding spot on the opposite side; the dorsal fins and tail are greyish, and the pectoral and ventral fins are paler.

This fish frequents for the most part the same localities as the common cod, being found in the northern seas. It occurs all round the coast of Great Britain and Ireland, but is said not to exist either in the Baltic or Mediterranean. It is chiefly caught with long lines baited with pieces cut from a herring or sand-laune.

In the 'Regne Animal,' it is said that when the haddock is salted, it is called dried, and by the English name hadack; and in the 'History of British Fishes,' Mr. Yarrell states, that 'the French fishermen call the haddock laddot, whence probably our name was derived.

Besides the two above-mentioned species of Mormhaua the following are enumerated and described as species occurring on the British coast:—The Dorse (Mormhaua Callarias), the Bib or Pout (M. lutea), the Poor or Power Cod (M. minutus), and the Speckled Cod (M. punctata). (Yarrell's History of British Fishes, [Fisheries.])

MORSE, a species of the genus Nautria.

MORTAGNE. [Orne.]

MORTAIN. [Manche.]

MORTALITY, BILLS OF. [BILLS OF MORTALITY.]

Mortality of the Fisheries. In describing the fisheries, it will be necessary to confine ourselves to some account of our present knowledge, theoretical and practical, of the laws which are found to regulate mortality among mankind in this country.

Uncertain as is the life of any one individual, it is now very well known that the number of individuals, at or near the same age, taken, the number that will be left at the end of a few years will be nearly the same, if they exist during that time under similar circumstances. No tables, however different the station and circumstances of which, can, from the number of events which might happen to one another by anything like the amount which might be supposed likely by one who turns his thoughts rather to the existence of one individual than of a large number. A law of proportion is discovered, and the probability of something like permanence in the distribution of mortality very great a priori. That harvests fluctuate in goodness is very well known; but it is also obvious that if the fluctuations upon a whole country had been as great as those on an individual fish, the whole race must long ere this have been starved off the face of the earth. If, in the same manner, the mortality of races had varied as much as that of families, it is impossible that the population of any country could have gone on in a gradual and regulated state of increase; or that large fluctuations, in any way compensated each other, the consequence must have been such a disproportion of the numbers living at different ages as it never has occurred to any one to imagine possible.

The law of mortality, theoretically speaking, is the relational between the numbers living at different ages; so that, having given a large number of persons alive at one age, it can be deduced by the law what number shall survive any given number of years: practically speaking, it is, in the absence of such a mathematical law, the exhibition in a table of the numbers surviving at the end of each year. Thus De Moivre's Hypothesis (namely, the supposition that out of 86 persons born one dies every year, till all are extinct) is an ascertained theoretical law of mortality; while the Carlisle table, presently given, is a practical one.

If you represent the number of persons living at the age of x, out of a certain number a at a certain previous age (usually the time of birth), then if a line varying with x be made in the abscissa, and the curve, which, when equal to 1, makes the ordinate, this curve may be called the curve of mortality. Its form, as deduced from a given set of observations, may lead, by comparison with known curves, to an equation which, more or less accurately, expresses your case. Besides De Moivre's hypothesis, others have been given, the principal of which we shall notice in order.

A curve following a mathematical law may be drawn through any points, however great their number, or irregular their distribution; but the greater the number of points, the more complex will be the equation of the curve. With an equation of a high degree (the tenth perhaps, or
the twelfth), any given table of mortality might be very nearly represented; but such complexity would be useless, and it has therefore never been attempted. Similarly, by using arcs of different curves, a near representation might be attained; but such a method, being practicable in many different ways, does not possess the interest attached to a one simple and uniform law, and would only attract attention by offering facilities for the actual calculation of life- 

In 1763 Lambert presented an equation of the following form, representing very closely the London table (ε is the base of Napier's logarithms): 

$$ y = 10000 \left( \frac{26 - x}{26} \right) - 6176 \left( 1 - e^{-\beta x} \right), $$

where \( a, \) being \( 1 = 13.658, \) and \( \beta = 1 = 2.4311, \) and \( y \) being the number surviving at the age of \( x, \) out of 10,000 born. This form, if it could be made to represent other tables, by an alteration in the constants, would be one of great practical utility; but we are not aware of any attempt having been made to extend it.

Mr. Benjamin Gompertz, in 1823, presented to the Royal Society a memoir 'On the Nature of the Function expressive of the Law of Human Mortality.' As this ingenious paper is written from a high probability, and terminates in a conclusion which accords in a great degree with observed facts, it must always be considered as a very remarkable paper in the history of the inquiry before us. We enter into some detail of it the more readily, that it may serve as an argument to Mr. Gompertz, whose ideas have been adopted by a recent writer on the subject, without anything approaching to a sufficient acknowledgment.

There is in the human constitution a power of resisting the effects of disease, which increases from birth up to a certain age, and diminishes from that time forwards; the evidence of such diminution being the increased proportion of deaths in a given time. The proportion is found, in most tables, not to be altered by equal quantities in equal times, but to diminish, as a greater part of life goes on.

Mr. Gompertz assumes that the 'power to oppose destruction' loses equal proportions in equal times; so that the intensity of mortality, supposed inversely proportional to this quantity, would be represented by the formula \( a \cdot q^{x}, \) where \( a \) is its value at the beginning of life, from which \( x \) years are reckoned, and \( q \) a constant depending on the rate of increase of the intensity. If therefore \( y \) be the number living at the end of \( x \) years, \( y \cdot a \cdot q^{x} = a \cdot b \) in the decrement of the time \( x \), where \( b \) is another constant; and this gives \( y = a \cdot b \log x, \) which integrated is the form

\[
y = k \log x,
\]

where \( k, \) \( a, \) \( q, \) and \( b \) are to be determined. This can be done by three values of \( y \) out of the given table; and the result, though purely hypothetical, can then be compared with the other parts of the table, by calculation of the values of the formula for different ages. The more convenient form of the above is

\[
\log y = \log a + \log b - \log \log \frac{\log g + x \log q}{\log \log g}
\]

where \( \log g \) is taken without reference to the sign of \( \log g, \) and the upper or lower sign is used according to the sign of \( \log q. \)

Among other comparisons, Mr. Gompertz has made one with the Oldbury table of age 10 to that of 60, and with tables including different values of \( l, g, \) and \( q, \) from 60 to 110. The two formulae obtained were, using log \( -1 \) for the logarithms, \( a \mid x \) and \( a \frac{1}{x} \) the mean age of death of the population. Mr. Gompertz has also presented that the identity character of the law of mortality being assumed, follows that of the formula \( M_{t} + \frac{1}{1 + \mu} \) persons born, it is the law of the mortality that \( M_{t} \) die in their first year, or that \( M_{t} + \frac{1}{1 + \mu} \) survive; similarly that \( M_{t} + \frac{1}{1 + \mu} \) survive two, and so on. But if the population be in a state of increase, and if the annual ratio of increase be that of \( 1 + \mu, \) those who die at the age \( x = 1 \) and \( x \) cannot be incorporated in the same table, since the first are a portion of a table of different life, with a larger number of births than before, and the former must then be reduced, or the latter increased, in the proportion of \( 1 + \mu; \) so that if \( M_{t}, M_{t}, \) &c., be the deaths in the first, second, &c., years of age by the register, the table must run thus: of

\[
M_{t} + M_{t} (1 + \mu) + M_{t} (1 + \mu)^{2} + \ldots
\]

persons born, \( M_{t} \) die in their first year, \( M_{t} (1 + \mu) \) in their second, and so on.
A table of mortality may also be given in the form of a table of the mean durations of life, calculated as in Life, **MEAN DURATION OF.** Or the table of mean durations may be obtained from the yearly rates, as follows:—

\[
\bar{m} = \frac{1}{2} \left( 1 - m_a \right) \left( \bar{m}_a + \bar{m}_b \right)
\]

by which, beginning from the end of life, the mean duration at each age may be computed from that at the age next higher.

Various tables of several kinds have been constructed, beginning with that made by Halley from the town of Breslau, ending with the Equitable Table of Insurance Offices from its own materials. If we were to look to the wants of the subject, whether as a physical investigation or a statistical one, we should find that it is everywhere in the infancy. The fact of a difference of mortality between the two sexes is established, and it also seems to be known that where the occupations of females are not above their strength, their mortality is less than that of males; but no settled determination of the amount of difference has been fixed. Thackeray's great dissatisfactions, single life is the longest, whether the age of the parents, or the relative age, affects the mortality of the children, whether the earlier children of a marriage differ in their law of mortality from the later, &c., we have no information at all. In the North of England, in the provinces of the North of France, attention paid by the government to statistical subjects has produced some results which are worth a good deal; the reader may consult the article in the **Encyclopedia Britannica** already cited for reference to them. We shall now give some of the details of the most remarkable earlier tables connected with the subject.

A.D. 1538, parish registers first kept in England.

1540-41. The statute 32 Henry VIII., c. 28, enabling ecclesiastical persons and corporations to grant leases for nine years, or terms of years, was passed. During this period, we think, much of the attention which has been paid to the subject of life leases in England. It gave rise to certain tables of the value of leases which were called **Annuity Tables.** These tables were put together, as was thought by later writers, about the end of the reign of Henry VIII. They assume a rate of interest greater than 11 per cent. After the Restoration, when the interest of money had very much fallen, the ecclesiastical lessees began to raise their rates. Thackeray's great dissatisfactions, and frequent representations to the House of Commons, which, though it passed no law, in several cases recommended to particular bishops, &c., an adherence to the old rule. Attention began to be turned towards the actuary controversy, and Tables of mortality were constructed.

Natural and Political Observations on the Bills of Mortality, often reprinted. In 1674, Sir William Petty, in a paper in the 'Philosophical Transactions,' proposed a law of mortality of the following kind: the probability of one life since birth is well represented by the square root of the ages. In 1685 were published the well-known 'Tables for renewing and purchasing the leases of the churches and colleges,' the methods of which were certified to be correct by Newton, and which therefore have been frequently called Newton's Tables. About 1720, if not before, a letter called 'The Value of Church and Colleges Leases considered,' was appended to these tables, and a very sharp controversy took place, which produced a great many pamphlets; the party of the leases answered with a variety of middle ages as an essay of life and interest of money that the church landlord dealt more leniently with his tenant than the layman, as was indeed the case. Among the writings which arose out of this controversy; the **Tables of Carlisle,** by John Richards, containing the most complete tables of annuities which had been published.

The work of Graunt and the political essays of Sir William Petty preceded, and probably stimulated the attempt of Halley to construct (A.D. 1692) a table from the bills of mortality at Breslau, which was published in 1693. In 1699 came Dr. Davenport's 'Essay,' &c., containing extracts from some tables by Gregory King (afterwards published entire), which Mr. Milne states to represent tables since marriage with much accuracy. Kerseboom's tables of lives (constructed from Dutch registers of annuities) appeared in 1738, 1740, and 1742. De Moivre's 'Treatise on Annuities,' containing his celebrated hypothesis, was published in 1742; and Thomas Simpson's work on the same subject, containing a table deduced from London observations, in 1742.**}

**The Doctrine of Annuities and Assurances,** by Francis Baily, London, Richard, 1816. This work, now out of print, has been lately translated into French, under the title 'Théorie des Annuités Viagères,' traduit de l'Anglais par Alfred de Courcy, Paris, Bachelier, 1836.


On the Natural and Mathematical Laws concerning Population, Vitality, and Mortality,' by Francis Corbaux, London, 1833. This work contains a large number of tables.

Reports (two in number) of Select Committees of the House of Commons on the Laws respecting Friendly Societies. Ordered to be printed, July 5, 1825, and June 29, 1827.

Report of John Finlaison, actuary of the national debt, on the evidence and elementary facts on which the tables of life annuities are founded.' Ordered by the House of Commons to be printed, March 31, 1829.


Tables showing the total number of persons insured in the Equitable Society, &c., by Arthur Morgan, London, 1834.

Mr. Rickman's various Reports on the Population Census contain tables deduced from them.

'Recherches sur la Décroissance de la Mortalité,' &c., par MM. Quetelet et Smits, Bruxelles, 1832; & 'Sur l'Homme, &c., on Essai de Physique Sociale,' 2 vols., par A. Quetelet, Paris, 1833. These works were in Latin and in French and were written for Belgium what we could wish to see imitated in England.

We shall now proceed to give some tables of mortality, namely, the Northampton, &c., the tables of the Equitable Life Assurance Office, and Mr. Ansell's Friendly Societies' table. We shall give a brief description of each.

1. **Northampton Table.** This table was formed by Dr. Price from the bills of mortality at Northampton, between 1741 and 1780. He has not distinctly described the process by which he formed it. This table was for a long time the only one used by the insurance offices. It is now known to give the probabilities of life too low at the younger and middle ages. Some of this must probably not all is due to the increased value of life in England since the middle of the last century. This table contains both males and females in nearly equal numbers. The accuracy of the Northampton Table with De Moivre's Hypothesis at the middle ages of 30-50 is considerably close. (Price, Obs. on Rev. Paym., vol. ii., p. 94.)

2. The Carlisle Table. The materials of this table were obtained by Mr. Milne from a tract published by Dr. Heywood, containing an actuarial bill of mortality from 1779 to 1779, both inclusive. The proportion is ten females to nine males. From the verification which this table has since received, it must be considered as the most correct representative of healthy life in England which exists. (Milne, De Annuitis, p. 404.)

3. The Equitable Table. The tract in which this is found is cited above. It represents the experience of the Equitable Society from 1760 to 1789, and agrees closely at the middle ages with the Carlisle Table. The agreement would be a little closer in most parts but for the following circumstance. In the formation of this table it is presumed that all those who discontinued their insurance lived, one with au-
other, one-half of their year of discontinuance in the Society. Now (throwing aside short insurances, which are always very small in number) the modes of discontinuance are only abandonment by neglect to renew the premium, and sale to the Society. In the former case the parties live the whole year of discontinuance in the Society, since their intention not to renew would be no bar to a claim on the part of their executors if their death took place during a year at the beginning of which premium had been paid; and it is well known that in the earlier history of every insurance office, abandonments were much more frequent than sales. And even in the case of sales to the office, it may reasonably be assumed, unless proof to the contrary were shown, that they take place, for the most part, shortly before a new premium becomes due, parties frequently choosing to take the benefit of the insurance as long as they can, and to sell when a new payment is approaching. It must therefore be supposed (unless, as before hinted at, specific proof from the records of the office be produced to the contrary) that the discontinuants, or a very large majority of them, lived the whole year of discontinuance in the office. This will make the mortality a little less than that represented in the table, though not much.

There is also a point on which, if our information be correct, the method of forming this table has been misapprehended. Those who study the subject are aware of the thing to which we refer (Enc. Metr., article 'Mortality,' part ii., § 53, note), and will therefore comprehend the following. It is, we understand, the practice of the Society in question to make up the registers on the first day of January, at which period every person insured during the previous year is put down as being of the office age which he had at his entrance. Now this office age means the age at the next birthday; that is, one with another, parties do not attain their office age till they have lived half a year in the Society. But on each first of January the parties insured during the previous year have, one with another, lived half a year in the Society, so that they are correctly stated as being of their office age when the registers are made. The preface of this very valuable table is not sufficiently explicit on this and several other points.

4. The Friendly Societies' Table. The materials for this table were collected by the Society for the Diffusion of Useful Knowledge, and were discussed by Mr. Ansell in the work cited above, which should be in the hands of every one interested in the excellent institutions of which it treats. It embraces the history, as to mortality, of 24,232 years of life, among the labouring classes, from all parts of England indiscriminately, and from 1823 to 1828.

I. Decrements of Human Life, according to the Northampton, Carlisle, Equitable, and Friendly Societies' Tables.

<table>
<thead>
<tr>
<th>Age</th>
<th>Northampton</th>
<th>Carlisle</th>
<th>Equitable</th>
<th>Society</th>
<th>Decrementa.</th>
<th>Age</th>
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<td>1000</td>
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<td>4679</td>
<td>1785</td>
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<td>0997</td>
<td>0997</td>
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<td>0871</td>
<td>0871</td>
<td>1300</td>
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</table>

The explanation is as follows.—Of 10,000 insured at Carlisle, 1539 would die in their first year, and would survive, while 4000 would live to 55 and apace. In the Equitable Table, of 3922 persons attaining the age of 40, 43 and 44 die in the two succeeding years, leaving 3835 surviving at the 42nd birthday.

Of the three species of tables, this is the most used in mathematical deduction, and the least adapted for use.
parative view. The best way of using them for the examination of their relative bearings is to compare the probable life, as it is called, of the two, that is, the time in which the numbers living are reduced one-half. Thus taking the age of 31, we see that the numbers living in the Northampton table are halved at the age of 39, while in the Carlisle table this does not happen till the age of 67.

II. Yearly Rates of Mortality upon 10,000 lives according to the Northampton, Carlisle, Equitable, and Friendly Societies' Tables.

Thus, of 10,000 persons attaining the age of 40, 130 die in the following year according to the Carlisle tables; while of 10,000 who attain the age of 41, 138 die in the next year. This species of table is the only one of the three which is immediately applicable to the comparison of two sets of data at and near a given age; while the one to which we now come serves to compare the total character of two sets of data from and after a given age. It also unites the fluctuations of different years, by compensation: thus looking at tables II. we should hardly suspect that closeness of resemblance between the Carlisle and Equitable tables, in the value of life, which is obvious in those marked III.

P.G. No. 964.
Comparing tables made from the same sex, or from the mixture of both, that is, looking at T, R, A, E, and G together for the males (P and F are made from the labouring classes exclusively), at t, r, and g for females, and at L. H, N, and C for both together, the general increase of longevity is sufficiently apparent. The older tables, made from burial-registries, will not prove more than the general fact, uncorrected as they are both for increase of population and migration. The great excess of the Carlisle Table, it must be remembered, is partly owing to the deaths from small-pox having been allowed for, which, though necessary in a table intended for subsequent use among a vaccinated population, prevents the comparison between the Carlisle and preceding tables from being altogether fair. The tables A, B, and C are very similar, and show that the life of the more provident class of labourers (who resort to Friendly Societies) is now as good as those of the Amicable Insurance Office in the last century. That Society is supposed not to have been, in former times, so careful in the selection of lives as the modern institutions of the same kind. This was probably the case, though another circumstance may have operated still more on the table. Up to the year 1808, or thereabouts, no lives older than 45 were taken; so that, while the registers of the Equitable Society have been constantly recruited with selected lives from 45 to 60, as well as at the lower ages, those of the Amicable Society have not had the same advantage above the age of 45. We think however that much of the difference between the two arises from the earlier period when the tables of the latter Society represent.

### Table 1: Age-specific Mortality Rates

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<th>Age</th>
<th>T</th>
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<th>Oo, R.</th>
<th>r</th>
<th>H, N, n</th>
<th>A:</th>
<th>Cc:</th>
<th>E:</th>
<th>G:</th>
<th>g:</th>
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### Table 1: (Cont.)

- **Tontine**: 1728, 1740, 1772, 1751, 1753, 1740, 1775, 1740, 1777, 1750, 1740, 1778, 1750, 1740, 1801, 1823
- **Carlisle**: 1728, 1740, 1772, 1751, 1753, 1740, 1777, 1750, 1740, 1778, 1750, 1740, 1801, 1823

Thus in Table 1 at the age of 20, the mean duration of a single life is the tenth part of 293 years, or 29.3 years.

- **T**: King William's Tontine
- **L**: London Table
- **Oo**: Norwich Table
- **H**: Chester Tables
- **H h**: Holy Cross Table
- **N a**: Northampton Table
- **c c**: Amicable Society's Table
- **c e**: Carlisle Table
- **E**: Equitable Table
- **G**: Government Annuities
- **Cc**: Chelsea Pensioners
- **F**: Friendly Societies' Table

To show that this distribution does not arise from the method of forming the tables: we have put the column after all symbols of tables formed from burial-registries (except the Carlisle, which has been in every point too carefully corrected to allow it to rank in method of formation with the rest) and subject to errors of population, and the column after those tables which have been formed in such a manner that no errors of the preceding kind can appear. It will then readily be seen, as a general result, that old life is relatively longest in those tables in which life in general is

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* Mr. Lubbock's corrected table ('Life, Use of Eq. and Pensioners') might not have been in the same degree as the others corrected, owing to the experience of the Society, which has been in this line since 1760.
altimately shortest, and that tables formed from female life, exclusively, do it more. We have observed (and it is so in many other tables, and we think a general explanation can be given. It is well known that the admirers of nature (many of them, at least) formerly included savage life in their panegyrics, and contrasted the uniform good above, with the frequent deformity and debility of the civilized man: this opinion however has declined since it was remarked that such uniformity of strength was probably a consequence of its being impossible for a disabled or weakened individual to subsist where the highest standard of health is required to procure common necessaries. Something of the same sort seems to take place with regard to mortality: where the disposing causes of death are strong and inadequately met, the weaker constitutions swell the table of mortality at the younger ages, leaving a relatively stouter person to face the chances of more advanced life. Thus in the case of a disabled soldier, he who can last to 60 is half as good, in point of duration, as he was at 20; while the insurer in the Equitable is only one-third as good relatively, and absolutely not nearly so good in the female.

It is sufficiently obvious that female life is better than male, from every comparison of the preceding tables, and almost at every age. To compare these durations, let us suppose two individuals of different sex, every age in the same series, G and g. If we then take the united amounts of their average lives from 15 to 85, we find that, one age with another, and for equal numbers of males and females similarly distributed,

For 1000 years of King William's Time (1104) Years of male life in the County of Carlisle. The Government male females are 1163 life.

There appears then to have been a slight increase in the average length of life, from those who admit it must conclude that improved medical science and greater accessibility of comforts lengthen the life of females more than that of males. At any rate the other extreme is tolerably well proved by foreign tables, Belgian and Swiss, (we may not consider the country to settle itself,) namely, that when the lives of women are employed in laborious occupations in the open air, they are materially shortened in duration. In Belgium the lives of women living in the country are, on the whole population in the country (mostly laborious, of course,) about one third of those of men; while in the towns they are longer, the proportion above-mentioned being that of 1000 to 1071.

On the mortality of the infant periods of life there is but little difference. Except that the Government Annuities, unite in showing that the value of life improves up to a period which differs in different tables; being six years of age in the Northampton Table, and five in the Carlisle. With respect to the Government Table it must be considered that the numbers in the first years of life are small, and also that all the lives are selected. If then it be more easy to select the best lives among infants than from among grown people, the anomaly of these tables is explained; and the explanation is not difficult to admit, if we remember that the selection is made in most cases by the relations of the party selected, who are perfectly aware both of the state of health of the infant (generally more marked than that of a grown person) and the longevity of its ancestors. We consider the Carlisle Table to contain the best information on the period of life preceding years of discretion, for the middle and higher classes.

We are also of opinion that the Carlisle Table is more likely to represent truly the very old ages; probably from the nature of materials, but from a better theory having been applied in their formation. It has been very common to end tables with the oldest lives observed in them: but the Equitable Table ends at 97, because the last ages are the different degrees of extreme (without a table number) took place at that age. This is not correct in principle, and is the same thing as if, a pair of dice having been thrown a large number of times (say 10,000), it should be inferred that no runs of doubles should ever be calculated on; because the actual number of throws was relatively small compared with the number of the throws. In the case of the dice we can calculate beforehand what was the chance of longer runs; and in the table of mortality we have no a priori calculation, but only observation of instances: this throws a difficulty in the way, but that difficulty is not properly met by exclusion of all that has not happened; as impossible. For the calculations connected with annuities, &c. it is of little consequence, because cases rarely occur in which the purchasing parties are above 80; at which age the chance of living twenty years is so small, that it would not much affect the pecuniary results if those who could get over the period between 80 and 100 years were afterwards supposed to live for ever. But for the determination of the physical laws of the duration of life, such termination of the tables at the oldest age of observed death is wholly inadmissible.

Mr. Bayle has given a 'Comparative View of Institutions for the Assurance of Lives,' London, 1826; Table XII, Appendix, from Easton's Human Longevity, Salisbury, 1799 a table formed by 1751 persons who attained the age of 100, which we subjoin, with such additions as will make it correspond with those given before:—

This table is the necessary consequence of that very large amount of dubious testimony which exists, in various places, upon instances of particular longevity. Looked at separately, there are no means of refuting any one instance; but their united effect is beyond all credibility. The ages of many of these persons have been positively confirmed by their own statements of the earliest public events within their memory, and it is not unlikely that very old persons frequently confuse what they have heard talked about in their infancy with what they have seen themselves. There is also a natural tendency to exaggerate great age. Enough however remains, when every possible allowance has been made for error, to show that the remaining life of a person aged 100 years is not so very small as it is generally believed to be; and we strongly suspect that the last years of the Carlisle Table are no exaggeration, but really considerably short of the actual law which prevails among the middle classes of society.

MORTAR. Common mortar is the substance placed between the stones or bricks of a building, to bind them together, and thus cause them to retain their places and give strength and stability to the edifice. Mortar is essentially composed of lime and siliceous sand, the first being in the state of hydrate or slaked lime: the sand is used of several sorts. The hardness of mortar acquires is owing to the gradual conversion of the hydrate of lime into carbonate of lime, which takes place very slowly by the absorption of carbonic acid gas from the atmosphere; in this state it adheres very firmly to the particles of siliceous sand, and is thereby strongly united with the material employed in the building. In order that this change may occur with advantage, certain conditions are requisite: if the mortar dries too quickly, the carbonate formed will remain much divided,
and will not acquire the necessary adhesive property; if, on the other hand, the mortar be placed under water, a portion of the lime will gradually dissolve, but remains as a solid, and the remaining part will become carbonatic with great difficulty, and the particles of sand will be isolated. If, on the contrary, the mortar be long kept moist and exposed to the air, the carbonatic acid gas acts slowly but incessantly on the lime, the water of which becomes gradually saturated with it, and the acetic acid being transferred to the lime, it is converted into an almost crystalline carbonate, in successive portions or layers, and these adhere with great force to the particles of sand. It follows, from what has been stated, that buildings erected with mortars, are more durable which are set down in portions or layers which are not exposed to the air. For mortars, which are not constructed later in the year; but it is to be observed, that during frost, owing to the freezing of the water, the absorption of carbonic acid is not only stopped, but the solidity of the mortar is destroyed by the freezing or crystallization of the water.

The proportions of lime and sand employed are subject to considerable variation; those most commonly used are said to be a bushel of lime to a bushel and a half of sand; but where greater durability is required, a quantity used is generally higher. The method of making the mortar is perfectly simple; the lime is either first slaked by the addition of water, and then the sand and more water are mixed with it, or the lime and sand are first mixed, and water subsequently added to the mixture.

Much has been said as to the extreme hardness of ancient mortars, and it is supposed that some secret method was adopted in its preparation; but the fact may probably be accounted for by merely referring to the circumstance, that the heat in France during the winter has given the carbonic acid from the air, upon which its hardness and durability depend. It is to be observed that lime which is not sufficiently burnt, or lime which has been slaked by the addition of water, or lime which has been acetylated in any manner to remove its carbonic acid, cannot form good mortar; the first has not been deprived of the carbonic acid which it requires to retain solidity from the air, and the latter has re-acquired it under circumstances which diminish instead of increase the solidity of the mortar.

When limestones contain considerable portions of silica and alumina, they form what has been termed of late years hydraulic lime, and the mortars made with them are called hydraulic mortars. This was the case with the cement at Nereus, Parkers' cement is a well-known kind: it will set, as it is termed, or become solid, in a quarter of an hour, either in the air or under water. In France artificial hydraulic lime has been prepared, and appears to answer the purpose extremely well. The lime mortar's properties have been made equal to about 62 per cent. of carbonate of lime, 6 of carbonate of iron, 15 of silice, 5 of alumina, 6 of water, and some oxide of iron.

MORTAR, a vessel in which substances are either reduced to fragments, pulverised, or dissolved by beating or triturating with a pestle. Mortars are made of different materials and various sizes and forms, according to the use to which they are to be applied. For the purpose of breaking large masses into smaller, or for pulverising ores, metals, and coarse or heavy matters, a large cast-iron mortar with a pestle of the same material is generally preferred: it is placed upon a block, the pestle being attached to a spring, which greatly relieves the operator. Mortars made of wood are frequently used in the manufacture of gunpowder: cast-iron mortars are extremely useful for preparing medicines. In some cases glass mortars are used, but this is only for solution or mixing, and not for pulverising. Such vessels as the reduction of substances to fine powder, an agate, flint, or porphyry mortar is used, care being taken that the mortar is of a sufficiently hard material to prevent abrasion by the substance pulverised in it.

MORTARA, The Province of, in the Sardinian territories, north of the Po, forms part of the great plain of Lombardy, and is bounded on the north by Novara, on the west by Vercelli, on the south by the Po, which divides it from the province of the same name, which separates it from the Milanese territory. The Agogna and the Tordoppi, both affluent of the Po, cross the province from north to south. The length of the province is 25 miles from east to west, and its breadth is about 22 miles from north to south. The products of the country are rice, corn, Indian corn, wine, and silk; there are also pastures for cattle.

This district is in former, and is still now occasionally, called Lolminella, from the small town of Lolmen. It constituted a fief of the empire, with the title of marquisate. The towns are,—1. Mortara, with 4000 inhabitants: 2. Vigevano, the largest town in the province, near the right bank of the Ticino, which is a bishop's see, has several churches and convents, manufactories of gauze, hats, and soaps, a poorhouse and workhouse opened in 1832, and 12,000 inhabitants. (Neigebar, Calendario Sardo.)

MORTARS are pieces of ordnance which, compared with those of the ancient times, are considerably larger, and are intended to throw shells or carcasses at considerable elevations (generally at 45°, but sometimes as much as 70°), in order that the missile may range to a great distance, and, falling near vertically upon the object (a battery, magazine, or besieged place), may crush it by the momentum imparted in descending. Mortars are either of iron or brass; they rest upon solid beds, and the trunnions or cylinders upon which they turn, in giving the required elevation, are placed at the outer extremity of the piece, in a mortar platform, in a battery, should be very strong, in order that it may bear the great recoil or shock of the piece when fired; and it should be carefully laid in a horizontal position.

The calibres of mortars in the British service are 3, 5, 6, 8, and 10, and are of different kinds: the largest mortars are used on land, and the last two are also employed in the navy; but in this latter service the pieces are about 16 inches longer than the land-service pieces of the same calibre. The two first are sometimes called royal mortars. The shell which by various exigencies of the service may be required to be thrown, or of the proportions, even when charged with quantities of powder bearing the same proportion to the weights of the shells. It has been supposed that mortars were employed in the year 1458 at the siege of the city of Genoa: no other ground than a statement that artillery of considerable magnitude was conveyed into Italy with the army of Charles VIII. In 1588 however the use of mortars must have been well known; since, in the Appendix to the "Colloquies of Tarragon," which was published in those days, the method of filling and projecting carcasses is fully described; and it appears that, in the same year, shells were thrown from ordnances at the siege of Wachtendonk. (Bomax.) Redhot shot were thrown from mortars at the siege of Brecon, by the French; and it is supposed that they were put to other ground than that statement that artillery of considerable magnitude was conveyed into Italy with the army of Charles VIII.

The first artillerists were somewhat capricious in the formation of their great ordnance; and among the various kinds which they devised may be mentioned what were called Partridge mortars. These had one great central bore for the reception of the shell; and, at the mouth of the muzzle, were sunk thirteen chambers, each of which contained a grenade. The shell and grenades were discharged at the same time, and in the air they must have appeared like a flight of birds; from which circumstance, no doubt, the name of the mortar was taken.

The Dutch engineer Coehorn invented a small mortar for throwing grenades into the covered-ways of places. They were capable of being carried about and served by one man. They were called grenade mortars; considered as a very convenient spot, and rapidly fired when it was intended to drive the defenders from behind the parapets. In the French service Pierrier (small mortars loaded with stones) are still employed for the same purpose.

In the campaign of 1802 a mortar experiment was tried at Gibraltar on the discharge of stones from an excavation in the rock. The figure of the excavation was a parabolical conoid, whose axis is 4 feet long, and whose diameter at the muzzle is 3 feet. It was charged with 27 lbs. of powder and 1470 stones; and, on the evening of the firing place, nearly one-fourth of the stones were projected to the distance of 100 yards. There are several rock-mortars, as they are called, at Malta, and such may on some occasions be useful for the defence of a place.

MORTAGE. A general notion of a mortgage may be collected from the following passage in Littleton (§ 352), who treats of mortgages, as then in use, under the general head of estates upon condition.
If a settlement be made upon such condition, that if the settlor pay to the settlee, at a certain day, 40l. of money, then the settlor may re-enter, &c., in this case the settlee is called tenant in mortgage, which is as much to say, in French, as mortgage; and in Latin, mortuam suationem. As of the lands the interest, or any part of the value of the land is, for that it is doubtful whether the settlor will pay, at the day limited, such sum or not: and if he do not pay, then the land, which is put in pledge upon condition for the payment of the money, is, by the terms of it, taken from him for ever, and so dead to him, upon condition. And if he doth pay the money, then the pledge is dead as to the tenant, &c.

The money thus agreed to be paid by the settlor must be supposed to be money borrowed from the settlee, or the mortgagee, and is to be paid to the settlee by the administrors, executors, administrators, or assigns, as he or they shall direct. In deeds which contain a power of sale, it is usual to insert a proviso, that such power of sale is not to destroy or prejudice the mortgagee's right of foreclosure.

These are the essential parts of a mortgage-deed, which is varied according to the estate or interest in the lands which the mortgagee conveys to the mortgagor, and according to the special agreement of the parties. By the execution of the deed, the estate of the mortgagor in the lands-mortgage is absolutely extinguished; and the mortgagee's estate is not forfeited till he makes default in payment of the money borrowed and interest at the time named in the deed. The money borrowed is however seldom paid in the time agreed, upon which refusal the mortgagee's estate is forfeited by his not fulfilling the condition, and the mortgagee becomes the absolute legal owner of the land, or of such estate in it as was conveyed to him.

He can then bring an action of ejectment against the mortgagor, if the mortgagee is in possession of the land, or he can give him notice, and he can do this even before default in payment, unless it is agreed by the mortgagee-deed that the mortgagee shall remain in possession till he makes default, and in a clause to that effect commonly it is agreed.

After the mortgage is made, the mortgagor cannot make a lease of the lands without the mortgagee's consent, for he has no interest in the land out of which he can create a legal estate; and if any such lessee gets possession of the land, the mortgagor may eject him. But the lessee who claims by a title prior to the mortgage is not affected by the mortgage transaction, though, after default is made and he has notice from the mortgagor, he is bound to pay him the future rents and those which are then due.

There has been much discussion upon the nature of the relation of the mortgagor in possession and the mortgagee; and this relation has been supposed to be that of tenant and landlord, the nature of the tenancy varying according as we consider it before or after default. If this is an erroneous view of the legal effect of the contract, and the supposition of a tenancy is perfectly useless for the explanation of the rights either of the mortgagor or mortgagee, which are determined by the instrument of mortgage, and by the well-established jurisdiction of courts of equity in matters of mortgage.

From the time of default being made, the several interests of the mortgagor and the mortgagee in the land must be considered as chiefly belonging to the jurisdiction of courts of equity. When the mortgagor, default of the mortgagor, has become the absolute legal owner of the lands, the mortgagor possesses what is called the equity of redemption.

This equity of redemption is conferred by courts of equity as an estate in the land: it may be devised by the mortgagor, by his testament, to his heir; it may be sold, or it may be mortgaged; it is subject both to dower (in equity, by 3 and 4 W. IV., c. 105) and curtesy; and it may be settled like a legal estate.

By a recent statute (5 & 6 W. IV., c. 28), made for the purpose of explaining the statute of limitations (3 & 4 W. IV., c. 27), it is enacted, That any person entitled to or claiming under any mortgage of land (as defined by the last-mentioned act) may make an entry or bring an action at law or suit in equity, to recover the estate or interest in the land for which such entry or suit in equity shall have first accrued. This act was passed to protect the mortgagor who allows the mortgagee...
to continue in possession of the land or in the receipt of the rents and profits; and it secures to him his rights for twenty years after the last payment of principal or interest by the mortgagor. By the 3 & 4 W. IV., c. 27, when a mortgagee has possession of the land or receipt of the profit, the mortgagor may claim from him, but he can only bring a suit to redeem the lands within twenty years next after the commencement of such possession or receipt, or within twenty years from the time when the mortgagor or the person claiming under him, has knowledge of the proceeding to the mortgagee, or some person claiming his estate, or to the agent of such mortgagor or person, his title of mortgage or right to redemption. The mortgagor, or the person claiming under him, may therefore, at any time within the above period, insist upon the mortgagor's principal money and interest, and claim a reconveyance of the lands; and if the mortgagor will not accept the tender and reconvey, the mortgagor may compel him by filing a bill in equity for the redemption of his lands.

A mortgagee can transfer his mortgage to another. The transfer or assignment, as it is generally called, consists of two parts expressed in one deed, the transfer of the debt, and the conveyance of the land, which is the security for the debt. When the mortgagor is residual, and assigns the mortgage, the assignee takes the mortgage exactly on the terms on which the assignor held it at the time of the assignment. If therefore the mortgageor should have paid the whole or any part of the debt, the assignee, in coming to a settlement of the money, would be entitled to the money paid in diminution of the original debt which the assignor affected to assign to him.

Though the mortgagee, after the mortgagor's default in payment of principal money and interest has the absolute legal estate, he is still considered by courts of equity only to hold it as a security for his debt. The legal estate in the land will descend to the mortgagee's heir, or will pass by his will, if duly executed; but the heir or devisee takes only an equitable estate. In the land, therefore, (as a general rule) belongs to the mortgagee's administrator or executor.

If the principal money and interest are not paid at the time agreed on, the mortgagee may file a bill of foreclosure against the mortgagor. By such bill the mortgagee calls on the mortgagor to redeem his estate forthwith, by payment of the principal money, interest, and costs; and if the mortgagor does not pay this within the time named by the decree of the court (which is generally within six months after the bill is entered), and his security has not been realized as due for principal, interest, and costs, he is for ever closed and barred of his equity of redemption, and the mortgagee becomes the owner of the land in equity, as he would have been had the money been paid at the time named in the mortgage, the mortgagor must reconvey the land, and deliver up to the mortgagor all the deeds and writings in his possession relating to the land.

If both the mortgagor and mortgagee are living at the time when the lands are redeemed, and nothing has been done by either party to assign or transfer his interest to any other person, the transaction is a very simple one: the mortgagor pays his debt and interest, and the mortgagee reconveys the lands. The settlement of accounts between the mortgagor and mortgagee may be rendered much more difficult by the circumstance of the mortgagee having received the rents, for which the decree for redemption provides that he must account. It may however happen that after the mortgagee has paid the debt and interest, that they are not properly disposed of their interests in the lands, or all these events may have happened, which renders the settlement much more complicated.

To take the case of mortgagor and mortgagee being dead. An equity of redemption implies a debt from the mortgagee to the mortgagor, which he is bound to pay, even if there are no covenants for payment in the mortgage-deed, it follows that, according to the general rule of law, his personal estate is in the first instance liable to pay the debt. If less than he has paid, he will make a different provision for payment of it. Thus the heir or devisee of the equity of redemption may be entitled to call on the administrator or executor to pay the mortgage debt. If however no provision was ever made for the heir or devisee, or the equity of redemption descended or was devised to him from or by the mortgagor, or if he purchased the equity of redemption, his personal estate is not liable to pay the mortgage debt; but the person who derives his title to the land from such intestate, devisee, or purchaser, must take it subject to the burden of the mortgage debt.

When a mortgage deed contains a power of sale, which is exercised in the lifetime of the mortgagor, the surplus money is personal estate; but if the sale is effected after the mortgagor's death, the money belongs to his heir or devisee.

The person entitled to receive the debt is the administrator or executor of the mortgagee; for, as already observed, the land is only considered as a security for the debt, which the mortgagee has bound himself, his heirs, executors, and assigns, to reconvey, to the mortgagee, or his assigns, the administrator, executors, and assigns. Thus whether the mortgagee dies without having or after having assigned his mortgage, the money is a debt due to the personal representative of the mortgagee, or to his assignee, or to the personal representative of the assignee, if the assignee is dead. When the debt is received by the person entitled to receive it, the person who has the legal ownership of the land, whether he be heir or devisee, is bound to convey it to the person to whom the mortgagee assigned it, or to his assigns, or to the administrator, executors, and assigns. In such case, on payment of the debt to the person entitled to receive it, the heir or devisee is by a fiction converted into a trustee for the person entitled to the land. The mortgagee may, however, by express declaration, convey the land, or the equity of redemption, or the title-deeds (by warranty or otherwise as an assignment or devise, or by way of repudiation or reversion), and make it pass as land by his will; in which case the devisee will have the same title to the money as he would have had to the land if it had been absolutely the property of the mortgagor.

When the mortgagee has mortgaged his equity of redemption (which he may do as often as he pleases), every new mortgagee has his claim on the land as a security for his debt, according to the order in which his mortgage was made. This is the general rule, and, so far as exceptions, which depend on particular circumstances. Thus a mortgagee of the equity of redemption will be preferred to his security, to a subsequent mortgagee who has advanced his money without notice of the prior mortgage, if such subsequent mortgagee should be able to obtain the legal estate.

If a second mortgagee obtains the title-deeds of the estate, this will not give him a preference over a prior legal mortgagee, unless the prior mortgagee has parted with or assigned his mortgage to the second, and thereby with the security. An agreement in writing to transfer an estate as a security for the repayment of a sum of money, is called an equitable mortgage, because it gives the intended mortgagee a right to have a legal mortgage, and in a court of equity gives him against the mortgagor, the same rights as he would have had against the mortgagor in equity, if he had taken the title-deeds of an estate, or of the court of court roll, as a security for a debt contracted at the time of the deposit, or previously to the deposit, constitutes an equitable mortgage. An equitable mortgage by deposit of title-deeds [Lease]; but in all other cases where a person mortgaged was entitled to such covenants [Moors v. Choate, 8 Sim., 509; and so the matter stands at present].
The preceding remarks apply to mortgages of land only, in which the laity may particularly the much arises from the condition of legal ownership of land in this country. But other kinds of property may be mortgaged, such as chattels personal, a life-interest in a sum of money, or a policy of insurance, or a ship, or shares in a ship. The subject of pawning or pledging of goods is treated under a separate head, and also the rules of the Roman law as to Hypotheca and Pignoris. The equitable lien on land, which is classed among mortgages by some writers, is briefly noticed under LAEN; and mortgages of ships under *Ship.*

MORTIFICATION (in Medicine) is the death of any tissue. It may occur from a variety of causes, as intense inflammation [*Inflammation,* or from anything which is connected in with *Romey,* obtained from the Society for the *Encouragement of Arts* a premium of fifty guineas, and that of St. Paul preaching to the Britons one hundred guineas. He was further distinguished by the notice and friendship of Reynolds, which friendship has been attributed not merely to the share which that great artist played in his early days, but also to the singular part which he played in his gallery of the Duke of Richmond, began to make himself known by his productions. One of his earliest works, founded on an incident in the life of Edward the Confessor, painted in 1740, c. 26, is that of the *Battle of Agincourt,* &c., show him to have possessed great and original powers in the higher walk of art; and in his knowledge of the human figure he has rarely been surpassed. The *Brazen Serpent in the Wilderness,* in the great window of Salisbury cathedral, the cartoons for that in Brazenose College, Oxford, were designed by him.

In person Mortimer was handsome, his figure athletic, and his voice was naturally very strong, but he greatly impaired it by the excesses of what is called free living. About the year 1775 his health began to decline, his former exuberant gaiety abandoned him, and he became aloof, solitary, and melancholy; for it was at this period that the man on the horse was so much remarked, and was able to employ his pencil both industriously and profitably, realising by it nine hundred pounds in the course of a single year, his life was soon cut short, for he died on the 4th of February, 1779, in the thirty-eighth year of his age, having been the chief cause of his combe, near the valley; where is his painting of St. Paul preaching to the Britons.

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The statute of the 7 Ed. I., sometimes entitled *De Religiosis,* as follows: *Whereas it hath been found that religious men should not enter into the fees of any without the licence and consent of the chief lords of capitation dominorum of whom such fees are immediately held; and whereas religious men have, and are wont or are wont to sell or give, to their own use and buying them, and sometimes receiving of the gifts of others, by which means the services due from such fees, and which were originally provided for the defence of the realm, or for the support of the church, are lost or lost the escheats of the same,* &c. The statute then forbids any religious person or any other to buy or sell lands or tenements, or under colour of a gift or term of years, or any other title whatever, presume to receive or grant, or by any means, to appropriate to himself lands or tenements, so that such lands and tenements come into mortmain in any way (ad manum mortuam deveniant), under pain and forfeiture of the same. The statute then provides, that if it is violated, the lord of whom the lands are held may enter within a year; or if he neglect: to enter, the next lord may enter within half a year; and if all the chief lords of such fees, being of full age, within the four seas, and out of prison, neglect to enter, the

The general notion of mortmain may be collected from the words of this statute, the term being used to express lands belonging to any corporate body, ecclesiastical or temporal, sole or aggregate. Various explanations have been offered to the reason of this phrase. Some have thought that mortmain was, in mortua man, that is, in a dead body. Under the feudal system lands held by any corporate body or person might not inappropriately be said to be in a dead land as to the body of the heir. As corporation has perpetually continued and succession, the lordships and estates in his lands which, under the strict system of tenures, he derived either from the services of the tenant, while alive, or from the death of the tenant and other circumstances incidental to such event. Accordingly the best explanation of the meaning of this term seems to be that offered by Coke, that the lands were said to come to dead hands as to the lords, for that by alienation in mortmain they lost wholly their escheats, and in effect their knights' services for the defence of the realm, wards, marriages, reliefs, and the like, and therefore was called a dead land, for that a dead land yieldeth no service. Similarly, the old mortmain vadium seems to have been so called, because the land in pledge was for the time dead to the pledger. [MORTMA:]

This statute of Edward I. prevented gifts and alienations between corporate bodies or persons and others, but it was eluded by a new device, apparently invented by the clergy, and probably most used by the religious houses. These bodies, pretending a title to the land which they wished to acquire, brought an action for it to a Franchise quod reddat against the tenant, who, irresolutely made default, upon which the religious house had judgment, and entered on the land.

The statute of the 13 Edward I. (Westminster, 2, c. 32, provided against these recoveries of lands obtained by coelum or on the ground that they should be inquired whether the demandant had any right in his demand or not; and if the demandant were found to have no right, the land was declared to be forfeited to the lord's lands mediate or immediate; but, as previously, was provided by the previous statute of Edward I. Another provision of this statute (c. 33) furnishes curious evidence as to the devices employed for the purpose of eluding the statutes of mortmain. The words of the enactment will best explain the provision:—Forthwith, and to the number of the land to a religious house, to take it back again and hold it of the house; and any such gift to a religious house was declared to be void, and the land was forfeited to the lord of the fee. The reason of this provision is obvious, if we consider the nature of the feudal
die of their lords, in order that the tenants may defend themselves by the privileges of Temples and Hospitalers accorded by the laws in case of the forfeiture of the feudal tenements be forfeited to the chief lords, or to the king, in the same way in which it is enated elsewhere with respect to tenements alienated in mortmain (de tenements aliena-

The other statutes were passed in the reigns of Edward I. and Edward III. relating to mortmain; but the next important statute is that of the 15 Richard II., c. 5. As cor-

porate religions could not now acquire lands by purchase, gift, intestacy, or devise, the device was to utilise some new device to be mainly the invention of or mainly practised by eclec-

tical bodies or persons. The device consisted in this: the lands in question were conveyed to some person and his heirs to the use of the ecclesiastical body or person and their successors. In this way the legal estate was not in the possession of those who could not legally hold it, but in a person who had such legal capacity; and the use or profit of the land, the beneficial interest in it, was se-
cured to the ecclesiastical body or person, contrary to the spirit of the previous statutes, though not contrary to their expressed provisions. The statute of Richard, after declar-
ing that this use was also mortmain, further declared all such conveyances to be void, and that the lords might enter on land so conveyed, in the name of the De Religious. This distinction of the ownership of land into the legal and beneficial was undoubtedly derived from the clergy by the like distinction in the Roman law between Quiritarian and Bonitarian ownership which is briefly and distinctly expressed by Gaius

Though the statute De Religious was in its terms comprehensiveness to enough to include all alienations to corporate bodies or persons, it is clear that this statute was mainly directed against the clergy, both regular and secular. The ecclesiastical corporations were more numerous than any other, and had been more active in getting lands into their hands. This statute of Richard II. however expressly extends the statute De Religious to lands purchased to the use of gilds, fraternities, and to various other corporations, where the doctrine of mortmain had not, before the date of this statute, applied to gilds or fraternities. The statute De Religious is by this statute of Richard II. expressly declared to apply also to what we now call municipal corporations, and the statute places such bodies as all respects on the same foot-
ing, as to the purchase of lands, with 'people of religion.' If such bodies as these had been considered within the sta-

tute De Religious, it seems clear from the statute of Henry VIII. that any such corporation would not have con-

cently become of such magnitude as to make it seem expedient to make a special declaration by statute to such them.

A statute of Henry VIII. (28 Henry VIII., c. 10.) commonly called an act against superstitions uses, is peculiarly

hardly a statute against mortmain in the strict sense of the term. The statute enacted that feoffments, fines, recov-

eries, and other estates, made of lands and herediments to the use of parish churches, chapels, gilds, fraternities, com-

monalities, &c., erected and made of devotion or by common consent of the people without any corporation, or to uses for perpetual obits, or a continual service of a priest, were de-

clared to be void as to such gifts as were made after the first of March in the year in which the statute was passed, for a time not exceeding twenty years from the creation of such uses. From the words 'by common consent of the people, without any corporation,' it can hardly be inferred that a number of individuals could take in perpetual succession without being incorporated, and for 'to take by perpetual succession without being incorpo-

rated' involves a contradiction. Nor can the statute be construed as admitting by implication such a power of per-

petual succession in unincorporated individuals. The statute does not proceed against acts ofwap and interest, as in any oth-

or by any persons were held to the use of the establishments or collections of individuals mentioned and described in the statute.

Subsequent statutes passed in the reign of Henry VIII. (27 II. VIII. c. 29; 31 H. VIII. c. 13; 37 H. VIII. c. 4), together with the statute passed in the first year of Edward VI. (1 Edw. VI. c. 14), put an end to religious houses and many other establishments which had been the special objects of the statutes of mortmain and superstitions uses. The consideration of what are now legally called super-

stitions uses properly comes under the head of Uses, Be-

}reviously.
It should be borne in mind that the terms charities and charitable uses have a legal meaning very different from the popular meaning of the term charity.

The great amount of property in England and Wales which is appropriated to charitable uses, and the importance of many of those establishments which are supported by such property, render it necessary to give some exposition of the nature and administration of charities in this country, which is most conveniently done under the head of USES, CHARITABLE.

The term Mortification in Scotland expresses nearly what mortmain does in England.

According to (1 Ed. Brodie), 'infeftments of mortified lands are those which are granted to the kirk or other incorporation having no other reddendo than prayer and supplications and the like: such were the mortifications of the kirks lands granted by the king to kirkmen, or granted by other private men to the provosts and prebendaries of college kirks founded for singing; or to chaplainies, preceptories, altargates, in which the patronage remained in the mortifiers.'

The Act of 1587, c. 29, passed in the eleventh parliament of the queen, first, by requiring that the king 'and his three estates of parliament entirely understood the greatest part of his proper rent to have bene given and disposed of dull to Abbes, Monasteries, and others persons of Clergie,' &c.: it further required that 'his pretended mortifications of kirks lands, and the kirks lands out of his own subiects, was nawais minded to greeve them with unprofitable taxations, specially for his royal support.'

The act then went on to declare that it was 'found maist meet and expedient that he sall have recourse to his awin patria and dispose of his lands and tenements (that is, the disposi-

ion as ane helpe maist honorable in respect of himself and least grievous to his people and subiects.'

The act then proceeded to unite and annex to the crown (with the exceptions after spoken of in the act) all the lands, &c., belonging to the ecclesiastical and religious persons therein mentioned. This act was in effect more extensive than the similar acts of Henry VIII. in England.

Since the Reformation, lands given in Scotland for charitable purposes have not been of the true mortmain character, but held either in blank or feu holding. (Bell's Dict. of the Law of Scotland.)

MORTON, JAMES DOUGLAS, Fourth Earl of, and Regent of Scotland, was a younger son of the great family of Angus, which, besides other honours, had once held the office of lord-high-chancellor of Scotland, and by the marriage of the sixth Earl of Angus with Margaret of England (widow of King James IV.) had recently been brought into the royal line, by consequence of being the brother of that princess. Morton was nephew to the above earl, being second son of the earl's younger brother, Sir George Douglas of Pittendreich. These two brothers had mutually assisted each other in their struggle for power against James V. The Earl of Angus, however, fell in 1528, Sir George fled and remained an exile during the remainder of James's reign. He then returned to his native country, and in 1543 was appointed a privy-councillor to the Regent Arran.

Previous to this period, but at what precise time is uncertain, the younger son of Sir George had married Lady Elizabeth Douglas, daughter of the third earl of Morton, by a natural daughter of King James V.; and on that occasion the earl, having no male issue, obtained a new act, giving him a clause to his patent, transferring the earldom to this fortunate son-in-law. In consequence of this provision he was styled the Master of Morton; and on his father-in-law's death, in 1553, he became earl of Morton. Up to this time he had been only the active promoter of the Reformation, and a friend of King Henry VIII. in the designs of that monarch in reference to Scotland. His name however does not often appear in the public transactions of the period; and although one of the original lords of the commission in 1552, he was not one of the consequential causes, in a personal point of view, of casting off the queen regent, from whom he had already received considerable favours, he long held a doubtful and irresolute course. Viewed from the English envoy, describe Morton as 'a simple and fearful prince.'

From the time of the queen regent's death however that description was inapplicable to him; and on the 7th January, 1563, he was constituted lord-high-chancellor of the kingdom, in the room of the forfeited Earl of Huntly, who

P. Tc., No. 265.
had been the great head of the Catholic party in Scotland. He had been only a few years in that office however when he was obliged to lay it down, and fly into England, on occasion of Rizzio’s murder, in which cruel and lawless affray he took an active and prominent part. He remained in England, under the protection of the English monarch, till the end of the year 1567, when he was to return to his own country. But the succession of Bothwell, whose ambitious designs needed all the aid which could be drawn together from every quarter. Bothwell soon opened to him the plot which he meditated for the murder of Rizzio, and then, as he had now and could not, his rival acquiesced. In this however Bothwell was mistaken; Morton refused to concur. But neither did he inform Darnley of the plot, nor take any measures to prevent its being executed; and he was one of those who subscribed the warrant for Darnley’s execution. Charles V. had been deeply concerned in the murder, and to use every endeavour to promote his marriage with the queen. Yet when this latter event took place, and when Bothwell became odious to the nation, Morton was the great leader in opposition to him and it was not till he was the castle of Edinburg, the lady of Lochleven, that Mary was conducted when she delivered herself up at Carbery Hill. When Mary was securely lodged in this place of confinement, the earl of Murray was put in command of the castle, and Morton was made his assistant in the office of lord chancellor. He continued in this situation during the regencies of Murray, Lennox, and Mar, and was indeed a principal actor in all matters of importance which took place in their time; and on Mar’s death in the year 1570, as he himself, Morton was appointed regent of the kingdom. Here his ability and vigour indeed, but at the same time his ambition, his savoros, and rapsity, and his general want of principle, became apparent in all; he was now not once feared and hated; and finding the occasion suitable to the purpose of recovering the idea of retrieving his reputation by resigning, or rather offering to resign, the government into the king’s (James VI.) own hands, his majesty being now in his twelfth year. Accordingly on the 15th September, 1577, he made resignation of his crown, in the presence of the court, and the nobles, and the people, and the commons of Scotland, and the queen accepted it, to the great joy of the people. Morton, thus unexpectedly taken at his word, retired in a sort of pet to Lochleven, which, from his formidable character, was then commonly called the Lion’s Den; and from this retreat he watched a favourable moment to return to his power. As opportunity presented itself, and he immediately became master both of Stirling Castle and of the king’s person. He then resumed power, and by the help of Queen Elizabeth retained it for some time; but at length the king’s new favourite, Crichton Stewart, who, as Robertson says, shunned no action however desperate, if it led to power or favour, charged him, in the king’s presence, with being accessory to the murder of Darnley. Upon this charge Morton was committed first to his own prison, and then to the castle of the choir (Edin- burgh, 1581), and to Dumbarton, of which Lennox, the father of Darnley, had the command. Elizabeth used every endeavour in favour of Morton, but the greater the solicitude which she showed for his safety, the more eagerly did his enemies urge his destruction; and being carried by Capt. Stewart, then earl of Arran, into Edinburgh, he was, on the 1st of June, 1581, brought to trial, found guilty, and condemned. When that part of the verdict was read which, besides finding that he had concurred, found that he was also accessory, he met the warden and the warden to the warden, and then exclaimed, God knows it is not so. The next morning, speaking of the crime for which he was condemned, he admitted that on his return from England, after the conference at Berwick, he had formed the conspiracy against Darnley, which the queen, as he told him, knew of and approved, but that he had had no hand in it. And as to revealing the plot, To whom? said he, could I reveal it? To the queen? She was aware of it. To Dunbar? No, he had neither a baby, nor brother, nor威尼斯, nor anything else, to him but he would tell her again; and the two most powerful noblemen in the kingdom, Bothwell and Hunsy, were the perpetrators. I know and concealed the plot, but to being art and part in its execution, I call God to witness, and I am wholly innocent. When his keepers told him that the guards were attending, and all was readiness, he replied, I thank my God, I am ready likewise. On the scaffold his behaviour was calm, his countenance and voice unaltered, and after some time spent in acts of devotion, he was beheaded by the instrument called the

Maiden, on the 3rd June, 1581. His head was placed on the public galley; and his body, after lying till sunset on the scaffold, covered with a beggarly cloak, was carried by common porters to the usual burial-place of criminals. None of his friends accompanied him to the grave—they did not venture to discover their gratitude or respect by any expression of sorrow. Public opinion was unanimous in his condemnation.

MORTON, JOHN, cardinal and archbishop of Canterbury, was the eldest son of Richard Morton, of Milborne, Wiltshire, and was born in the county, in 1410. He received his earliest education at the abbey of Cerne, whence he removed to Bakiol College, Oxford. Of his progress in that university we know little, till he became principal of Peckwater Inn. His character was then of a grave and studious disposition; he was never seen without a book, and it was even recommended to him the notice of Cardinal Bourchier. The cardinal, beside conferring upon him various preferments, introduced him to King Henry VI., who made him one of his privy-council. He adhered to this unfortunate prince with much fidelity, that even his successor Edward IV. could not but admire his attachment, which he rewarded by taking Morton into his council. In 1473 Morton was appointed master of the rolls; and between this time and the list of his promotions to prebendaries, and other preferments, shall make the reader acquainted with the high esteem in which he was held. In 1478 Edward IV. made him bishop of Ely and lord chancellor of England, and at his death appointed him one of his executors. He then became closely connected with the Duke of Buckingham, whom he advised to act the same time that Lord Stanley was arrested, gave Morton in ward to the duke of Buckingham. He escaped however from the duke’s castle at Brecknock, and concealed himself for a time in the Isle of Ely; soon after, passing in disguise to Mortimer’s Cross, he again joined the cardinal Bourchier, in 1486, joined with the pope in promoting him to the archbishopric of Canterbury. In August, 1487, if not earlier, he was again constituted lord chancellor, and in 1493 created a cardinal by pope Alexander VI. He died September 15th, 1499. Morton was a man of great talents, learning, and probity. The cut or dran from Peterborough to Whanse, known by the name of Morton’s Leane, was made entirely at his expense while he was bishop of Ely; and the opinion seems correct for that the English Life of Richard III., usually attributed to Sir Thomas More, was really written by Morton. (Tanner, Bibl. Brit. Hbd. pp. 532, 533; Bemham’s Hist. of Ely, 40. Camb., 1771, p. 179-181; Chalmers’s Biog. Dict.)

MORTON, KEVIN, bishop of Down, one of our Saxon ancestors called earl-yeard, soul-shot, or money paid at death. The mortuary was a gift left by a man to his parish church, as a recompense for his personal labours and offices not duly paid. Dogstail, in his History of Warwickshire, p. 679, enters minutely into the reason and original occasion of such bequests, the earliest mention of which he finds in the Council of Arundel, in the year 1069, and in the Laws of King Canute. Mortuaries were afterwards distinguished into deceased mortuaries, and mortuaries ever, or mortuaries for the future, and mortuaries for other goods or chattels; the latter of livable stock: Blount says the second-best boast, after the first had been paid to the lord for his heir. After the Conquest we find the mortuary replaced by the mortmain, in which the owner of a piece of land was presented with the body at the funeral. John Arden, in his will dated 4th of June, 17th Hen. VIII., says, Item I bequeath for my mortuary, or cors-pretént, a black gelding nambling, that Almighty God may the rather take my soul to heaven, and that no man, nor any other that shall drink of the antient wails from the time of Hen. III. to that of Hen. V., in which horses, carpanosed and bearing the military weapons of the defunct, are directed to be led before the corpse at his funeral, and delivered as mortuaries. This was the origin of the practical horsemen, in all sorts of persons of distinction. Mortuaries, in time, were found oppressive to the yeomanry and poorer inhabitants of parishes; in the Glossary to their Parochial Antiquities, says...
that a mortuary was sometimes paid to the lord of a fœs, as well as to the priest of the parish.


Description but it mulberry and History added but M.

He also wrote a 'History of Ireland, from the year 1599 to 1603, with Notes, New Edition, 1673.

Kingdom from 1169; to which is added a Description of Ireland,' Dublin, 1735, 2 vols. 8vo. He died about 1614.

MOSAIC, or more correctly MUSAIC (the term being a corruption of Opus Museum), a species of inlaid or test- ing, consisting either of inlaid marble, or of mosaic, done with minute tesserae of stones, glass, or various other substances, generally either marble or natural stones, or else glass more or less opaque, and of every variety of hue which the subject may require. The former mode was that chiefly employed by the ancients for their costly tessellated pavements, many of which have at various times been discovered in this island, and which prove, more than any thing else, the opulence and luxury in building displayed by the Romans in this distant part of their em-pire; and further, the latter was employed on the sub-structures, of which they are the remains; since they fairly be taken for granted that decoration, attended with such difficulty and tediousness of execution, and requiring artificers of a superior class, if not artists, was not intro- duced into Rome till late.

Mosaics of this description, that is, for pavements, gene- rally consist only of a series of ornamental borders enclosing one or more compartments containing some figure or de- vice, or occasionally a group or subject. Others consist entirely of a series of mosaic medallions, one or more in each compartment, which are executed in three—black, white, and red. Examples of pavement mosaics in each of these modes have been discovered at Pompeii, and in many of them the borders very much re- semble those used in the Roman pavements.

Mosaic continued to be used both for pavements and ornamenting walls to a late period in the middle ages, and was greatly practised in Byzantine buildings, and by Byzant- inian artists, who were also employed in Italy, whereas it was not made extensive in the West until the Renaissance. Though it is not certainly known by whom or by what nation the mosaic was first introduced into Italy, we know that the Moorish gives in his work many specimens of the kind, and among others one from a pavement in the baptistry of Pisa (begun in 1153), which is remarkable, as the compartments form precisely the same pattern as that of the window in the nave of the Duomo at Milan, represented in the fruit, page 383, in Moorish Architecture. In the pavement the lines are a dark green on a white ground, and the spaces, which are perforated in the window, are filled up with various patterns and colours, placed alternately upon a dark and a white ground.

Ornamental patterns of a similar character, executed in mosaic, and frequently having a considerable intermix- ture of gold, were frequent, and of embellishment thus executed were executed in a great variety of subjects, and have been described in the art of the Moors, and their northern disciples, the Huns and Vandals. Patterns very similar to those of such mosaics were also frequently employed for painting walls, of which kind speci- mens from the church of San Francesco at Assisi, as well as others in mosaic in the same building, may be seen in Hessenroth's Arabische und Alt-italienische Bau-Fres- curen.

Something akin to mosaic or coloured inlaid-work was occasionally employed in Italy during the middle ages for external decoration also; as an instance of which the façade of the Duomo at Assisi may be mentioned. In this work the pattern is chiefly in black and white, brilliant reds and blues are intermixed at intervals, a species of external dec- oration supposed by some to have been derived from the practice of polychromy among the Greeks. [Poly- chromy.]

Although nearly similar as to their process, mosaic pic- tures, especially some of those of later times, may be considered as a distinct branch of the art. Whether actually employed as pavements or inserted in walls, mosaics of the
class just described consist chiefly of ornament and pattern, executed in few and simple colours, with hardly any attempt at true perspective. Some are mere arrangements of the figures, human or animal, occasionally introduced in them. The outlines are everywhere distinct and hard; the joints between the tesserae, or separate pieces of material, plainly visible; in short, there is no attempt at pictures; scarcely anything resembling a picture is found among them, and it may so express it. All these however are rather properties than defects, because a direct imitation of nature — any picture, according to the modern idea of the term — would be altogether unsuitable in beds of mosaic, and even in the decoration of a pavement or floor. Even for ceilings they are objectionable enough, but for floors pictures would be almost intolerable. It has been conjectured by some however that mosaic-work first suggested the idea of painting, or pictures, by means of similar arrangements of forms and colours upon a plane surface, and confining the composition to figures alone, without any intermixture of pattern-work or arbitrary ornament; and if founded upon nothing better than conjecture, such supposition is highly plausible, the transition from the one to the other being both obvious and easy. Further, such hypothesis is greatly strengthened by our finding that nearly all the specimens of ancient painting which have been preserved to us or yet discovered have been done in mosaic, resembling mosaic, and but a partial imitation of nature, the figures being in many of them upon a uniform ground, and very few indeed exhibiting more than a partial background and a slight indication of distances.

Many have supposed that the decline of the arts, mosaic painting continued to be employed in Italy, both externally and internally, for the decoration of churches, as for instance, on the façade as well as within the basilea of St. Mark at Venice. Some have supposed that such productions were entirely the work of Byzantine, that is, of Greek artists, but the contrary opinion is firmly maintained by Cicognara, who asserts that mosaic was practised by native Italians, that it was well known to the earliest Venetians, and that consequently it must be referred to a Florentine who lived in the thirteenth century, the first Italian who obtained instruction in the art from Greeks practising it at Venice. The works however, both of Constantinopolitan and Italians of those ages, are more curious than beautiful, rude and uncouth in design, and exhibiting very little of the principles of painting. In fact they bear a far greater resemblance in every respect to the glass-painting in Gothic windows than they do to pictures, and that may itself have termed a kind of transparent mosaic-work. In neither case is the imitation of nature aimed at, but merely a sort of conventional and more or less symbolical representation. The outlines are hard and cutting; the colours forcible and unbroken, with a decided light and shadow; the pictures and pictorial imitation is further repudiated by the figures being frequently represented upon a gold ground, a practice afterwards followed by some of the earlier German painters, and that in the present day in some of the modern frescoes at Munich.

Pictures in mosaic are comparatively of recent origin, dating not further back than the commencement of the seventeenth century, when copies of celebrated works by Raphael and other masters were for the first time thus executed. Mosaics of this kind are face-similes of the originals, and have merely the effect of paintings produced in the usual way, although attended with infinitely greater cost, and beyond all comparison more laborious and tedious in their process. As such colored tesserae of the same colour throughout, the gradation of tints, the melting off of any one colour from its highest light to its darkest shadow, can be obtained only by an immense number of small pieces, and which those who are not cognizant to each other exhibit scarcely any perceptible difference. They are full and costly works, and expense besides which the execution is so entirely mechanical, that it is fit only for copyists. The sole advantage in any degree proportionate to the cost attending it, is the extreme durability of the work when once accomplished, as its colours hardly be changed by any length of time; nor is it liable to the slightest decay, or any injury, except what may be occasioned to the document by the hand tools.

Similar mosaic is frequently employed, or rather missappplied, on a miniature scale, for pictures on the lids of snuff-boxes and cards of cards; and in chimneypieces, which are at the best mere curiosities and very laborious trifles. Florentine-work may also be described as a species of mosaic, chiefly used for inlaying or veneering marble slabs for tables, and decorative purposes of that sort, upon which it is highly practicable to assign all the beauty of its patterns produced, in stain-cloth flooring, and the same style of design might also be shown in carpets, and were these more sober in their colours, and more d'antique in their design, the furniture and other decorations of rooms would be of the proper kind. Conjectures have been made, and occasionally recommended themselves for conservatories, terraces, &c. Although mosaic itself is by far too expensive for any but very rare occasions, the effect of it may be obtained, and the beauty of its patterns produced, in stained-cloth flooring; and the same style of design might also be shown in carpets, and were these more sober in their colours, and more d'antique in their design, the furniture and other decorations of rooms would be of the proper kind. Conjectures have been made, and occasionally recommended themselves for conservatories, terraces, &c. Although mosaic itself is by far too expensive for any but very rare occasions, the effect of it may be obtained, and the beauty of its patterns produced, in staine-cloth flooring; and the same style of design might also be shown in carpets, and were these more sober in their colours, and more d'antique in their design, the furniture and other decorations of rooms would be of the proper kind.
The geological epoch at which the Mosasaurus first appeared, seems to have been the last of the long series during which the oolitic and cretaceous groups were in process of formation. In these periods the inhabitants of our planet seem to have been generally marine, and some of the largest creatures were Saurians of gigantic stature, many of them living in the sea, and controlling the excessive increase of the then extensive tribes of fishes. From the rise upwards to the commencement of the chalk era, the Ichthyosaurs and Plesiosaurs were the tyrants of the ocean. We see at just the point of time when their existence terminated, during the deposition of the chalk, the new genus Mosasaurus appears to have been introduced, to supply a whole chain of the forms which had been impossible for the large and powerful marine reptiles to give place to the Cetaceans of the tertiary periods. As no Saurians of the present world are inhabitants of the sea, and the most powerful living representatives of this order, viz. the Crocodiles, though living chiefly in water, have recourse to swimming, rather than speed for the capture of their prey, it may not be unprofitable to examine the mechanical contrivances by which a reptile, most nearly allied to the Monitor, was so constructed as to possess the power of moving in the sea, with sufficient velocity to overtake and capture such large and powerful fishes as, from the enormous size of its teeth and jaws, we may conclude it was intended to devour. The head and teeth point out the near relations of this animal to the Monitors; and the proportions and build of the whole animal warrant the conclusion that this monstrous Monitor of the ancient deep was five and twenty feet in length, although the longest of its modern congeners does not exceed five feet. The head here represented measures four feet in length, that of the last Monitor does not exceed five inches. The most skilful anatomist would be at a loss to devise a series of modifications by which a Monitor could be enlarged to the length and bulk of a Grampus, and at the same time be fitted to move with strength and rapidity through the waters of the sea; yet in the fossil before us, we shall find the genuine characters of a Monitor maintained throughout the whole skeleton, with such deviations only as tended to fit the animal for its marine existence.

The Mosasaurus had scarcely any thing common with the Crocodile, although the Iguanas in having an apparatus of teeth fixed on the pterygoid bone, and placed in the roof of its mouth, as in many serpents and fishes, where they act as bars to prevent the escape of their prey.

The other parts of the skeleton follow the character indicated by the head. The vertebrae are all concave in front and convex behind; being fitted to each other by a ball and socket joint, admitting easy and universal flexion. From the centre of the back to the extremity of the tail, they are deep concavities of animal substances, which are calculated to support the back of animals that move on land: in this respect they agree with the vertebrae of Dolphins, and were calculated to facilitate the power of swimming; the vertebrae of the neck allowed to that part also more flexibility than in the Crocodiles.

The tail was flattened on each side, but high and deep in the vertical direction, like the tail of a Crocodile; forming a straight ear of immense strength to propel the body by horizontal movements analogous to those of skulking. Although the number of caudal vertebrae was nearly the same as in the Monitor, the proportionate length of the tail was much diminished by the comparative shortness of the body of each vertebra; the effect of this variation being to give strength to the tail, instead of speed; and the rapidity of movement, which would have been unattainable by the long and slender tail of the Monitor, which assists that animal in climbing. There is a further provision to give strength to the tail, by the chelon bones being solidly united to the ribs by ligaments. Of the extremities, sufficient fragments have been found to prove that the Mosasaurus, instead of legs, had four large paddles, resembling those of the Plesiosaurs and the Whale; one great use of these was probably to assist in raising the body out of the water, the breath being as efficiently had not the horizontal tail by means of which the Cetaceans ascend for this purpose. All these characters unite to show that the Mosasaurus was adapted to live entirely in the water, and that although it was of such vast proportions compared with the living genera of these families, it formed a link intermediate between the Monitor and the Iguanas. However strange it may appear to find its dimensions so much exceeding those of any existing Lizards, or to find marine genera in the order of Saurians, in which there exists at this time no species capable of living in the sea; it is scarcely less strange than the analogous formations in the Megalosaurus and Iguanodon, which afford examples of still greater expansion of the type of the Monitor and Iguana into colossal forms adapted to move upon the land. Throughout all these variations of proportion, we trace the persistence of the same laws which regulate the formation of living genera, and the combinations of perfect mechanism that have, in all times, resulted from their operation, we infer the perfection of the wisdom by which all this mechanism was designed, and the immensity of the power by which it has ever been upheld.

Cuvier asserts of the Mosasaurus, that before he had seen a single vertebra, or a bone of any of its extremities, he was enabled to announce the character of the entire skeleton, from the examination of the jaws and teeth alone, and even from a single tooth. The power of doing this results from those magnificent laws of co-existence which form the basis of the science of comparative anatomy, and which give rise to the highest interest to its discoveries.

Head of Mosasaurus Campevi. (Lacerta gigas of 85 mm.)

The noble specimen from which the cut is taken was discovered in 1760, and is in the Museum at Paris. At the capture of Maastricht by the French army it was given up to them for the purpose of being placed in the Museum, according to Cuvier, by Goddin, dean of the chapter of that town, which, in virtue of some droits of the chapter, had taken it from Hoffman, of whose collection it formed the principal feature. It is said that the French cannonners had directions not to point their artillery towards that part of the town in which that precious specimen was deposited. Casts are preserved in the British Museum, and in the museums of the Geological Society and of the Royal College of Surgeons.

Localities.—Maastricht, upper chalk in England (Man- tell, near Lewes), green-sand of Virginia (Morton), Sandy Hook and Woodbury, New Jersey. [Maastricht Rocks.] MOSCHATA, a name proposed by M. Renieri for a genus of Actinemia, or soft Zoantharia, which a little resembles Holothuria, and lives in the sea, wherein it floats free. Example, Moschata rhododactyla.

Localities.—Mediterranean and Adriatic seas.

MOSCHEROSCH, JOHANN MICHAEL, a German writer of the seventeenth century, generally known under the pseudonym of Philander von Sittwald, was born 5th of March, 1600, at Willisstadt, a small town in Hanau-Lichtenberg, where his father was preacher. Respecting his early life few particulars of any interest are known, for all may be comprised in the statement that, after studying at Stras- burg, he filled successively a variety of appointments, until, in 1656, he was made president of the consistory at Hanau; and that he died, April 4, 1669, at Worms, while upon a journey to visit his son at Frankfurt on the Main.

As a writer he obtained much popularity in his time by his 'Wunderliche und wahrhaftige Gesichte Philander von Sittwald,' in two vols., 1650, a collection of satirical pieces in the form of visions, a species of fiction greatly in vogue at that period as the vehicle of satire and allegory. Moscherosch may in fact be termed the German Quevedo, his Gesichte being to a certain extent a paraphrase of the Spaniard's Sueclos, with adaptations to the manners and fol-
bles of his own countrymen. Notwithstanding too that his style falls short of the concise terseness and energy which mark his original, he may be considered one of the best German prose-writers of the seventeenth century, gifted with great humour, and displaying not only considera-
ble knowledge of the world, but also great force of satire and ridicule, both coarse and comic.

MOSCHIDÆ, a family of ruminant quadrupeds familiarly known as Musk Deer. Linnaeus defines the genus Moschus, which he places between Cervus and Cervus, under the title of "Peccari," as having the upper canine teeth solitary and exserted—Cornua nulla. Dentes Lantarii superiores soli-
tarii exserti.

Pennant, in the Systematic Index, gives it nearly the same position, the only difference being that the Deer precedes it, and the Camel follows it.

Cuvier, in his last edition of the "Règne Animal," gives it the same position that Linnaeus assigned to it; the Llamas (among the Camels) immediately preceding it, and the Deer (Cervus, Linn.) being next in succession to it. The French zoologist states that the Muskus are much less anomalous than the Camels, and only differ from the other Ruminants in the absence of horns, in having a long canine tooth on each side of the upper jaw, which comes out of the mouth in a similar manner, in having their skin overlaid with a slight fibula, which has no existence in the Camels. He adds that they are charming animals in regard to their elegance and lightness. The distinction of the exserted upper canine tooth, as stated by Cuvier, is not confined to the Muskus: such a configuration exists in some of the males of the Cervidae, the Munjak for instance.

Mr. Swainson is of opinion that the Moschidae, or Musk Deer, constitute the most aberrant group of the Ruminants, and he places them between the Cervidae and the Cameloparidae, the last family being the terminating group of his fourth tribe, or Ruminants.

M. F. Cuvier enumerates Moschi moschiferus, Meminna, pygmaeus, Jacamandu, and Naga, as the only species known at present.

Mr. Gray, in his Disposition of the Mammalia (Annals of Phil., 1825) divides the family Bowdrie into two sections, the first with persistent horns, and the second with either no horns or deciduous horns. He makes Moschus the fourth subfamily, and arranges it between Cervus and Cervus, in the second section. The genera of Moschus, in this arrangement, are Moschus and Meminna. The same author, in June, 1836, read to the Zoological Society of London, a paper on the genus Moschus of Linnaeus, with descriptions of two new species. He remarks that the only character by which this genus, as established by Linnaeus and others, differs from the genus Cervus, consists in the absence of horns; for the elongated canines are compressed, and not horns, of the Indian species of Cervus, especially the Cervus Muntique. [Deer, vol. viii., pp. 362, 363.]

The character of the fur, the degree of hairiness or nakedness of the metatarsus, and the presence or absence of the musk-bag of the male, offer however, he observed, good characters for the subdivision of the group into three very distinct sections or subgenera.

The first of these divisions, for which Mr. Gray would retain the name of Moschus, comprehends only the Thaller Musk Deer, Moschus moschiferus. Linnaeus. In common with the Deer and Antelopes, it has, he pointed out, the hinder and outer side of the metatarsus covered with close erect hair, and, like many of the Deer also, its fur is bluish-grey, and looks as if it were bathed with water, and the males are provided on the middle of the abdomen with a large pouch secreting musk. Its young, like those of most of the Deer, are spotted, whilst the adult animal is plain-colored.

Mr. Gray further stated that the division to which, in the year 1821, in a paper in the 'Medical Repository,' he gave the name of Meminna, also consists of but a single species, the Moschus Meminna, Linn. In this group the hinder edge of the metatarsus is, he observed, covered with hair; and there is no musk-bag in either sex. The false hoofs, he remarked, are distinct, although Linnaeus and Buffon denied their presence.

The third and last subdivision is characterised by Mr. Gray, under the name of Tragulus, as having the hinder edge of the metatarsus nearly bald and slightly callous, a

character which distinguishes them at once from all other Ruminants; the fur is soft, and described like that of Minimna, but not spotted even when young; the thighs are provided with a somewhat naked, concave, subgluteal, callous, disk, placed between the rami of the lower jaw, from which end surrounded to the fourteenth tooth, the chin cuticle has no musk-bag. Like all the other species of the Lin-
nean genus Moschus, they have false hoofs; and most of them have the edges of the lower jaw, three diverging bars on the chest, and the under surface of the body, more or less purely white. The species of this division differ in colour in the various stages of their growth, the young fawn resembling the adult in every particular exactly in size.

In this division, the synonymy of which is said to be extremely confused, Mr. Gray reckons four species, two of which he describes as new. Mr. Gray stated that he was unable to identify with any of the four species mentioned by him on this occasion, or to separate from them distinct, the Palendoc, figured in Marsden's 'Sumatra,' the Pulenrace, Cuvier, in his first edition of Cuvier's 'Animal Kingdom,' on which Dr. Ogilby has established his Moschus Grifithii. The Moschus pyg-
maeus of Linnaeus, in Mr. Gray's opinion, belongs to the genus Antelope; the hinder part of the tarso being covered with hair, and the false hoofs very small and rudimentary, and entirely hidden under the hair of the feet. He thinks that the Moschus Americanus appears by its spotted liver to belong to a species of Deer; and that the Moschus de
nominatus, Cuvier, is a species intermediate in size between the fawn of a deer. Mr. Gray further observed that it is certain that Dr. Shaw quotes as a synonym of the last-named species the figure of Seba, on which alone the Moschus Americanus is founded, while at the same time he enumerates the Moschus Americanus as a distinct species. [Zo.
Proc., 1836.]

In the same year Mr. Ogilby, in his paper on the Rama
nand, read before the Zoological Society, makes the Moschide the third family of that order, with the following character:

Feet bisulcate; horns none; incisor teeth (primes above none, beneath eight. Two genera.


interdigital fosse none; inguinal follicles none; testes two.


interdigital fosse small. Inguinal follicles small.

Testes two. Type, Ixalus Probaton. [Zoo. Pr.
Proc., 1839.]

Mr. Ogilby goes on to state that the genus Ixal-
us—founded upon the observation of a single specimen, is eventually proved to belong to a different family: and he observes that it differs little from the true antelope. The subsequent remarks on the species placed among the Moschidae, other forms, Mr. Ogilby remarks, are desiring to fill up the chasms which evidently exist among the characters of that group. 'Two,' continues Mr. Ogilby, 'are more especially indicated, and our knowledge of its laws of organic combination, and the constituent parts of other groups, gives us every reason to believe in the actual existence, and to anticipate their discovery.' B. then proceeds to characterise the genera Himalus and Capreolus, observing that they will probably be found in the tropics, forest of the Indian archipelago, and on the elevated table-lands of Mexico or South America.

'It may appear a bold, perhaps a presumptuous under-
taking,' says Mr. Ogilby, 'thus to predict the discovery of species in the characters, in which we have no positive knowledge; but, as already remarked, all the analogies of nature, whether derived from organic combination, or from the constituent members of similar in the tropics, forest of the Indian archipelago, and on the elevated table-lands of Mexico or South America.

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**MOS**

**Organization.**

The *Moschidae* do not differ much from the other Ruminants; the leading differences are given above, and the general osseous structure of the form may be collected from the following cuts.

Dental Formula:—Incisors, 0\(\frac{8}{6}\) canines, 1\(\frac{1}{6}\) molars

\(6\frac{6}{6} = 34\)

**Teeth of Moschus Moschiferus. (F. Cuv.)**

The canine teeth go far back into the upper jaw, as will be seen from the following figure of one of them. It is not impossible that the so-called canine teeth of *Ursus cultridentes* may be the canine teeth of an extinct ruminant allied to this family, or that of the Cervidae. [Machairodus.]

**Caneine Tooth of Moschus Moschiferus**

**Skeleton of Meminna.**

**Genera. Moschus.**

**Generic Character.**—See above.

**Example.** *Moschus moschiferus*, the Musk or Tibet Musk.

**Description.**—Somewhat of the form of a roebuck; but higher behind than it is at the shoulder, from the upper part of which to the sole of the foot it measures about two feet three inches; whilst from the top of the haunches to the soles of the hind feet the measurement is about two feet nine inches. Ears long and rather narrow, in the inside pale-yellow and dark-brown outside. Hair on the body suberect, long, each hair marked with short waves from top to bottom, ash-coloured near the base, black or blackish near the end, and rusty at the tips. Chin yellow. The colours vary. Most of the adults are plain-coloured. In some, and such is the individual figured by Pennant, the fore part of the neck is marked on each side with long white stripes from the head to the chest, the back striped transversely with pale brown reaching to the sides, which are also dappled with a lighter colour.† Hoofs very long and deeply divided, spurious hoofs very long. Tail about an inch long, concealed in the hair. Scrotum rutilum. Penis 34 perceptiendus. (Pennant.)

**Female less than the male and wants the two tusks.**

**Young, spotted.**

**Habits; Food; Utility to Man.**—The Musk is a mountain-animal, timid and shy, and a lover of solitude. Precipices covered with pines and almost inaccessible crags are its favourite haunts; and the musk-hunter often perils his life in the dangerous chase, for when hotly pursued, the animal takes refuge frequently in the highest fastnesses, leaving men and dogs with scarcely the possibility of access to the precipitous summits to which it flies. And yet the slaughter made among them must at one time have been great, and the animals abundant; for Tavernier bought in one journey 7673 musk-bags. The bag, or tumor, containing this well known drug is peculiar to the male: it is kidney-shaped, pendulous, of the size of a hen's egg, and situated beneath the abdomen. There are said to be two apertures, the larger oblong, the smaller round, and covered with hair; and on the application of pressure, the musk may be forced through the apertures. It is brown and unctuous. This bag the hunters cut off, and tie it up for sale, but, like everything that is calculated for the use of man and is the object of commerce, it is said to be adulterated by the admixture of foreign matter, and pieces of lead are stated to

* These figures are taken from specimens in the museum of the College of Surgeons by permission of the Museum Committee.

† But note, this may have been a young animal.
have been found enveloped in it, for the purpose of increasing the weight. The musk which comes from Tibet is considered the best, and used to bear the highest price; the bag is more or less full, and the quality more or less good, according to the age and health of the animal. When dry, musk is dark-brown, inclining to red, or rusty-black, and appears more or less granulated. To the taste it is rather bitter and somewhat acrid. It is perhaps the strongest and most pungent of perfumes, and so subtle that everything near it becomes infected, and for a long time retains the characteristic odour even when a musk is used up.
diating hands as the distinctive character of the Naupi, and three as that of the Kanchi; whereas, in truth, the number is the same in both, and the difference is only in their disposition.

Locality.—Java and Sumatra.

Sir Titze states that this species frequents thickets near the sea-shore and feeds principally upon the berries of a species of Ardisia. He adds that it can be easily trained, when taken young, and will become quite familiar.

This view also to this genus Musch Kanchi (Javan Muzk of Shaw, Le Chevrotain of Java of Buffon); fuliev-
tener (Le jeune chevrotain of Buffon); and Stanleyanum, of which, in 1836, there were four living specimens in the magnificent collection of the Earl of Derby at Knowsley; and two others, consisting of a specimen of each of the varieties, in that of the Zoological Society of London, the gift of her present majesty. With the exception of the last, whose locality is not known, these are Oriental, the Kanchi being an inhabitant of Java, and the Tragulus fulievtenere a native of the Malacca Islands and the east Indian Pen-
insula, but the habitat of Tragulus fulievtenere is given by Mr. Gray with a query.  

**MOSCHIDAE.**

The following species are recorded: M. antiquus, Kaup (Eupelphesien sandi); M. dryas (Tertiary, north east border of Bengal, Pentland). M. Prattii (Tertiary, Isle of Wight, Pratt). Dr. Schinz also mentions the teeth of these ruminating animals as occurring in the Tertiary coal of Zolling; but of which, it is scarcely larger than the teeth of the small musk; the latter belongs to a species of deer. Remains of Moschus are also mentioned by Jaeger (Tertiary, Bean iron ore (Bolner) of the Rauh Alp).

**MOSCHOPULUS, MANUEL.** Several treatises on geography are known. Agriculture is considered a part of this name, and extant; but there is some difficulty in saying who he was and when he lived. The opinion generally received appears to be that there were two of the name: an elder, called Moschopulus of Crete, or the Grammariian; and a younger, who lived in the reign of Michael VIII., Palæologus, about 1270. Some writers have spoken of a third Moschopulus, who taught Greek in Italy in the latter part of the fifteenth century; but this fact does not seem well established, and we may perhaps attribute the name of Moschopulus to the uncle and nephew above mentioned.

Among these works are, 'Erotetara, or Grammatical Questions,' Basel, 1540; 'A Collection of Atticismes,' 'On Grammatical Exercites,' 'A new Epitome of Grammar,' 'On Grammar, not only of Greek, but 'On Prooemion, 'Scholia on Hesiod and Pindor,' &c. Titze published at Leipzig and Prague, in 1822, 'Manuelis Moschopuli Cretensis Opera Graecam Grammaticas, 2vo., which contains several pieces attributed to these authors, but which were never before printed. See also Bachmair's 'Anecdota,' vol. ii.

**MOSCHUS,** a native of Syracusse, and a pastoral poet, probably lived in the third century B.C., and was the friend, and, some say, the disciple, of Bion of Smyrna, whose death he deplores in pathetic strains in one of his compositions, entitled the 'Epitaph of Bion.' We know nothing more of Moschus. There remain of his compositions four Idylls, and a few other small pieces. The Idylls are characterised by great elegance and delicacy; but are perhaps somewhat too refined for the taste of most moderns. One of the Idyll entitled 'Cupid Runaway' is a lively little composition. The Idylls of Moschus were published, together with those of Bion, at Bruges, 1565. There have been other editions of Moschus: one of the best is by Manzo, 1754 and 1807. Hume, in his 'Modern Poets,' &c. Bruckner, in his 'Theoricus, and are also in the collections of Bruckner, Gais-
Roth, and Boissonade. Moschus has been translated into German by J. H. Voss and others.

**MOSCHOV (in Russian, MOSCHA),** one of the eight governorates of the Governor-Generalship of the centre of European Russia, between 54° 40' and 56° 30' N. I, and 35° 10' and 38° 40' E. long. It is bounded on the north-west by Tver, on the north-east by Vladimir, on the south-east by Riazan, on the south by Tula, and on the west by Smolensk. Its area, according to Stein, Schubb, and Cannabich, is 10,000 square miles, but Hermann makes it 11,000, and Hirschel-
Roth, 12,000 square miles. The population is nearly 1,000,000, though one of the least extensive, it is one of the most populous provinces of the empire. It is divided into thirteen circles.

The face of the country is an undulating plain, here and there broken by groups of low hills and the steep banks of the rivers; it is not indeed quite uniform, but nowhere presents any grand or romantic scenery: only the environs of the immense cemeteries have delightful spots, most of which however owe their beauty to art. The soil is for the most part lean and sand, with some heath and marsh; and on the whole the land is but moderately fer-

Boulton & Watt's coke, and kindred improvements. They are well or less abundance on the surface, or in the beds of clay and sand, and granite in large blocks (crinical blocks), as in the north of Germany.

This government is most amply provided with water, there being, according to Storch, 100 lakes, none of which however are of any great extent, and 2610 rivers and streams. The principal rivers are, the Wolga, which indeed only just touches the province for a short distance in the north; the Oka, which flows in the south; and the Moskwa, which gives its name to the government and to the capital. The rivers are in general frozen about the middle of No-

Musk varieties, can be seen in various parts of the world.

Jones, a good naturalist, who knows the province, made an extensive tour in the year 1812, and his account is highly valuable. He remarks that the inhabitants chiefly attend to domestic poultry and calves, for which they are sure of obtaining a good price in the capital. Some attempts have been made of late years to improve the breed of sheep, but with little success, as the climate does not agree with the Merinos. More attention has been paid to the breed of horses, and there are few con-

The breed of cattle, like the agriculture, is not sufficient for the supply of the province, which requires a great importance of the cultivation of flax, hemp, and flax is the most valuable crop. The flax is cultivated in two sorts, one for the flax cloth and the other for the oil, which is celebrated all over the empire for its size and fine quality. Flax is scarce, and though apples, pears, and cherries thrive, in fact only apples are attended to. The best sort of apples is of Chinese origin; it is called Nisly; it is transparent, juicy, and pretty well flavoured. There are likewise many plans.

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and a population of 10,200 inhabitants, who have manufactures of silk, cotton, linen, woollen cloths, and leather. There are several tanneries, and malt and brick kilns; above 400,000 poles (the pool at 36 lbs) of tallow are annually melted here. The inhabitants have a very extensive trade in tallow, hides, leather, corn, hemp, oil, hops, and fruits from the Ukraine, all which find their way to Moscow; and they supply the neighbouring country with colonial produce, which they obtain by four journeys a year. The following is a brief description of them.

2. Serpuchow, on the rivers Nara and Oka, over the latter of which there is a bridge of boats. The citadel, on an eminence, is surrounded by a high wall, now fallen into decay; the town has 16 churches, and 1600 houses inhabited by 6000 people. It is one of the oldest cities of Russia, and its inhabitants, who have manufactures of sailcloth, woollen, leather, and paper. They have a good trade in corn, cattle, tallow, hemp, linen, and timber, which go partly to Petersburgh and partly to Moscow.

The appearance of the city is very ancient. 3. Herga, on both sides of the Pottwa, over which there is a wooden bridge. The inhabitants, 6000 in number, have a brisk export trade in the same articles as Serpuchow, with Moscow, Petersburgh, Riga, and Königsburg.

The Moscovites are excellent. The navigation of the Oka and the Moskwa is a great advantage to this province.

The inhabitants are all of Russian origin; in the city of Moscow itself indeed there are not only persons from all parts of the Russian empire, but strangers from various countries of Europe. Of the Russians are of the Greek religion, of which there are in this province above 1300 churches, under the archbishop of Moscow. The Roman Catholics, Lutherans, and Calvinists have houses in Moscow.

MOSCOW (Moskva, or Moskow), the antient and original capital of the Russian empire, formerly the residence of the czars, till Peter the Great made St. Petersburgh the seat of government. It is, in comparison with other capitals, a city of modern origin. On comparing all the authorities, it seems most probable that it was founded in 1147, by the grand-duke Yury II, or George, surnamed Dolgorukvy, or Long-hand. Thus nearly seven centuries have elapsed since the foundation of Moscow, during which period it has stood very firm, and been free from invasion.

Moscow is situated in 55° 45′ 45″ N. lat. and 37° 33′ E. long., in a fertile and richly cultivated country on the banks of the river Moskwa (pronounced Moskva) and of the rivulets Yauza and Neglima (or Neglinnaya), the latter of which is in fact only a brook. The form of the city is a sort of irregular rhomboid, and its circumference is generally stated at about 224 English miles. In this space however there are above 1000 gardens, besides 235 kitchen-gardens, some of them of very great extent, and a number of fields or parks called the Moscow domains. They are enclosed with palisades, for holding festivals, and for exercising troops; there are likewise 253 ponds or small lakes, on the banks of some of which there are public walks and fine gardens laid out with much taste.

Moscow is divided into—1. The central part, containing the Kremle or Kremlin. 2. The Kitai-Gorod, or Tartar town. 3. The Beloi-Gorod, or white town, surrounding the central part. These divisions lie on the north or convex side of the Moskwa, like a crescent. 4. The Zamoskvoretz, or out-town, so called from the earthen ramparts with which it is surrounded. This part encloses the preceding parts on the north side of the river, but extends to the south side, so as to fill up the circle. 5. The Suburbs, which are 35 miles distant.

The view of Moscow at a distance has excited the admiration of all travellers. The countless number of towers, some with cupolas either gilt or painted green, and others rising in the form of minarets, and the many gardens and trees interspersed, give it an appearance, in a word, quite an Oriental appearance. The number of towers in Moscow is said to be 600, nearly every church having several, besides the steeple. They have in general, like most Russian churches, a peculiar appearance, being surmounted with what we have called cupolas or domes, but which the Russians call, glass or heads, which are in the form of a bulb or onion, not unlike those of the Pavilion at Brighton; on the top is a crescent, with the cross above it. With a general similarity of form, they differ in the forms of the towers, striking the eye by the irregularity of their forms and their gay diversity of colours. It is to those towers in particular that Moscow owes its remarkable appearance. They are all of stone, and most of them situated in open squares, in consequence of which they escaped the fire of 1812. Hence, Moscow has lost little or nothing of its original aspect by the conflagration of 1812, which was ordered by order of Napoleon has been rebuilt in the same style.

The roofs of the houses are composed of iron plates, painted dark green, so that at a distance they are lost among the tall groups of trees which rise from the gardens. The same is the case with the Kadetsky garden, which was destroyed by fire in 1812. After all that has been said and written on the authors of this dreadful conflagration, it seems now to be generally allowed that it was contrived by the Russian government. The dwellings of the czars, who was generally looked upon as the author of it, acknowledged it, and even published, in 1813, a pamphlet which he called 'La Vérité sur l'Incendie de Moscowa,' in which he positively denies that he had any share in it. But the Russian cause in two ways: by depriving the French of the immense resources which they would have found there, and by inflicting the passions of the people against the invaders, who were represented as the destroyers of the best cities of Western Europe. Accordingly it is generally admitted that the Russians were the authors of the fire.

The French are unanimous in ascribing it to them; and in fact no motive can be assigned for the destruction of the city by the latter before they had plundered it. It is probable that the Russians themselves were not the authors of the burning of Moscow in the same light as the natives of Western Europe. Devastating fires have been common occurrences in the history of Moscow, from its foundation to the present period. As such destructive appearances are always accompanied by the burning of Moscow not as a crisis giving a turn to the course of the war, but as a concomitant event of subordinate importance. Perhaps they consolled themselves with the reflection that it had always arisen from its ashes with re- increased splendour and beauty, as it has in the instance of the present instance. With respect to the extent of the destruction, it appears that Moscow contained nearly 18,000 of what are called numbers or courts, each containing a principal house and two or more dependent buildings. Of these, 17,276 were destroyed in the fire, and 1796 stone houses only 525 escaped, and of 6000 wooden houses only 1797 were left. 'Innumerable palaces,' says Dr. Lyall, 'crowds of noble mansions, and thousands of houses, barracks, shops, and warehouses, containing the wealth and luxuries of the whole nation, together with libraries of science, of literature, of art, and of the cabinet, and galleries, were destroyed. The total loss sustained by the two counts Razumovsky, by Count Apraxin, by Count Boutourlin, whose library, valued at a million, was wholly consumed, and by Countess Rostop- schin, whose house contained 200,000 rubles. But immense and irreplaceable as the loss was, the memory of it gradually fades away as the Russians see their venerable city rise with increased beauty from its ruins.' We cannot here enter into the debates of the architects and writers who, since the year 1813, which has so greatly changed the appearance of Moscow. 'The extraordinary mixture of contrast of magnificent palaces and petty huts, so often noticed by foreigners, though still occurring in a few places, no longer strikes the eye as formerly. Moscow has lost its Asiatic features, and assumed the appearance of the capitals of Western Europe. Happily for the lover of venerable antiquity, the Kremlin, which suffered comparatively little, notwithstanding the attempts of the French to destroy it, has preserved its antient irregularity and grace.' (Lyll.)

According to the latest detailed account that we have co-
tained, Moscow contained in 1835 above 10,000 houses, of which more than 2000 were of stone, seven cathedrals, 21 monasteries, 245 Greek, 2 Roman Catholic, and 3 Protestant, besides 2 English churches, 3 Armenian chapels, and a Greek, besides it is a tower on a hill and a hut to build on the Sparrow Hill a church to our Saviour, and he actually laid the first stone in 1817. This prodigious edifice was to consist of three distinct churches one above the other, and the total height to be 770 feet, but the design has been altered since, and the present is a tower on a church to our Saviour, which Emperor, who ordered a large fortress to be built instead.

I. The Kremlin.—The Kremlin, which was first built of stone in 1367, in a commanding situation on the banks of the Moskva, taken as a whole, is a most singular, beautiful and rich, on a pedestal, and is a single block of red granite, adorned with bas-reliefs. It was designed by M. Martos, an eminent Russian artist.

III. The Belo-Gorod, or white town, the third grand division of the city, forms above two-thirds of a circle, enclosing the Kremlin and Kita-Gorod on the north side of the Moskva river, which forms the southern boundary of those divisions. Besides many fine palaces of the nobility, the Belo-Gorod contains several remarkable edifices, such as the university, the medico-chirurgical hospital, the foundling-hospitals, post-offices, and the state-office of foreign affairs (which might be called the state-paper office), the residence of the governor-general, the exercise-house, the assembly-rooms of the nobility, three monasteries, three nunneries, and the like.

The palace consists of three immense stories, besides the basement, in a fine style of architecture. The internal arrangement, the site and elegance of the apartments, as well as the rich furniture and decorations, correspond with the expectations excited by the appearance of the building. The university suffered severely in consequence of the French invasion, before which it was very flourishing. The fine library, and valuable collection of all kinds, fell a prey to the flames. The building has since been repaired, and the site and elegance of the apartments, and the richness and taste of the decorations, would now make it a pleasing and magnificent object, forming as it were a wing to the palace.

The cathedral of the Transfiguration is a very plain and nearly square edifice, founded in 1326, and rebuilt in 1497. The cathedral, and 32 churches in the Kremlin.

After the cathedrals, the Ivanovskaya belfry claims attention for its size, its elegance, and magnificent appearance. It was erected in 1338, and rebuilt in 1497. It is 259 feet 6 inches high from the bottom to the top of the spire, and above the capital of the church, on which it stands; and there is in this belfry the celebrated bell said to be the largest in the world. It was cast in 1376, and fell in consequence of a fire in 1377, and is now sunk by its weight to some depth in the ground. It has been said to weigh 400,000 lbs., but an inscription on the bell states the weight at 10,000 pounds, or 360,000 lbs. English. The Kremlin contains besides the imperial museum, the arsenal, the palace of the patriarch, the Chodof monastery, and the Vosnesenskoya monastery, in the cathedral belonging to which a great number of works of art have been restored and the capital of the church, the other side of the building, is decorated with several stelae and adorned. The value is said to exceed even that of the treasures in the Jewel-office of London.

II. The Kita-Gorod, surrounded by a wall with 12 towers and 5 gates, is properly the city. The houses, which are mostly of stone or brick, are built close to each other, contrary to the usual mode. It is the centre of the trade of Moscow; and contains the bazaars, the magazines, and the richest shops. Among the public buildings are—1, the Pokrovskoi chureh, built in 1554, which was originally so constructed as to be made to be used as a church to our Saviour, which Emperor, who ordered a large fortress to be built instead, so that there are now twenty-one places of worship joined together, in which divine service may be performed at the same time. 2. The house of the town council, a handsome edifice, formerly the university. 3. The printing-office of the holy synod, a very fine building, in which there are thirty presses for printing ecclesiastical books in Slavonian, and books in Greek, Latin, French, and German, for the spiritual schools under the synod. The Kita-Gorod contains the splendid monument erected by the emperor Alexander in honour of Minin and Pozharski, who delivered the country from usurpers and foreign invaders in the seventeenth century, and placed on the throne Michael Romanov, the first sovereign of the reigning family. This monument consists of the colossal bronze statues of the two heroes, fourteen feet in height, on a pedestal of a single block of red granite, adorned with bas-reliefs. It was designed by M. Martos, an eminent Russian artist.

The exercise-house, an enormous edifice, was built in 1817. In Russia, where the cold in winter is so severe, and the heat in summer frequently so intense, the inconvenience and sometimes the impossibility of training and exercising troops out of doors renders such buildings as this absolutely necessary. The government has therefore provided for the exercise of the troops, and the execution of the various offices of the building. This at Moscow is, we believe, the largest in Russia. It has two fronts precisely similar, and two similar ends. The length of each front is 560 feet, and the breadth of each end 165 feet; the height is 42 feet. Each front has 36 and each end 8 plain Ionic columns, with fine arched windows between, the frames of which, and the doors of oak, not painted, make an agreeable contrast with the white walls. In this building 2000 infantry and 1500 cavalry may be exercised at the same time. It was designed by Lyall, formerly Lieutenant-colonel of the Marines, and supervised by General Charbonnier. The roof rests entirely on the walls. The foundling-hospital, founded in 1763, is an immense quadrangle, four stories high, besides the basement. It is situated on the elevated bank of the Moskva, and on the west side of the Yauza. It is a very plain and elegant edifice. It is said that it has been productive of great benefit in Moscow in preventing the crime of infanticide, which was very prevalent in Moscow, where the improper and barbarous practice of exposing children is now unknown. It is to be regretted that no lists of the mortality are published. Storch could procure none. Dr. Lyall could only obtain a Report, dated January, 1819, from which it appeared that the average number of children sent out of the hospital was 7642, and in the hospital 1138—i.e. in all 8780; that
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in the preceding year 4340 had been received, being an average of very nearly 12 in a day. The assembly-house of the nobility is a large pile of building, or rather a number of buildings, the effect of which is not agreeable. The interior is fitted up with great splendour: the grand ball is large enough to contain 2000 persons. It was burnt in 1812, and has since been rebuilt: the emperor contributed 100,000 rubles. The palace of General Apathir far excels the most splendid of the other private edifices of Moscow; it is almost totally consumed in 1812, but was rebuilt with remarkable rapidity. The palace of Pashkov is reckoned one of the finest specimens of architecture in Moscow. The college of mines, the college of foreign affairs, containing an equal number of students, are formed in regular streets, and are enclosed the four divisions of the city. In its place there are promenades planted with trees. In this division are the dépôt of the commissariat, a handsome building, containing the stores of the conscripts. In the former there are two stories, high, adorned with Doric columns, with a balcony at their base, and two wings. The dépôt for spirits, which occupies an immense space forming two squares, is chiefly remarkable for its length and use, being the dépôt for the spirits, or vinegar, which is received from all the crown's domains and from which all Moscow and the neighbourhood are supplied. The Imperial Philanthropic Society, the Moscow Commercial School (an excellent institution), are plain edifices; the Medico-Chirurgical Academy, a large building three stories high, with a portico of Doric columns, and has two detached advanced wings. It possesses a very respectable anatomical museum, and a fine collection of specimens from the three kingdoms of nature. The Zatchateisko monastery is a great ornament to this part of the city. It is a low cloistered edifice, derived its name from the church dedicated to the Zatchatijé, or conception of St. Anna, a handsome building in the Gothic style, the interior of which is very elegant and splendid.

V. The Zemlianoi-Gord, or earthen town, was so called from the earthen rampart, which was erected in 1618; but of which, though it was repaired in 1783, not a trace now remains. The fort, formerly 1.8 miles along the Moskva, enclosed the four divisions of the city. In its place there are promenades planted with trees. In this division are the dépôt of the commissariat, a handsome building, containing the stores of the conscripts. In the former there are two stories, high, adorned with Doric columns, with a balcony at their base, and two wings. The dépôt for spirits, which occupies an immense space forming two squares, is chiefly remarkable for its length and use, being the dépôt for the spirits, or vinegar, which is received from all the crown's domains and from which all Moscow and the neighbourhood are supplied. The Imperial Philanthropic Society, the Moscow Commercial School (an excellent institution), are plain edifices; the Medico-Chirurgical Academy, a large building three stories high, with a portico of Doric columns, and has two detached advanced wings. It possesses a very respectable anatomical museum, and a fine collection of specimens from the three kingdoms of nature. The Zatchateisko monastery is a great ornament to this part of the city. It is a low cloistered edifice, derived its name from the church dedicated to the Zatchatijé, or conception of St. Anna, a handsome building in the Gothic style, the interior of which is very elegant and splendid.

The tsoloéï, or suburbs, thirty-five in number, form an irregular polygon, completely surrounding the Zemlianoi-Gord. Part of the suburbs, like the Zemlianoi-Gord, consist of a mixture of stone and wooden houses, intermixed with superabundance and mean hovels. There are many villages, with much unenclosed pasture, some corn-fields, and waste land. In many parts of this division a stranger might fancy himself as far from Moscow as from London. Many of the monasteries and churches in the suburbs are worthy the attention of visitors. The most ancient palace built by the terry occupies a large piece of ground, which is surrounded with high walls, enclosing, besides the monastery, a principal central church, and three, four, five, six, or even more churches. Galitn Hospital is a very fine building, and a noble institution, founded at the end of the eighteenth century by Prince Galitzin. Sheremetof's Hospital is an extensive, noble, and magnificent edifice, resembling a fine Greek temple. Count Nicholas Shermotoff, desiring to erect a hospital at Moscow, obtained an ukase of the emperor in 1783, permitting him to build 300 beds, and an amount allotted to the building and support of the establishment was two millions and a half of rubles, which, at that time, might be equal to at least 150,000 sterling. The court ordered the inscription on 180 beds. His son added 40 beds more. Since that time further additions have been made. The establishment is not merely for the relief of the sick: a large annual sum is assigned for other charitable purposes, such as giving pensions to whole orphaned families, or to fifty indigent females, &c. There are many other hospitals and infirmaries. The chief military hospital is an immense establishment, founded by Peter the Great, and capable of receiving 1500 patients. A fine building, now called Catharine's Barracks, which has been used for the same purpose, was converted into a barrack by the empress Catharine II. It was converted into barracks by the emperor Paul.

MOSCOW, the residence of two archbishops, and contains besides the several government offices and public institutions specified in this article, the most important manufactories in the empire. It is the centre of the whole internal trade, and is the repository of immense quantities of merchandise of every description. The value of articles imported here amounts to five millions of rubles in a year. It is also the residence of the very great Russian nobles, who live in elegance and splendour. It contains the most magnificent edifices of the richest and most magnificent cities in the world, and that in which the national manners and the character of the people have been least changed. The population, which has been variously stated, is supposed to amount to 340,000 souls. In addition to the number of inhabitants, there is a number of servants who reside within this time in the environs, increased by 50,000 or 60,000 more.


P.S. Since the above was written, we have seen a letter from Moscow, dated the 1st of August, stating that the emperor has caused the ancient palace of the Czars to be thoroughly repaired, gilded within and without, and finished as nearly as possibly conformed to ancient chronicles and traditions: he has caused the palace of Alexander, after scarcely twenty years' existence, to be levelled with the ground, and upon the site of the old house commenced opposite to the old palace of the Czars, which is to form a part of it. As many thousand workmen are constantly employed, it is probable that the work will be soon completed. Another gigantic work is the building of a magnificent church for all Russia, instead of that which the emperor Alexander intended to erect on the Sparrn hill.

MOSELLE, an important river belonging to the system of the Rhine, which has the upper part of its course in France, and the lower course in the Rhinematic provinces of Prussia. The Moselle rises on the western slopes of the Vosges, near the southern extremity of that range, at an elevation of 372 French tons, or about 2560 English feet, above the level of the sea. At first its course is in the mountainous tract occupied by the ramifications of the Vosges; but at Charmes, below Epinal, it enters the great plain of Lorraine, which is wholly watered by this river and its tributaries, of which the principal are the Meurthe and the Seille, both on the right bank. The Moselle has its source in these favourite parts of Luxembourg and falls 800 miles to Toul: from Toul it flows north-east in a winding channel of 17 miles to the junction of the Meurthe, where the navigation commences. From the junction of the Moselle with the Meurthe, it flows north-east by east, 36 miles, to quits France, and, after skirting the western borders of the Prussian territory. After leaving France it flows 116 miles in a winding channel north-east past Trèves, Bernkastel, and Trarpach, to its junction with the Rhine at Koblenz and its greatest breadth, at right angles to the length of the Sarre, which is partly a French river. The whole course of the Moselle is about 280 miles, for 170 or 180 of which it is navigable.

The Moselle is subject to frequent inundations, which cause considerable damage. It is used for floating timber and for 55 miles above the junction of the Meurthe. The navigation, especially in the French part of the river, is subject to considerable difficulties; in some parts, from the rocks which shorten the channel; in others, from the shallows which extend across the channel. As long as the roads are sound, and the Moselle is not obstructed by the impediments here pointed out, it serves as the outlet for the produce of a considerable district, especially for timber and deals, charcoal, pit-coal, freestone, slate, corn, wine, and manufactures, which are shipped in 1800 vessels.

MOSELLE, Department of France, on the north-eastern frontier; bounded on the north and north-east by the grand-duchy of Luxembourg and the Rhinematic province of Prussia, on the south-east by the department of Meuse, and on the west by that of Meuse. Its form is that of an obcute triangle, having its greatest length from west by north to east by south, from near Longuion, on the Chiers, to the neighbourhood of Bitch, amid the slopes of the Moselle, 154 m. long, and its greatest breadth, at right angles to the length of the bank of the Seille, below Nomeray (Meurthe), to the neighbourhood of Sierck, on the Moselle, 41 miles. It has
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MO
between 48°

55'

aud 49°

33'

N.

S

lat,

and between

5° 28'

and

7° 43' E. longitude.

The

area of the department is estimated at 2063 square
miles, which is considerably below the average area of the
French departments, and is a little greater than the area
of the English county of Norfolk. The population in 1831
was 417,003; in 1836 it was 427,250, showing an increase
in five years of 10,247, or about 2*5 per cent, and giving
207 inhabitants to a square mile. In amount and density
of population the department is considerably above the
average of France, and in both respects rather above the
English county with which we have compared it. Metz,
the capital, is in 49° 6' N. lat. and 6° 12' E. long., 172
miles in a direct line east by north of Paris, or 191 miles by
the road through Chfilons-sur-Marne and Verdun.
The highlands of the department are at the extremities.
The eastern extremity is traversed by the chain of the
Vosges, and the western by the heights of Ardennes, which
are not so elevated as the Vosges. The intermediate part
belongs to the broad valley, or rather plain, of Lorraine,
which is watered by the Moselle and its tributaries. The
Vosges consist in this department not of the primitive rocks,
but of the formations which overlie them, to the new red
or saliferous sandstone inclusive. The rest of the department is occupied by the formations superior to these, and
which intervene between the red-sandstone and the chalk.
The minerals are iron, the ores of which are found in every
part, but not always in sufficient quantity to make them
worth working ; copper and lead, the mines of which have
been abandoned; coal; rock salt, in which some mines
are wrought ; manganese ; abundance of gypsum ; excellent
freestone; together with sandstone, quartz, limestone,
The principal mines of
potters' earth, and crucible clay.
iron-ore are in the arrondissements of Briey aud Thionville.
There are in the department eighteen establishments for
working iron: in these establishments are fifteen furnaces
for making pig-iron, in eleven of which charcoal alone is
used ; in four, charcoal mixed with coke or other fuel
sixty- nine forges for making wrought-iron ; and three for
the manufacture of steel. There is one coal-pit in the
department, which, a few years since, gave employment to
160 or 170 persons, three-fourths of them in the mine, and
produced annually nearly 900 tons of ordinary coal : in
1835 the produce rose to more than 3000 tons.
The department is included almost entirely in the
basin of the Moselle : a few of the streams which rise on
the eastern slopes of the Vosges, and How immediately into
tbe Rhine, have their sources just within the eastern
boundary of the department ; and the Chiers, and its tributary the Crune, which belong to the system of the
Meuse, water the western part The Moselle enters the
department on the south, near Pont-a-Mousson, and flows
northward, 41 miles through the department, by Metz,
It is navigable in all this part.
Thionville, and Sierk.
The Sarre, the principal tributary of the Moselle, enters the
department on the south side, but soon after quits it for
the department of Bas Rhin ; and entering again, crosses
tbe department into the Prussian territory, but at a considerable distance to the eastward of the Moselle. The
navigation of the Sarre commences soon after it passes the
southern boundary, at the junction of theAlbe, which also
belongs in great degree to this department Two other
tributaries of the Sarre, the Rossel and the Nied, which
latter is formed by the junction of two streams, called respectively Nied Franc,aise and Nied Allemande, belong
almost entirely to this department ; also the Ornes, a feeder
The Seille, which joins the Moselle at
of the Moselle.
Metz, has the greater part of its course in the department
of Meurthe. The navigation of the Moselle is given in
the official accounts at 50 miles; that of the Sarre, at
22 miles. The Canal des Salines, which was formed to
convey the produce of the salt-works of Meurthe to the
Sarre, has part of its course in this department. It follows
the valley, first of the Rode, a small feeder of the Albe,
and then of the Albe itself till its junction with the Sarre.
There are a considerable number of pools or small lakes,

and some marshes.
The number of Routes

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Royales, or government roads, is
twelve ; their aggregate length (Jan. 1, 1837) was 276 miles,
viz. 231 miles in repair, 26 miles out of repair, and 19 miles
unfinished. The principal road is that from Paris to Metz,
and from thence onward into the Prussian and other German states. It enters the department on the south-west side,

and runs

and then east-north-east, by Metz, Sarreguemines, Horabourg, and Forbach. The road from Paris
to Luxembourg crosses the western side of tbe department
through Longuion and Longwy. Roads run from Metz to
Longwy, with a branch to Thionville to Sarrelouis in the
Prussian states
to Nancy and to Chateau Salins, in tbe
department of Meurthe. There are roads from Sarreguemines by Chateau Salins to Nancy, by Saar Union (Bas
Rhin) to Phalsbourg (Meurthe), and Strasbourg (BasRhin)
;
aud to Sarrebruck, in the Prussian territory. The Routes
Ddpartemen tales, or departmental roads, had (Jan. 1, 1837)
an aggregate length of 216 miles, viz. 182 in repair and 34
out of repair. The aggregate length of the bye-roads and
paths (chemins vicinaux) was above 3000 miles.
In the
means of communication, both by land and water, this department is better provided than the French departments
first east,

;

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generally are.

The temperature

of the department varies with the
elevation of the surface : in the plain of the Moselle it is
mild ; in the hilly and mountainous tracts the cold is of
longer duration and more severe. In the neighbourhood
of Sarreguemines and of Bitche, amid the Vosges, the snow
lies long on the ground, and the transition from winter to
summer is very rapid. Agriculture is better understood
and practised in tnis department than in most parts of
France, and the peasantry are distinguished by their activity
and superior knowledge. Fallows are gradually passing
into disuse ; and the employment of marl, and especially
gypsum, as manure, is common.
About 750,000 acres,
nearly three-fifths of the whole surface, are under the
plough. The quantity of wheat raised exceeds by a third
the average produce of the French departments ; and in
barley, oats, rye, and maslin (or mixed corn), the preponderance is about the same ; but from the number of horses,
the supply of oats is not sufficient to meet the demand.
considerable quantity of pulse is grown ; also of flax and
hemp ; and of linseed, rape, and colza, from which abundance of oil is produced. Potatoes are cultivated, but not
so extensively as in other parts ; maize is little grown, and
buckwheat not at all. About 30,000 acres are occupied as
orchards or gardens, especially the former; and some
villages are so surrounded by orchards, that they appear as
if built in a wood.
The melons, peaches, pears, and
especially the Mirabelle plums of Metz, are in high repute.
The drying of the fruit, and the preparation of confectionary
and syrups from them, is an important branch of industry.
The nursery-grounds of the department are in high repute,
and young trees are sent to a considerable distance. The
vineyards occupy about 13,000 acres. The wine is chiefly
of middling quality, the vignerons (vine-dressers) finding
their account in the production of a large quantity of
ordinary wine, from the hardy Lorraine grape, rather than
in the uncertain vintage of grapes which, though they
produce better wine, are less able to withstand the frosts of
winter and spring. Some of the growths are however fine,
and are sent into Germany ; the commoner sorts are consumed at home. The quantity of woodland is consider,
able, about 230,000 acres, and affords a supply of fuel for
domestic use, and for the iron and other works
the trees
are chiefly, oak, beech and hazel : a considerable trade is
carried on in walkingsticks, made from the thorn and tbe

A

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cornel.

The meadow-land amounts

to 110,000 or 120,000 acres:
a small portion of it is devoted to the cultivation of the
artificial grasses.
The number of horses is more than twice
as great as in the average of the departments, but they are
of a very ordinary breed. The number of horned cattle is

rather above the average ; but they are of small size, and
do not readily fatten. The number of sheep is comparatively small, and the breed for the most part very inferior.
Considerable efforts have however been made of late years
the Merinos have been introduced on
for its improvement
the model farm of Moncey, in the arrondissement of Briey
and the English breeds and the Cashmere goat in some
Swine are numerous; their flesh
other establishments.
Bees
affords a substitute for the deficient supply of beef.
are pretty extensively kept.
The forests abound with game : the wild boar is rarely
found ; but the roebuck and the hare, as well as the wolf,
the fox, and wild cats, are common. Redbreasts abound
in the neighbourhood of Metz, where they are taken in
autumn in great numbers, being esteemed a delicacy. The
rivers abound with fish ; the Sarre and the Moselle yield
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The salmon and the shad, which ascend them thus far: the crayfish of the Sarre are excellent.

The department is divided into four arrondissements as follows:—

<table>
<thead>
<tr>
<th>Arrondissement</th>
<th>Population in 1836</th>
<th>Population in 1851</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metz</td>
<td>140,811</td>
<td>183,620</td>
</tr>
<tr>
<td>Thionville</td>
<td>117,520</td>
<td>156,851</td>
</tr>
<tr>
<td>Briey</td>
<td>126,466</td>
<td>162,973</td>
</tr>
<tr>
<td>Sarreguemines</td>
<td>123,973</td>
<td>162,973</td>
</tr>
</tbody>
</table>

The number of cantons or districts, each under a justice of the peace, is twenty-seven.

In the arrondissement of Metz are—Metz (pop. in 1831, 44,416 for the commune; in 1836, 45,793), on the Moselle; Gorze (pop. 1740 town, 1781 commune), at some distance from the left bank of that river; Boulay (pop. 3263 town, 2659 whole commune), near the Nied; and Faulquemont, on the Nied Allemande. Gorze is in a narrow valley of the most picturesque character. It has several fountains, supplied by springs in the town. There are several tand-yards at Gorze. There are the remains of an old abbey of the abbott's house; also of some subterranean conduits of Roman erection, which convey the waters of this neighborhood to the aqueduct which ran from the neighborhood of the Roman fortress of Alesia, near the Parc-sur-Moselle, across the Moselle, and thence to Divodurum (now Metz), where it furnished a supply of water to the baths and naumachia. Of this aqueduct there are considerable remains, partly in the bed of the Moselle, and partly on the right bank, near the village of Joly, where it is said that it is ascribed to Druusus by antiquaries, but the popular name is the Devil's Bridge. At the village of Ars, just mentioned, are two paper-mills, a manufactury of velvet, and one of woolen cloth for clothing the troops. Boulay has considerable manufactures of swords and bright steel weapons; of saws, anvils, and all kinds of joiners' and locksmiths' tools; of cotton yarn and woollen cloths; of copperas, alum, soap, and glue. There are also breweries, lime-kilns, fulling-mills, oil-mills, dye-houses, and tan-yards, besides the Spanish mill for grinding plaster, and two mills for grinding cuttery and tools.

In the arrondissement of Thionville are—Thionville (pop. in 1831, 4142 town, 5645 whole commune; in 1836, 5680 for the commune) and Sierck (pop. 1624 town, 2026 whole commune), on the Monselle. The fortifications from the left bank of that river; and Bouzonville (pop. 1817 town, 2325 whole commune), on the Nied. Thionville was probably founded in the eighth century. It was fortified, but of late years it has been strongly fortified. It was taken by the Prince of Condé, after the great battle of Rocroy, a.d. 1649. It is a fortress of some strength, on the left bank of the river, and was vainly besieged by the Prussians in a.d. 1792. It has an old wooden bridge remarkable for the facility with which it can be employed as a coracle. In the town there are several potteries and brownhouses, two corn-mills, two bark-mills, and an oil-press. There is a school of mutual instruction; courses of instruction are given in geometry and mechanics applied to the arts.

Sierck is situated at the foot of a rocky eminence, crowned by a fortress. This place has several tan-yards; glue is made, and stones for oil-mills and presses are cut from one piece. The stone with which Metz is paved is quarried near this town. Sierck is the mart for the neighborhood of the present valley of the Adour, from which it was taken by the Prince of Condé, after the great battle of Rocroy, a.d. 1649. It is a fortress of some strength, on the left bank of the river, and was vainly besieged by the Prussians in a.d. 1792. It has an old wooden bridge remarkable for the facility with which it can be employed as a coracle. In the town there are several potteries and brownhouses, two corn-mills, two bark-mills, and an oil-press. There is a school of mutual instruction; courses of instruction are given in geometry and mechanics applied to the arts.

The department consists of the bishopric of Metz, the bishop of which is a suffragan of the archbishop of Besançon. It is in the jurisdiction of the Cour Royale and the circuit of the Académie Universitaire de Metz; and in the third military division, of which the head-quarters are at Metz. It returns six members to the Chamber of Deputies.

In respect of education this department is considerably in advance of the average of the French departments; but it
inferior to the adjacent departments of Meuse, Meurthe, and Bas-Rhin. Of every 100 young men enrolled in the military census for 1829-30, 57 could read and write. The number of inhabitants was, Meuse 74, Meurthe 68, Bas-Rhin 62; average of France 39.

This department antiently constituted part of the territory of the Mediomatrici, whose capital was Divodurum, afterwards Mediomatri or Metis, now Metz, and of the territory of the Tungrians, and the Tungri. These people were, in the Roman division of Gaul, comprehended in the province of Belgica Prima. The Romans called the Moselle, Mosella (i.e. the little Meuse, a diminutive of Moso, the Meuse), and the Sarre, Saravus. In the territory of the Tungrians, beside Divodurum, were - the town of Iblodurum, which D'Anville fixes on the river Yron, on the border of this department and that of Meuse; Corunusca, somewhere near Thionville; and Ad Duodeicemum, on the border of this department and that of Meurthe. They are not to appear to have been any other Roman or Gallic towns mentioned by antient authors within the boundary. From the Romans the department passed to the Franks; in the middle ages it was known as part of the country of Les Trois Evesches; and before the Revolution of France was a province of Lower Lorraine.

MOSES (Mоwз, Mosёz, Mosэz), the lawgiver of the Hebrew people, was an Israelite of the tribe of Levi, and the son of Amram and Jochebed (Exod., ii. 11; vi. 20). He was born in Egypt, in the year 1571 B.C. according to the common chronology. To evade the edict of Pharaoh, the king of Egypt, that all the male children of the Hebrews should be killed (Exod., i. 22), he was hid by his mother three months in an ark of bulrushes, which she had laid at the Egyptian court, where he became ·learned in all the wisdom of the Egyptians.' (Exod., ii. 1-10; Acts, vii. 22-23.) At the age of forty years Moses conceived the idea of freeing his Hebrew brethren from their bondage in Egypt, and on one occasion (probably as officer) maltreating an Israelite, he interfered, slew the Egyptian, and buried him in the sand. The next day, upon his attempting to reconcile two Hebrews who had quarrelled, his services were scornfully rejected, and he was upbraided with the murder of the Egyptian. Finding that his secret was known, he fled from Egypt, and took refuge with a tribe of Midianites in Arabia Petrea [Midianites], among whom he lived as a shepherd forty years, having married the daughter of Jethro or Reuel. (Exod., ii. 11-22; Acts, vii. 23-30; Heb. xi. 24-27.)

As Moses fed his father-in-law's flocks in the desert of Sinai, God appeared to him at Mount Horeb in a bush which burnt with fire, but was not consumed; he heard the voice of God speaking out of the midst of the bush, and commanded him to return to Egypt and lead out his people thence into the land of Canaan. His elder brother Aaron was joined with Moses in this mission, and the power of working certain miracles was conferred upon him. On his arrival in Egypt, the Israelites accepted him as their deliverer, and after bringing ten miraculous plagues upon the land of Egypt before he could gain Pharaoh's consent to the departure of the people, he led them out through the Red Sea, which was miraculously divided for them, into the wilderness of Shur, into the wilderness of Moab (Exod., i, iii., vi. [Exodus: Jaws].) While the people were encamped at the foot of Sinai, God delivered to them, through Moses, the law which, with some additions and alterations, was ever after observed as their national code. (Exod., xxxiv. 1-17.) Of the Israelites in the Wilderness for forty years [Jaws], Moses appointed Joshua as his successor in the command over them, and died at the age of 120 years, on Mount Pisgah, on the east side of the river Jordan, having first been permitted to view the promised land of Canaan from its summit. God buried him in the valley of Bethpeor in the land of Moab, but his tomb was never made known. (Deut., xxxiv.; Jude, v. 9.)

The following points in the history of Moses require further explanation.

1. The name of Moses (Моwз) was given him by the Egyptian princes, 'because,' she said, 'I drew him out (גָּרֶה) from the דְּבָדָשׁ to draw out) of the water.' (Exod., ii. 10.) Now, under the circumstances of the case, the name is much more likely to be Egyptian than Hebrew, and its real derivation is probably that given by Jablonsky (Opuscula, i. 152-7), from the Copit Mo, 'water,' and Oudeiche, 'saved.' This is confirmed by the form Моwз, which is always used in the Septuagint, and by the testimony of Josephus (Antiqu., ii. 9, 6) and Philo (De Vita Mosèi, ii. 83).

2. The gap left by the Scripture narrative in the early history of Moses has been filled up by Josephus, Philo, and other writers, with various legends, some of them highly improbable, of which the most violent is given in Millman's History of the Jews, vol. i., p. 61, &c.

3. The miracles of Moses have been made the subject of much discussion, and many divines of the Rationalist school have attempted to explain them as an advancement of natural phenomena, or as ingenious jugglery. Even if it were admitted that most of the ten plagues were visitations to which Egypt was subject, they would still retain all the essential characters of miracles in their increased and their unusual occurrence, in the exemption of the Israelites in Goshen from most of them, and in their immediate cessation at the prayer of Moses. The imitation of the first three plagues by the Egyptian magicians has generally been ascribed to Jewish and some Christian authors to diabolical agency, and some modern writers have considered that it can be satisfactorily accounted for by the knowledge of the Egyptian priests in legerdemain. But assuredly their inability to imitate the later plagues, when they confessed, 'This is the finger of God' (Exod., vii. 16) a miracle is greater than the miraculous character of these visitations, than their imitation of the earlier ones is against it. Several writers have shown how greatly the sufferings of the Egyptians from these plagues were aggravated by their physical circumstances and religious opinions. (Bryan's Observations upon the Plagues inflicted on the Egyptians; Rosenmüller's Scholia, Exod., vii., &c.; Millman's History of the Jews, vol. i., p. 66, &c.) Other difficulties connected with this are parts of the histories of Moses and Aaron and in Winer's Biblieisches Realwörterbuch, vol. ii., p. 133-139.

Respecting the king of Egypt in whose reign Moses led out the Israelites, and the destruction of the Egyptians in the Red Sea, see Wilkinson's Manners and Customs of the Ancient Egyptians, vol. i., c. 2., &c.

The part which Moses took as leader of the Israelites is stated in the Scripture record to have been owing to the direct command of God (Exod., iii.,) and the laws which he gave them are asserted to have emanated from God himself, seeing xx. 1, 22, &c. As the subject of these facts, or, as theologians express it, of the 'Divine Legation of Moses,' depends chiefly on the authority of the books ascribed to Moses, this part of the subject is referred to Pentateuch.

The Legislation of Moses.—The chief authority for the following account of the Moses legislation is the 'Mosaicæ Recht' of Michaelis. The references are to the English translation of that work by Dr. Alexander Smith. Other works on the subject are mentioned at the end of the article.

The Law is laid down in the books of Exodus, Leviticus, and Numbers, and repeated with modifications in the book of Deuteronomy, but in neither case in any systematic order. (Exod., xxvi. xxvii. xxviii. xxix. xxx. i.-iv.; Deut., x.—xxi., xii.—xx., xvi.—xxx.; Lev. i.—vii., v. —x., vi.—xx., xxii.—xxxi.; Num. i.—xvi.)

The Mosaic laws must be viewed throughout as enacted for a people who stood in the peculiar situation of having been chosen by God out of all the nations of the world, to possess knowledge and worship of the true God, and to exhibit in their history the providential dealings of God with his people.

The whole law rested on two fundamental principles, one of which was religious, and the other partly religious and partly political. The first fundamental principle of the Mosaic law is the worship of Jehovah as the one true God; and consequently the uncompro.mising position which was taken up, and which was at that time the prevailing religious errors. Other nations, while acknowledging the supreme God as the creator, associated with him subordinate deities, to whose agency they looked for temporal blessings. All such
worship was prohibited by the first words of the Law, 'I am Jehovah, thy God, which brought thee out of the land of Egypt, out of the house of bondage. Thou shalt have no other Gods with me.' (Exod. xx. 2, 5; Deut. iv. 35, 39.)

This second fundamental principle was that of the prohibition of idolatry of every kind. (Exod. xix. 4, 6.) To render this fundamental law the more binding, Jehovah, who was already the founder of the nation of Israel by delivering them from Egypt, was represented as their king, whose command they were to obey and that they themselves should become high-treasors. (Exod. xix. 4-8; Deut. vii. 22-24,

The real foundation of the Mosaic polity was in agriculture. The whole territory of the state was so divided that every Israelite (that is, every head of a family except those of the tribe of Levi) received a portion of land, whom became the inalienable property of himself and his

Besides persons, who, in opposition to the principles and in Palestine of Hebrews, were both by the allotment of land to every
derived a portion of land, whom became the inalienable property of himself and his

The practice of freebooting to obtain a livelihood, a common among the Arabs, and by no means unknown among their Hebrew brethren (Judges, ix., x.), was discouraged by Moses, both by the allotment of land to every citizen, and by the little encouragement which he gave to hunting.

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Judah alone; in the revolt of ten of the tribes from Reho-
boam; and in the standing rivalry between the tribes of
Judah and Joseph, which led to that revolt.

The Levites (Deut., xvii.) were the natural judges. Did not represent
their tribes. Before their appointment Moses was sole
judge, and it was to relieve him from the burthen of that
office a class of judges was instituted. (Exod. xvi.)

There was a judge over every ten persons, another
judge over every hundred, and a judge over every
town. From each of these orders there was an appeal to the one above,
and from the last to Moses himself. Moses further ordained
that when the people were settled in Palestine, judges should
be appointed in all cities. These courts that appear to have been left to the people, as Moses lays down
no rules for their election. In subsequent ages it generally
happened that they were Levites.

In Num. xi. 16, we have an account of the appointment
of twenty men out of the elders of the people to assist
Moses. These are commonly supposed to have been judges;
and the foundation of the Sanhedrim, so well known in the
later Jewish history, is traced to their appointment. Micha-
elis takes a very different, and, we think, more correct view of
their office. He considers that they were a senate chosen
to take part with Moses in the government, and that the
institution was but temporary. We do not find them men-
tioned in the subsequent history of the people, and the real
Sanhedrim was not founded till after the Babylonish cap-
tivity.

The scribes were an order of officers quite distinct from the
judges. This office was instituted during the Egyptian
capitvity. (Exod. v.) They were to be appointed in every
city, to receipt the silver and the gold, and the ransom money
generally taken, like the judges, from the tribe of Levi.
Their name (מָשָּׁל) is derived from a root, which still
exists in Arabic (sadar), meaning to write. From this and
other circumstances it is concluded that they were the
officers who kept the genealogical registers and apportioned
the public burdens to every individual. They also con-
veyed to the people the general's orders in time of war.

Such was the Israelite state, consisting of the congre-
gation of the people, governed by the heads of families, the
princes of tribes, the judges, and the scribes. To this demo-
ocratic constitution the tribe of Levi formed a counterpoise.
They had no landed property, but received the tithes of all the
other tribes. Besides these they received the first fruits of
all produce, probably about a sixtieth part of the whole crop;
they had a part of every sacrifice; and while the people,
who were in the wilderness every beast bound to feed
was offered as a sacrifice, and afterwards the priest received
a portion of every slaughtered beast that was not brought
to the altar; they had everything that was devoted to God,
and the redemption fees of the first-born of men and
uncircumcised. Their king at the same time was and
some minor articles. A calculation of these items would
show that their revenues were enormous, and far more than
is needed for the support of a body of religious instructors.
But this was not the office of the Levites; and the cir-
cumstance of their living in cities of their own made the
discharge of such an office impossible. They were indeed,
in a different sense, the ministers of religion; for they per-
formed all religious ceremonies, preserved copies of the
law, explained it in doubtful cases, and judged cases, to
the best of their ability. They supported the state, and
without them the religions and political order of the
people could not have been preserved. (Deut., v.)

The Levites were the literary class of the nation, and filled all the learned professions. Diffi-
cult and obscure passages were to be referred to them for judg-
ment. (Deut., xxvii. 8-13; xxvii. 5.) In the wilderness they
formed a guard to the tabernacle and to Moses. The occa-
sion of their obtaining the priest's office is related in Exod.
xxiii. 25-29. In the name of the Levitical order was the high-priest, who was always taken from the family of Aaron. He possessed
great influence in the state. He was the supreme legal
authority. In Deut. xvi. 12, he is placed on a level with
the judge or chief magistrate; and when there was no king or
when the high priest was the chief magistrate, as in the
case of Eli.

Moses did not determine what should be the nature of the
supreme magistracy. Before his own death he ap-
minted a successor in the person of Joshua, who was a

*This supreme magistracy must not be confounded with the ordinary judi-
cal authority mentioned above.
The laws of the jubilee and sabbatical years do not appear to have been long observed; indeed it is plain from Levit. xix. 34, 35, that the observance of these laws was expected. From 2 Chron. xxxvi. 21, it appears that up to the Babylonian captivity there had been seventy sabbatical years neglected. This would carry us back nearly 600 years, namely, to the reign of Saul or David, as the time at which these laws were observed.

A man's property descended to his sons, of whom the eldest had a double share. (Deut. xxi. 17.) The exclusion of daughters from the inheritance was established long before the time of Moses. (Gen. xxxi. 14.) No provision was made in the law for the support of widows. On the occurrence of a case in which a man died leaving only daughters, Moses made the law that in all such cases the daughters should inherit their father's property, but that they must not marry out of their own tribe. The husband of a maiden heiress accounts for the cases of inheritance passed to a man's brethren; failing them, to his father's brethren; and failing them, to the next of kin of the father's, according to the directions as to determining who are the next of kin. Probably this was already determined by custom. The Mosaic law contains nothing on the subject of wills; but we find that the right of bequeathing property other than land existed both before and after his time, and he nowhere prohibits it.

2. Laws relating to Persons.—The laws of Moses incalculately the most complete legal obdience. (Exod. xii. 12; compare Ephes. vi. 1-3.) The power of fathers over their sons was absolute, and does not appear to have existed before the time of Moses. (Deut. xviii. 1-15.) Fathers and mothers, chose wives for their sons. Next to the father, the first-born had the greatest power over the family, though it does not clearly appear in what this consisted, nor whether it was exercised in the father's lifetime. Though whatever opened the womb was a first-born (Exod. xxi. 2, 5), yet it was from Deut. xxi. 15, and 1 Chron. iv. 2, that the first-born of a family was the first-born to a man of all his children, and not the first-born by each of his wives.

3. Laws relating to Property.—Moses ordained that after the conquest of Canaan the land should be divided by lot in equal portions among the Israelites, and should then be inalienable for ever. This law was invested with a religious sanction, by representing God as the proprietor of the whole land, which the people only held in usufruct under him. (Deut. xvii. 10.) The land already might be sold nominally, as it reverted to the original owner or his heirs in the year of jubilee, which was every fifty years, such a sale amounting only to the sale of the crops for fifty or fewer years. Land so sold might be redeemed on certain conditions before the year of jubilee. (Levit. xxv. 35, &c.) The law against the alienation of land admitted of exceptions, the chief of which was that land vowed to God, if not redeemed before the jubilee, became the property of the priests. (Levit. xxv. 26.) A father might sell his land, and his son, if he pleased, might purchase it again; but it was highly injurious to a man to have posterity who might perpetuate his name, and by his engraving upon this notion the law of levirate marriages, by which it was enacted that when a man died leaving a widow, his brother should marry her, and if he died, his brother; that is, children who were to be accounted as belonging to the first husband, and who were enrolled in the genealogical registers in his name.

The marriage law of Moses had in general a tendency to promote marriage, and this chiefly by its sanctioning the marriage of all persons, and does not appear to have existed before the time of Moses. (Deut. xviii. 1-15.) Fathers, married mothers, chose wives for their sons. Next to the father, the first-born had the greatest power over the family, though it does not clearly appear in what this consisted, nor whether it was exercised in the father's lifetime. Though whatever opened the womb was a first-born (Exod. xxi. 2, 5), yet it was from Deut. xxi. 15, and 1 Chron. iv. 2, that the first-born of a family was the first-born to a man of all his children, and not the first-born by each of his wives.

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right understanding of this law is very important to the explanation of the doctrine of Christ concerning divorce (Mark, vii. 2, 5). Some two thousand years ago, the marriage laws of Christian countries (Michaels, Arts. 92, 93.)

Moses permitted polygamy, as is proved by the laws in Exod., xxii. 9, 10; Levit., xviii. 15; Deut., xxi. 15-17, by the constant practice of the antient nations, by the fact that he nowhere prohibits it, and by the small number of the first-born compared with the whole number of males, namely, about 1 in 42 (Numb., iii. 43). But he permitted it only as a matter of policy, "on account of the wars indeed, and because of every man's concupiscence of his own heart," that is, the difficulty of rooting out invertebrate customs, and perhaps for other reasons, which are pointed out by Michaelas (Art. 96). Some of his laws have a strong indirect tendency to prevent, for example, the buying of a slave; and notwithstanding some striking examples of its practice, as that of Solomon, it does not appear to have prevailed extensively among the Israelites. (Mich., Art. 95.) After the Babylonish captivity it ceased entirely. Moses however set limits to the practice of polygamy, not allowing many wives. (Deut., xvii. 17.)

Moses prohibited marriages between certain near relations, some of which, those namely between parents and children, brothers and sisters, he considered as opposed to natural morality, for he himself opposes them as being harmful to themselves. Other marriages between relations were probably forbidden only for reasons connected with the character and habits of the people. (Levit., xvii. 9; Michaelas, book iii., c. 7.)

Other classes were unfavourable, at least if we may judge by the way in which he speaks of the marriage bond in Gen., ii. 24; but he allowed it to a greater extent than he altogether approved, 'because of the hardness of their hearts' (Matt., xix. 6). The law of divorce is in Deut., xxii. 20, which celebrates the purity of the ancients, by giving away her a writing of divorcement. She might then marry again; but if her second husband put her away or died, she might not return to her first husband. (Mich., Arts. 119, 120.) No provision is made for the support of the divorced wife, which was probably the main reason for the right of divorce. (Deut., xviii. 29.) The support of a widow after her husband's death was provided for, if she had no children, by the law of levirate marriages; if she had children, it was left to filial piety.

Slaves and Servants.—Moses found slavery already existing among the Israelites and their neighbours. He permitted it to continue, under certain restrictions, and his laws on this subject are conceived in the spirit of justice and benevolence. (Lev., xx. 15.) Slaves were acquired by capture in war, by purchase, and by the marriage of slaves. Of purchase there were four kinds: 1, when a slave was transferred from one master to another; 2, when a man under the pressure of poverty sold himself a slave; 3, when children were sold, as virtually the fourth, when an insolvent debtor, or a thief unable to make restitution, was sold as a punishment. The value of slaves was of course variable, but in two cases it was fixed by law (Exod., xx. 12; Lev., xxvii. 1-6). Besides the slaves of private individuals, there were others who belonged to the public; these were employed in menial labours for the service of the sanctuary. Slaves might have property of their own. A master might beat his slave, but not so as to kill him (Exod., xx. 21); if he even maimed him, the slave was to be set free (Exod., xxii. 26, 27). A Hebrew slave possessed this advantage over a foreign one: he was entitled to his freedom in the sabbatical year and in the year of jubilee, and he might be redeemed before the year of jubilee, which was to be held in slavery for ever. The manumitted slave received presents from his master (Exod., xxxii. 1-10; Lev., xxv, 39-55; Deut., xi. 12-16). Slaves had to conform to some of the principal religious ceremonies observed by the Israelites.

In the Mosaic law we find many laws relating to the treatment of slaves, many of which have a tendency to preserve the breed of such as are useful to man.

**Police Law.**—1. **Civil Police.**—The population was to be ascertainment by periodic census, the same as which is not provided in the statute. Every individual was subject to a capitation tax of half a shekel. (Exod., xxx. 11-16.)

2. **Military Police.**—Every man above 20 years old was liable to be called out to war. (Numb., i. 3-46; xxvi. 2.) But generally a selection was made by the tribes, who

3 L 2
also appointed the officers. Under the kings permanent officers were appointed. Exemption from military service was allowed to the man who had built a house and not yet occupied it, to him who had planted a vineyard or olive- yard and not yet enjoyed its fruit, to him who had betrothed a wife, and to him who had married within a year. (Deut., xx. 5-7.) Cowardice was also a ground of exemption, but attended with disgrace. The spoil taken in war was divided into four portions, and those portions were distributed among the people, those who went to war and those who remained at home having equal portions, and that in effects was the property of the soldier who seized it. Many regulations are made to promote cleanliness and to allow of cleanliness in the camp, with which this object was declared to be sacred.

3. Ecclesiastical Police, or the Ceremonial Law.—In this part of the Mosaic law many ceremonies are ordained which are of frivolous and unmeaning kind unless we keep in view the fact asserted both in the Psalms and in the New Testament, and thus explained in the Epistle to the Hebrews, that most of the Levitical rites were only types of the blessings to be enjoyed under the Christian dispensation. We do not enlarge upon this subject, as we are not here regarding the Mosaic laws in their theological aspect.

Circumcision, which had long before been given by God to Abraham, was adopted in the Mosaic law as the ceremony by which every male was admitted to the civil and religious privileges of the people of Israel. (Gen. vii. 9-14; Levit. xii. 13.) Every bond-servant among the Israelites was obliged to submit to this rite, and also every stranger who wished to be naturalised among the people and to possess the privileges of a citizen.

Offerings were of three kinds: 1. Bloody, consisting of slaughtered animals, which must be those regarded by the law as clean. They were either burnt-offerings, which were wholly consumed on the altar; sin-offerings, made on account of the uncleanliness or ignorance of the people; or a part only was laid on the altar; or peace-offerings, or peace-offerings, of which only the fat parts were burnt and the rest eaten. 2. Unbloody, or meat-offerings, consisting of meal, bread, &c. 3. Drink-offerings, consisting of wine, of milk, or of oil, on the altar. Sacrifices might be offered at the place which God might appoint, which in the Wilderness was the tabernacle: this law was doubtless intended to prevent idolatry. Besides their typical significance, these sacrifices had constant moral and practical advantages, which are pointed out by Michaelis (Arts. 189-191).

Two tithe of all the produce of the land were due to God. The first was paid to the Levites for their support, and the second was offered to the priests. In addition to the tithes, the first-born of all animals, including man, were sacred to God, and belonged to the priests. This law had its origin in the sparing of the first-born of the Israelites when those of the Egyptians were slain. The first-born might be redeemed, but in cases of default sacrifice was not to be redeemed, but those of other beasts and of man might be redeemed at a fixed price. (Exod. xiii. 2-16; Levit. xxii. 26; Num. xviii. 15-19.) The first-fruits of crops and other produce belonged also to the priests (Levit. xxiii. 9-14; Num. xv. 21-23; xvii. 11-13; Deut. xxvi. 4-5). There was another sort of firstlings which were employed for feast-offerings (Deut. xvi. 8; xiv. 23; xv. 19-23; xxv. 11-13).

The Sabbath.—Every seventh day was a day of rest and of religious worship. This was no new law of Moses: it had been enjoined upon man, at the creation of the world, to celebrate the resting of God on the seventh day. (Gen. ii. 3.) In the Mosaic law it was also a commemoration of the deliverance of the Israelites from Egypt, and some of the peculiarities in the Jewish observance of the day are undoubtedly connected with that fact. No service whatever was to be done on the Sabbath, except what was necessary for the sanctuary itself. The punishment for transgressing this law was death. (Exod. xx. 13; 23-30; 31-35; 34-35; Num. xv. 21-23.)

There were three annual festivals, each lasting seven days. The males were not allowed to assemble at the place where the sanctuary stood. (Exod. xxiii. 14-17.) These were—1. The passover, to commemorate the passage over of the Israelites by the destroying angel when he slew the first-born of the Egyptians. It fell on the evening after the 14th day of the first month of the year, that is, very near the vernal equinox, and at the beginning of harvest. 2. The feast of pentecost was held at the end of harvest, on the 40th day after the 16th of the first month. It was a festival of thanksgiving for the harvest. 3. The feast of tabernacles began on the evening of the 14th day of the seventh month, about October. It was a festival of thanksgiving for the fruitage and vintage. Remarks on the observance of these festivals and an account of the other feast days will be found in Michaelis (Arts. 197-201). He reckons that in the whole year there were 30 feast days, besides the 52 Sabbaths.

Many of the verses of the present life of the Israelites are regulated by the Mosaic law with great precision. The laws on this subject may be divided into two classes: 1. Regulations respecting meats, and their distinction into clean and unclean, with the prohibition against eating swine. 2. Those relating to defilements, mental and moral, concerning leprosy. Both these classes of laws conducted greatly to the preservation of health and morality, and formed a strong barrier against idolatry. (Michaelis, Arts. 202-217.) For an account of several miscellaneous precepts in the Mosaic law the reader is referred to Michaelis, book iv., c. 5.

Respecting the criminal law of Moses we have not space to enter into details. It is ably treated by Michaelis (book v.). This part of the Mosaic institutions is distinguished by its equal treatment of all offenders, punishment according to the enormity of crimes. Some offences, especially those of a religious character, were punished with a severity which to us may appear excessive; but this was on the principle of carrying out the design by which the people were regarded as set apart to preserve the worship of the true God, and according to which it was a matter of the first importance to remove every defilement from among them. The Mosaic penal law introduced a vast improvement, by abolishing, or at least remitting, the punishments for crimes of the fathers, and fathers for those of their children. (Deut. xxiv. 16.) The punishments are not cruel. They were—1. Death by the sword, or by stoning, followed in some cases by inflictions on the corporse of the criminal—thus the eye, or the hand, or the foot, or the penis, or some other part of the body. 2. Exile, or excision from the congregation of God. 3. Corporal punishments. 4. Fines. 5. Offerings to make atonement for sin: these kept up the idea that all offences were committed against God. None of the punishments for the living were degrading; for stripes are not considered so by Oriental nations, nor were they by the Hebrews.

Of the form of judicial procedure little is known, except that it is regulated by the written laws. The purity of the judgment-seat is guarded by several statutes, both to prevent bribery and partiality. Causes were heard in the gate of the city, according to immemorial usage in the East; and thus publickly was secured, as the city-gate was the common place of resort of all men, as the market-place where witnesses, of whom two or three were necessary in capital cases, were examined upon oath. (Levit. v. 1; Num. xxxxvi. 30; Deut. xviii. 6, 7.) In some cases oaths of purgation were required from the accused. (Levit. v. 5, 3.) Sometimes a reference was made to God by lot in civil cases; and in criminal cases the lot was occasionally resorted to, but only for the discovery and not the conviction of the criminal. A criminal's confession might convict him capitally. (Josh. xxvi. 21; 37-40; 2 Sam. i. 13-16.) Moses nowhere appeals to rewards and punishments in another life as a sanction for his laws.

The greatest care was taken to preserve the law. One copy of it was written in a book which was deposited in the sanctuary beside the ark of the covenant (Deut. xxxv. 26), and another copy was engraved on stones, which were fixed on Mount Gerizim or Mount Ebal (probably the former) with solemn ceremonies, in which the people swore to keep the law, blessings were invoked on the obedient, and curses denounced on the transgressors. (Deut. xxviii.)

Viewed as a whole, the laws of Moses seem perfectly adapted to the character of the people for whom he legislated, and to the physical and political condition of the country in which they were to inhabit. Not those above than that which is made by many people when they suppose that because these laws came from God, therefore they are the best code that can ever be formed. Had they possessed
this ideal excellence, they would have been really bad laws, because they would have been unsuited to the nation they were intended to govern. They were not meant to be unalterable; indeed some of them were altered by Moses himself. They were only intended to last for a time, and therefore, when considered with reference to our present experience of human affairs, they appear to have many imperfections.

The origin of the Mosaic legislation is declared in Scripture to be from God, by which we must understand that these laws were sanctioned by God and published by his command. It has already been observed that many of the laws did not originate with Moses, but were ancient observances which he adopted and codified by the command of God. (See also Iken, Diss. II. de Instituti et Ceremoniis Legis Mosicae ante Mosem; Remar, Cognitiones de Legibus Mosicae ante Mosem.) And moreover, when we remember that he was brought up in Egypt, and was "learned in all the wisdom of the Egyptians" (Acts, vii. 22), when we compare various parts of his laws with similar institutions which existed in Egypt (for example, the freedom of the constitution, the separation of the caste of priests from the rest of the community, the discouragement of commerce, and the measures taken for keeping the priestly classes distinct from other nations), it becomes highly probable, if not certain, that the Mosaic institutions were largely modelled on those of Egypt. This opinion, which is held by nearly all the best critics who have examined the laws of Moses, has been unaccountably regarded as opposed to the divine character of these laws, as if divine inspiration must necessarily deprive a legislator of the wisdom which he already possesses, and prevent him from adopting, under the sanction of that inspiration whatever good he may find in the institutions of other nations. On the other hand there are many points of opposition between the Mosaic and Egyptian laws which it is impossible to overlook. Several of these are adduced by Michaelis, in a paper in the "Commenaries," vol. iv., "De legibus quibusdam in Moseo fo finis lati, ut Israelitis Egypti cupidissim Palestinarum canem faceret." The spirit of the whole law was, as Moses himself asserts (Lev. xix. 25), diametrically opposed to that of the Egyptian as well as the Canaanite institutions. For these reasons it is impossible to regard the Hebrew legislation as a mere copy of the Egyptian.

Some divines of the Rationalist party have maintained that Moses was not the author of the whole of the legislation of the Pentateuch. This opinion is opposed to the evidence which exists in favour of the genuineness and authenticity of the books of Moses. [Pentateuch.]

The following very useful table of reference is taken from Wilson's "Archaeological Dictionary," where it is said to be "taken from a MS. in the library of St. John's College, Cambridge," by Archbishop Laud, and probably either compiled by his Grace, or by his direction.

### The First Class.

#### The Moral Law written on the Two Tables, containing the Ten Commandments.

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#### The Second Class.

#### The Ceremonial Law may be fitly reduced to the following heads, viz.:—

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The Third Class.
The Political Law.

N.B. The magistrate is the Keeper of the Precepts of both Tables, and to have respect to human society; therefore the Political Laws of the Israelites are referred to both the Tables, and are to be reduced to the several Precepts of the moral Law.

Laws referred to the First Table, namely:—

1st. To the First and Second Commandments, viz.
   a. Of Idolatry and Apostates, 22, 20...13 17
   b. Of Divorces and False Prophets, 23, 24...18
2nd. To the Third Commandment, viz.
   a. Of Covetousness with other Gods, 23, 24...7
3rd. To the Fourth Commandment, viz.
   a. Of Blasphemies, 24...18

Political Laws referred to the Second Table, 31

1st. To the First and Second Commandments, viz.
   a. Of Capital Punishments, 21...19
   b. Of Wildfire Murther, 21...19
   c. Of those unrightfully Committed, and the Cities of Refuge, 21...19
   d. Of Heinous Injury, 21...19
   e. Of Punishments and Capital, 21...19
   f. Of the Law of War, 21...19
2nd. To the Seventh Commandment, viz.
   a. Of Unlawful Marriages, 21...19
   b. Of Forbenishment, 21...19
   c. Of Wherefore, 21...19
   d. Of Abhorry and Jealousy, 21...19
   e. Of Copulation against Nature, 21...19
   f. Of other, 21...19
   g. Of Other Marituals, 21...19
3rd. To the Eighth Commandment, viz.
   a. Of the Punishment of Thieves, 22...19
   b. Of Serine, Joshua, etc., 22...19
   c. Of sinning Chemists, 22...19
   d. Of any of the above, 22...19
4th. To the Third Commandment, viz.
   a. Of the Lord's Day, 22...19
   b. Of the Day of Days, 22...19
   c. Of the Day of the Lord, 22...19
   d. Of the thing Lost, 22...19
   e. Of the thing Committed to be kept, 22...19
   f. Of the Heirs, 22...19

5th. To the Ninth Commandment, viz.
   a. Of the Establishing the Political Law, 23...19
   b. Of the Establishing the Divine Law, 23...19
   c. Of the Extent of the Law, 23...19
   d. Of the Excellence of the Law, 23...19

(Michaelis, as quoted above; Salvador, Histoire des Institutions de Mois et du Peuple Hébreu; Pastorit, Histoire de la Legislation, tom. iii.; Jahn's Biblische Archäologie, tom. ii.; Lowman's Dissertation on the Civil Government of the Hebrews; Spencer, De Legibus Hebræorum; Witsi, Egyptiaca; Warburton's Divine Legation of Moses; Hallo's Analyse of Chronology, vol. ii.; Winet's Biblical und deraturbuch, arts. Moses, Gesenius, etc.; the Commentaries on the Pentateuch on Voss, Rosenmüller, etc.; Graves on the Pentateuch; Fabric's Homer Mosicae; Lando's Modern Egyptians, and other works on the Arameans, furnish excellent illustrations of some of the Missic Institutions.)

MOSHEIM, JOHANN LORENZ VON, was born of a noble family at Liebeck, October 9, 1694. He was educated at the gymnasium of Liebeck and the university of Kiel. At Kiel he succeeded Albert zum Felde as professor of philosophy in the university. He obtained the degree of doctor of divinity at Göttingen, and was appointed professor of theology in the university of Helmstedt, where he remained from 1723 to 1747, when he was appointed professor of theology at Göttingen and chancellor of the university. Here his lectures on theology attracted all classes of students. He died on the 9th September, 1753, at the age of 61. He was three married. By his first and one of his two sons, a Moral daughter, and his third wife one daughter, afterwards Duchess of Nassau.

Mosheim was greatly distinguished as a preacher. His style was formed on the model of the great English and French preachers, Tillotson and Watts, Bouriquet, and Fénélon, and his works have been compared to Fénélon for the graces of his style, and he is considered one of the founders of the modern German literature. His talents were of a very high order, his learning was immense, and his character was excellent.

The whole number of Mosheim's works is 161. He himself published at Helmstedt, in 1731, a catalogue raisonné of the works which he had published up to that time. His best known work is the Institutionum Historia Christianarum, Antiquitatum et Recentiarum, libris 21. This work, which is written in Latin, was first published as 2 vols. 12mo, in 1726, and the enlarged edition, in 4to, which he examined the original authorities, was published in 4to. in 1745, just before Mosheim's death. Another edition, enlarged, was published in 1764, in 4to, by Mosheim's writings by Miller, one of his pupils. It was translated into German by Von Eenem, and by J. R. Schlegel. Schlegel's translation is the better, and is enriched with valuable notes. It has also been translated into French, Dutch, and English. The first English version was made in 1764, by Dr. Maclaine, an assistant minister at the Hague, and has been frequently reprinted. It is very unfaithful. Maclaine's professor object was to improve Mosheim's style, by adding words, and altering off periods. His alterations and additions constantly express his own sentiments instead of Mosheim's, and sometimes flatly contradict his author. In 1832 a faithful translation, with valuable notes, was published by Dr. Murbeck, of New Haven, Connecticut, United States. Mosheim's Ecclesiastical History extends from the birth of Christ to the beginning of the eighteenth century. Each chapter is treated of separately, under the two heads of External and Internal History. The External History comprises wars and events, or the extension of the church by the efforts of its public rulers and private members, and calamitous events, such as persecutions and internal attacks. The Internal History includes the history—1. of the Christian doctors; 2. of the doctrines and laws of the church. In the former he has been the most celebrated. This arrangement is open to several objections, of which the chief are, that it is too artificial; that what Mosheim calls external and internal history constantly run into each other; and indeed it is not easy to understand how the history of a community can be said to be external to it; and lastly, it imposes on the historian the necessity of deciding what no human mind can decide, namely, what events are prosperous and what calamitous to the church. But the work of Mosheim is open to a graver objection. He has not treated his subject with the proper spirit of pious interest, though his own orthodoxy is undoubted. Nevertheless, his deep knowledge, his patient research, his general character and impartiality, and his philosophical spirit, earn for him a place among the best historians. His works gave an impulse to the study of Church history in Germany, which has produced, among other works, those of Pfaff, Baumgarten, Wahls, Weidinger, Schreiber, Henke, Scholz, and Neander. Of these, that of Schreiber, a pupil of Mosheim, was first published to 43 vols. 8vo. Neander's "Kirchengeschichte" is still in progress: when completed, it will probably be the best that has yet appeared. Our own literature is very deficient in this important matter, and we have revived the study of ecclesiastical history in England especially.
worth's 'Systema Intelllectualis,' Jena, 1738; six volumes of Sermons, 1747; and nine volumes on the 'Morals of Holy Scripture,' 1773.

MOSUL (from the Arabic Mosul, Michdadr, and Medsherd, and immediately the Spanish and Portuguese Mosquiata and Mosquita), a Mohammedan city of the neighbourhood, the distinctive marks of which are generally cupolas and minarets. Internally they exhibit nothing remarkable as to plan or accommodation, forming merely a single large hall or apartment, without any seats or other fittings-up, and with no other decorations than paintings and bas-reliefs; the doors and mosaics on the walls. In regard to these latter, some of the mosques at Cairo are highly embellished. Although more famed than any other, the mosque of Santa Sophia at Constantinople exhibits nothing of Mohammedan or Arabian architecture, having been originally built as a church, and is in the Byzantine style.

MOSQUITO, a term applied to certain stinging flies belonging in all probability to several distinct genera. The mosquitos are either genuine gnats, like insects, furnished with a proboscis adapted for piercing the skin, and at the same time forming a kind of siphon through which the blood flows; this instrument moreover injects into the wound which it makes a poison which causes inflammation. It resembles the whole collection of the orchestral acocents, and is the same tribe as the common gnat (Culex, Linn.); Humboldt however asserts that the insects known by that name in America belong to the genus Simulium, and that the Culex, which are equally numerous and annoying, are called by the same name in Brazil. The former are what the French call Mouquettes, and the latter Cowisini.

The genus Simulium, according to Macquart (Suites à Buffon; Hist. Nat. des Insectes, 'Diptères'), belongs to the family Tipulariae and section Tipulariae-torres, and is in the last place, the true gnats. The proboscis is gulated and slender; antennæ cylindrical, 11-jointed; eyes round, ocelli wanting; basalar joint of the tarsus as long as the others taken together; wings very broad, basal and marginal bands ocellate.

M. Macquart, in his account of the habits of the species of this genus, says, 'They frequent the leaves of shrubs under trees, and live upon the juice found upon those leaves, especially such as are produced by the plant-life; they have however contra gnats, like insects, to this kind of nourishment, but when opportunity offers, like gnats, they suck the blood of animals and produce an equally painful wound. Their proboscis is more complex than that of the gnats, consisting, as in other Tipulariae, merely of a proboscis, which they have developed usual. These minute flies are constantly in motion, and in running apply the whole soil of the anterior tarsus to the plane upon which they may be moving; they most apply to their fore-legs as feelers."

MOSQUITO, or MOSOUL. (Al-Moustal, in Arabic), a town of the Persian, Arab, and Asiatic Minor, which is on the Tigris, in a low and flat country on the road from Bagdad to Diarbekr and the high land of Armenia. It is likewise on the road from Bagdad to Aleppo (Halep) and Asia Minor. Caravans trade between Mosul and Aleppo, carrying to the latter place call-outs from Kurdistan, and Indian goods from Bassorah, which they exchange in Syria for European manufactures. Indian goods are also forwarded to Tocat, in Asia Minor, from whence copper is received in return, and sent down by the Tigris to Bagdad. Notwithstanding the favour trulys of the climate under the gallantry of the place, it is not very considerable, is now reduced very low. The only manufacture now carried on to any extent within the town is that of coarse cotton cloths, dyed blue, and used by the lower order of people. According to Marco Polo, the silk of Mosul, in -which was manufactured at the time he was there, was already well known. The Arabic spoken at Mosul differs considerably from that of Cairo, and even from that of Aleppo; it has a mixture of Turkish, Persian, and even Indian words in it. The population is about 30,000 souls, and has been considerably reduced.

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The Christians are about 1800 families, namely, 1000 of Chaldeans, who have nine churches, four of the Latin or Western communion, and five Nestorian; and four of the Greek, who have three churches; and 300 families of Jacobites or Euxyians, who have two churches. The Catholic or Latin bishop of Diar- bekr, or of Chaldea, resides here. There are also about 300 Jewish families, who have a synagogue.

The government of Mosul is in the hands of a pasha of two tails, who has a very limited territory and is independent of Mosul, and the environs of Bisch and Bagdad, and receives his investiture from the sultan. He keeps a force of about 1000 men, chiefly cavalry.

The town is surrounded by a wall; the streets are narrow and unpaved. There are several bazaars, numerous coffee-houses, and about thirty mosques. A bridge connects Mosul with the eastern bank of the Tigris, where some mounds are supposed to mark the site of ancient Nineveh. [Nineveh.] (Buckingham's Travels in Mesopotamia.

MOTAČILLA. [SYLVIAE.]

MOTALÀ-ELF. [SWEDEN.]

MOTET (Motetto, Itali), in Music, a vocal composition set to sacred words, and used in the Catholic church. The word was first used in connexion with anthems, when first introduced, and signified a superior kind of hymn, accompanied only by the organ. [ANTHEM.] Latterly however the Motet has lost much of its primitive solemnity, having been, for considerably more than half a century, written with full and florid decorations, and having the Mass. It is deprived of no small portion of its devotional character. Many attempts have been made to discover whether the word is derived, but without any satisfactory result.

MOTIL, the English name of the insects belonging to that section of the family Culetidae called Mosisini.

MOTER-LE-VAYER, FRANÇOIS DE LA, was born at Paris, 1588, and in 1625 succeeded his father as substitute to the procureur-general; but he soon abandoned his professional pursuits to pursue the study of history. In 1639 he was admitted into the Academy of St. Louis. He was highly pleased with his work on the education of a prince, intended to appoint him preceptor to the dauphin, but the queen, Anne of Austria, refused his consent. Notwithstanding his brilliant success, in 1649 he was degraded by her, on account of the education of the young duke of Orleans, whose astonishing progress under the tuition of Le Vayer induced the queen to acknowledge the talents of the master and confide to him the completion of the king's (Louis XIV.) education.

He died in 1673, at the age of his 58th year.

Of his numerous works, which obtained extraordinary success, the most important are: 1. 'Discours de la Contra¬ridité d'Humeurs qui se trouve entre certaines Nations, et singulièrement la Françoise et l'Espagnole.' Paris, 1636, in folio. The title-page is dated 1634. 2. Four volumes 8vo. 3. 'Considerations sur l'Eloquence Françoise,' 1638, 12mo. 4. 'De l'Instruction de Mons. le Dauphin,' 1640, 4to. 4. 'De la Vertu des Païs,' Paris, 1641, 3rd edition, 1647. Several collections of his works have been made. See the Système de l'Empire de la Turquie, a History of the Turks, 1675-1709, 14 vols. 8vo. The materials of which were furnished by Roland le Vayer, nephew of the author. La Mothe is styled the Historiographer of France by Voltaire (Système de Louis XIV.), who also mentions him as a notorious Pyrrhonist.

The great diversity of opinion which La Mothe observed in the world seems to have laid the foundation of that scepticism which pervades his writings. His society was eagerly sought by all the learned and enlightened persons of his time, and he was readily admitted into the brilliant circles of Madameisselle Gournay, who at her death bequeathed her library; but from the vulgar and prejudiced part of the community he experienced persecution. Passing one day under the gallery of the Louvre, he was asked, "Do you not read the Academy?" He replied, "Yes, but do not understand it." "Well," said a bystander, "that is an excellent result." "My friend," replied La Mothe, "I have religion enough for you to forgive me my ignorance." He was nearly fifty years of age before he published his first work.

From that time (1636) he published regularly every year. His work 'De la Vertu des Païs' was answered by Arnauld, in a tract entitled 'De la Nécessité de la Foi en Jesus Christ.' La Mothe's book not selling so fast as the book that was desired, he made the following complaints: 'I have a method that will facilitate its sale,' said the author, and immediately procured a prohibition against the reading of it, which had the desired effect, for the work was read with admiration, and every copy sold off. (Bibli. Univ. Voltaire, ch. 16.)

MOTHER-OF-PEARL. [SHELL.]

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MOS.
MOTHER-WATER. When any saline solution has been evaporated so as to deposit crystals on cooling, the remaining solution is termed the mother-water, or sometimes merely the mothers.

MOTION is change of place; there has been motion when one body, at one time, occupies a part of space different from that in which it was at a preceding time. The only additional necessary conception is continuity of change: every point which has moved from one point of space to another must have passed over every part of some line, and no point of the line is the same as any point of the other.

Some of the antients used the word in a more general sense, answering to change. Thus, according to them, creation, generation, corruption, increase, diminution, and change of place, are the six sorts of motion. We have here no reason to believe that they intended to mean anything less than to say that they see local motion spoken of in old writings, that this is the term by which simple change of place, to which the word motion is now restricted, is distinguished from the other changes which the same word then denoted. We still apply the word, as we do terms of magnitude (see that word) to changes of the moral system, as in speaking of the motions and emotions of the mind.

If there be anything which would need neither definition nor description it might be supposed to be simple motion, a thing never absent from one moment of the waking perceptions, nor even of the dream. Its existence was however denied, or is reported to have been denied, by various of the Greek sophists, though it is highly probable that they had some kind of historical tradition of deliberate opinion what was merely meant for an ingenious attack on one or another established school. According to Sextus Empiricus (i. § 17), Diiodorus surnamed Cronus, a Carian, disproved the existence of motion by arguing, if man must die, that the father in the place in which it is, or the place in which it is not; but it cannot move in the place in which it is, and certainly not in the place in which it is not: consequently it cannot move at all. To which the sophists reply, if the same man never die, for if a man die, it must either be at a time when he is alive, or at a time when he is not alive.

A better answer would have been, that it is true of all material phenomena that they happen either in the place in which they are, or in the place in which they are not; but except only the change from that place in which the matter is and will not be, to that in which it is not but will.

The sylogism of Diiodorus may be useful to remind us that motion implies both spaces and times, since the sophism excludes that matter from existence. Zeno of Elea (not the Stoic) gave the celebrated argument of Achilles and the Tortoise. [PROGRESSION.]

If we consider merely motion, without any reference to the matter of which the quantity of motion is expressed, we have, as we conceive, a subject of pure mathematics before us, though this has been contested. Newton however used considerations of motion without hesitation in his fluxions; and his successors have endeavoured to avoid them as much as possible, without being conscious that they may be to conventional ideas of rigour, have never failed to introduce perplexity and obscurity to the beginner. It may be right to remind the student that the change of place introduced by Euclid (i., prop. 4 and other propositions) has not necessarily replies, that by all the commentators of the idea of motion; geometry would not interfere to prevent the superposition of being made without the motion of the triangle, whose place is changed, passing through the intervening parts of space. It was the introduction of the idea of motion that the parties who objected to the doctrine of fluxions repugned.

But if we consider motion in matter, we must inquire into the external causes of motion, and the capabilities of matter with respect to motion; this shall be the subject of the next article [MOTION], continuing ourselves in the present one to the first-mentioned branch of the subject.

Next to the idea of motion comes that of swiftness, rate of motion, or velocity (see also the latter word), suggested by the obvious, that motion and swiftness are elements of place in the same time. But here we must observe, that we are rather indebted to motion for our measure of time than to time for our measure of motion. If sentiment beings, like ourselves, had lived in perpetual day, without any recurring sequence of making the day and night, and in the natural means of generating equal motion, we have no right to suppose that they would ever have learned to consider time as a measurable magnitude. They might admit that it might be more or less, as we do of industry, courage, or any other moral qualities [MAGNITUDE], but we cannot be more destitute of measures for those qualities, than they could be of that, it is measuring time. Since it has been obtained, though by means of equable motion, a distinct idea of successions of duration, equal in magnitude. We use this idea in the definition of motion, just as in geometry we consider the line before the surface, though we might have named the line before the figure, and the surface before the figure. If we had not formed lines by the intersection of surfaces. We say, though we have no certainty, but we do not forget that many philosophers are of opinion that such ideas as those of time and of a line are fundamental notions, resulting from our organic system of matters, or the system of beings (if any) anterior to observation, or, at least, not derived from it. This question is here immaterial, as we suppose all parties ready to start with a definite notion of time. Considering the motion of a simple point, which describes a line, as it is called uniform when the lengths described in successive equal times are equal, whatever each time may be. It is important to remember this, since different successive motions may be uniform in some respects and not in all. Thus acceleration is changing the magnitude of an equal velocity, and no whole revolutions, but equal fractions of one revolution may not be performed in equal times. In uniform motion, an arbitrary unit of time is chosen, and the length described in that time is called the velocity, which is simply the Latus rectum of the circle on which the point is thought to move. This length should be called, not the velocity or swiftness, but the measure of the velocity. For the length described in (say) one second is not the velocity or swiftness, but the inch of the motion. This is an abstraction from the comparison of motions; of two moving points, that one which described the greater length in a given time moved the quicker: and swiftness is the absolute substantive by which we express the existence of this difference. It was the obvious inference, that if we express the existence of the relation of greater and less.

When equal spaces are not described in equal times, we can imagine the rate of motion to change either gradually or discontinuously. Thus it can be imagined that a body can move with a constant velocity, which is such that it moves 6 feet in a second, may at once, without any intermediate state, take a velocity of 20 feet. But such a conception cannot be realised on any material body, though there may be all the appearance of it. [IMPULSE.] When the rate of motion is changing, performed in equal seconds, it is a direct method of obtaining the rate at any one instant; for no successive equal spaces are described in equal times. This difficulty will be discussed in the article VELOCITY: the time of description is supposed to be small enough for the length so small that the change of rate undergone in passing through it is insensible, and to consider the point as moving uniformly through that length. Let the very small length x be described in the small fraction of a second, then: if v be the velocity at v, v + x; and in the small time of the same rate, since: f: l = v: t, and s: f may be taken for the velocity.

The existence of motion is detected either by a change of the distance of an object, or of its direction, or both; it is not necessarily the object which moves. The spectator himself may be in motion unconsciously, and it is matter of common experiment that every motion of the spectator o which he is not conscious, and every rapid motion, whether he be conscious of it or not, new or continuous, or not, seems to us to appear in motion. In walking, the effect which we ascribe to the motion of the earth or the carriage we take the motion of the carriage in a contrary direction. In the smooth motion of a boat, no effort of thought will enable the spectator to realise his own motion, and destroy that of the shore or a neighbouring vessel. We can never observe that which we find to happen to ourselves; perhaps the experience of other persons may be different.

It may also happen that the object is in motion as well as the spectator, in which case the latter motion will be transferred to the former, and the whole motion will be described in the natural way. The whole motion of the object, compounded of
that which it has of its own, and that which it appears to have from the motion of the spectator, is called the apparent or relative motion.

The method of ascertaining the relative motion is as follows:—Since we only determine the positions of bodies by their distances and directions; and since we suppose the motions both of the spectator and the object to be given, let a fixed point be taken to represent the position in which the spectator imagines himself to remain, and laying down the real distances and directions of the object at the end of successive times, set off those distances from the fixed point in the proper directions. The relative positions of the object being thus secured, the line passing through these positions will be that in which the object appears to move. For instance, let the spectator move through 123...89 while the object moves through ABC...HI, so that when the first is at 1, the second is at A; when the first is at 2, the second is at B, and so on; the last positions being 9 and 1. Take for a fixed point, at which the spectator fancies himself to be, and having joined 1 and A, 2 and B, &c., draw OA parallel and equal to 1A, OB parallel and equal to 2B, &c., and OI parallel and equal to 9I. Hence the spectator, fixed at O, will see the object successively at the same distances and in the same directions as a, b, &c., and 1; whence the line abc...hi will be that of its apparent motion.

When both motions are rectilinear and uniform, the apparent motion may be more simply obtained, as follows:—Let the spectator move uniformly from O to A, while, in the same time, the object moves from B to C. Take the following method of fixing the spectator: as he moves forward from O to A let the paper on which the figure is drawn move backward in the direction contrary to OA, so that by the time the spectator has reached A, the point A shall have receded to where O was. He will therefore never have changed his place, his progress on the paper having been always compensated by the retrogression of the paper itself. Take CD parallel and equal to AO, whence the point C will, by the motion of the paper, at the end of the motion, be where D was at its beginning. Consequently the spectator, who imagines himself at rest, will give to B that motion which is compounded of a motion along BC, while BC itself is carried into the position ED. That is, B will appear to move along the line BD, the spectator imagining himself to remain at O. The dotted lines show the method of proceeding, as just described.

While the ship A moves from A to B, let C move through CD, E through EF, G through GH, K through KL, M through MN, and let P remain at rest. Then, a spectator in A supposing himself at rest, C will appear to remain at C, E will appear to move through EF, G through GH, K through KL, M through Mn, and P through Pp. The motion of A has been transferred in a contrary direction to each of the other vessels.

When bodies are very distant their changes of distance are not soon perceived, consequently it is only by change of direction that their motion becomes visible. This is the case in all the heavenly bodies; but we shall now show what the apparent motion of a planet, superior and inferior, would be, if changes of distance, as well as direction, could be perceived and estimated.

If the spectator be in motion, an object at rest appears to him to have precisely his own motion, but in a contrary direction: for if the object be O and the spectator move through ABCD, no distances would be changed if the spectator were fixed at O, and the object moved through ABCD, and all directions would only undergo a diametrical change. Consequently the relative motion of the object is represented by allowing it to change places with the spectator, and inverting the direction of north and south, which will have the effect of making the relative motion from west to east, if that of the spectator were from east to west, and vice versa. Let us suppose now that the earth moves round the sun in a circle, which will be near enough for our present purpose; it will be immediately obvious that the direction of motion, so far as concerns the order in which the constellations will be described, is the same in the relative motion of the sun round the earth as in the absolute motion of the earth round the sun. For though the absolute directions of motion are opposite, yet S, to a spectator at E, is seen towards a point of the heavens opposite to that in which E appears from S. [Motion, Direction of]
In giving to the sun the apparent motion which answers to the real motion of the earth, the same motion must be given to the orbits in which the planets are carried round the sun. The question then is as follows: if a planet move round the sun, say with a uniform circular motion, while the sun moves round the earth, also uniformly and circularly, what path will the planet actually trace out?

To get a notion of the possible species of curves, let us simply the question by supposing a circle ABCD moving along a straight line ET, while a point moves round the circle from A.

![Figure 6](image)

In the first place, if A did not move round at all, the line AG would be described; if A moved slowly round, the translation of the circle would cause an undulating curve like ABK to be described: if A moved as fast on the circle as the circle itself is moved forward, the undulation would be changed into a curve with cusps like ALG; while if A move faster on the circle than the circle is carried forward, the circle, so to speak, will not have time to get out of the way, and prevent the formation of loops, as in AMNMQPQ. . . . The faster A moves, the larger and the nearer will be the loops, so that at length no one will be clear of the preceding and following, or the loops will interlace.

If the circle move round another circle, the same appearances will be presented in an inverse order. Let the centre E of the circle ABCD be carried round the circle ET, whose centre is O. If A did not move at all upon its circle, it would, by the motion of its circle, describe a circle (dotted) equal to ET: if A moved slowly, it would describe a succession of close loops enveloping O; if quicker, the loops would at last disengage themselves from each other; while for still more rapid motion of A the loops would be-

![Figure 7](image)
come cusps, and afterwards the curve would simply undulate. The character of these curves will be further discussed under Trochoidal Curves, and their astronomical application under Planetary Motions. It is sufficient here to say that the apparent orbits of all the planets (or rather, the orbits as they would be if changes of distance were perceptible) are trochoidal curves of the above-described species, with loops which do not interfere with one another.

If two bodies be moving over two circles, they are said to move in the same direction when, two radii being taken in the same direction, the linear directions of motion are the same, as BD and QR. Thus care must be taken not to compare two circular motions by positions which belong to radii in opposite directions. For instance, the directions of motion be ABC and QVS (which are the same), and if at the same time the two bodies be at B and S, their linear directions of motion are opposite, though according to the definition their circular motions are in the same direction. Thus in the case of the moon, and her revolution round her own axis [Moon], the middle point of the visible moon is moving round the moon's axis in a direction opposite to the orbital motion of the moon; but the radius of that middle point is opposite in direction to the line joining the centres of the earth and moon; so that the direction of revolution of the moon's rotation is the same as that of the orbital rotation.

**MOTION, LAWS OF.** The laws of motion mean those universal methods of receiving and losing motion which close attention to mechanical phenomena, coupled with
strict inductive reasoning, has shown to be inherent in the constitution of matter.

The intelligent observer, not used to inductive reasoning, nor instructed in the results of mechanics, were required to state the views which experience had taught him of the constitution of matter, as an agent or patient in the production or reception of motion, he would perhaps reply as follows: Matter seems to have no parts or moving itself, though if we judge from the fall of bodies towards the earth, the phenomena of magnetism, &c., it would appear as if matter might be the cause of motion in other matter. And it seems to be our first idea that at the different parts of the earth some modification of the laws of gravity are observed, arising from the difference of the motions of the several places. It would not surprise a person wholly unacquainted with mechanics, to whom the preceding facts were stated for the first times, if he were told that some mistakes were made in the pointing of guns in Indian battles, arising from the artillerymen having been trained by officers who had learnt their art in the latitude of Addiscombe, near Croydon, in Surrey, and had forgotten the law for the different meridian motion of the two countries. Now the first law of motion which we can establish (though usually called the second) arises from it never having been observed that any notice need be taken of the difference of places on the earth in estimating effects of motion. It is not necessary to our necessities on gunnery for different latitudes, nor to alter the disposition of parts in any machine moved from one latitude to another to produce a more advantageous effect. There is true, a slight variation in the weight of bodies, as they are carried toward the equator [нихечем, PENDULUM] the results of this are apparent in experiments in which the acquisition of motion depends upon weight, or rather, upon its proportion to the quantity of matter. But this very problem of the part of law is such that the question of the truth of the laws of motion is established by a test which would detect the smallest quantities, and furnishes an answer to those who might say that the possible effects of the difference of diurnal motions, though never noticed in cases of motion, as in a cannon-ball, might be perceptible in delicate instruments. If to the motion of the earth we superadd another, such as the motion of a carriage, the same sort of result is found. Those who move on a railroad at the rate of 30 miles an hour, or 45 feet in a second, in the equatorial motion of the earth, that they stand to the objects in the carriage in any degree changed by the motion. At the instant of taking the motion, or on any sudden jolt or change of motion, effects may be produced which would never appear to the careful observer; but when the carriage is once obtained, it is well known, that it might occupy himself in reading a work on mechanics written on terra firma (so called), and might verify all the experimental conclusions, without coming to any result which would be different from the effects of the writer and himself, as to motion. Hence we are led to the conclusion that all the relations of matter to matter remain unaltered, if the whole system be made to move, provided that the same motion be communicated to all its parts. And though we do not, absolutely speaking, know what rest is, since no point of the earth, nor of any heavenly body, can be shown to be at rest, yet since we see that the relations remain unaltered when the velocity of a whole system is changed, we are led to conclude that the same laws which are found to be so when a system of motion is seen to be at rest would also prevail if the whole system were at rest; the ground of our presumption being, that the laws remain unaltered under any alteration of the common motion which it is in our power to make.

Let us now see that the carriage, instead of moving in a right line, is carried on a curved road, say a simple circle. It is no longer observed that loose objects in the carriage have a tendency to repose relatively to the carriage itself, but at the same time to itself. If the carriage is a bubble of air, the assumption of the substances on which they stand be sufficiently small, they will endeavour to move outwards, or from the centre of the circle of motion. This phenomenon can be made a consequence of the laws of motion, when the latter have been stated in the simplest form, and we do not pretend to enter into this subject further than to point out that it is only of rectilinear motions we can predicate any law as descriptive of what is inherent in matter. We have, it is true, already spoken of circular motions in taking into account...
of the earth; but it must be remembered, firstly, that the circles in question are so large, that a small arc of any one is nearly a straight line; secondly, that we have been obliged to advert to this tendency outwards, which is the reason of the diminution of weight (or of much the greater part of it) detected from the oscillations of a pendulum which is such to the earth.

This second law of motion (for such it is called, though it must be deduced first when the earth's motion is considered) may be thus stated:—If there be two or more causes of motion, taking place in the same right line, whether inherent in the body or external to it, their effects do not interfere, nor does either diminish or augment the effect of the other. If, for instance, the body A be subject to two actions, one of which, being entirely in the direction A B, would bring the body to B in a given time, and the other, entirely in the direction A C, would bring it to C in the same given time; then the body will move from A to D, precisely as it would have done if, moving along A B in the manner first specified, the line A B had been translated with its extremity A moving in the second manner specified, the line A D not changing its direction.

The most simple and general method of stating this law is as follows:—The distance of a point from a straight line or plane, measured in any given direction, and as it will be at the end of a given time, is the sum of the distances of the point from the straight line or plane; or no force, in a given direction, can produce motion to or from a line in that direction. Thus if a ball were thrown from the earth in such a manner that it would reach 50 feet in one second, no imaginable horizontal current or whirlwind, however much it might alter the actual course of the ball, would prevent its rising 50 feet in the second. The statement of the law by Newton, namely, that when a force acts upon a body in motion, the change of motion which it produces is in the direction and proportional to the magnitude of the force which acts, is perhaps rather too vague to give a distinct notion to learners.

From the law just enunciated, we may learn that bodies upon the earth move according to the laws which have been stated, the properties of bodies at rest with respect to all motions that are to be estimated relatively to the earth: at least upon the supposition that the curvature of the motions of the earth is not sufficiently great to produce a sensible effect. We have then to ask, what is the natural state of matter on the earth? Can it preserve any motion of itself, or does every motion gradually slacken and die out, by the mere inability of matter to maintain it without the application of external causes? On this point we have only strong presumptions, which would be by themselves insufficient. Our first step would be to conclude, from what we actually see, that rest is the natural state of matter, and one to which it always approaches, however great a cause of motion be applied, unless that external cause, or some part of it, be maintained.

Looking further however we find that terrestrial matter, immediately on its being put in motion, encounters causes of retardation. The resistance of the air, and the friction of the basis on which the substances rest, are easily shown to have a considerable effect. It is to be observed, however, that the cause of motion once set in motion, is by no means diminished. We have thus two opinions:—one, that the natural state of matter on the earth? Can it preserve any motion of itself, or does every motion gradually slacken and die out, by the mere inability of matter to maintain it without the application of external causes? On this point we have only strong presumptions, which would be by themselves insufficient. Our first step would be to conclude, from what we actually see, that rest is the natural state of matter, and one to which it always approaches, however great a cause of motion be applied, unless that external cause, or some part of it, be maintained.

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of the most singular mental aberrations which ever was manifested, that at the time of the appearance of the New-"tonian system, it had been for a long time the maintainer of the creation, at least until (which has not yet happened) some good quiescent 'second' cause was discov-ered—that doctrine was frequently charged with atheism.

If the earth were supposed to be fixed, we might ob-viously (though not obliged to do so) begin from matter at rest, and establish first that law of motion which usually stands first.

The third law of motion was enunciated by Newton as follows: 'Action and reaction are equal and contrary,' which required no farther proof. The doctrine, as stated above, appears then that opposite motions are to be considered as contrary effects; and, if applied to the same body, we know that they would destroy one another. In like manner, then, as in considering the first law of motion, we have to learn that in the motion of a body which is acted upon by a force inherent in matter, and not arising from external causes; so in the third we are taught to consider opposite velocities as negations of each of the other—that the creation of both is equivalent to the negation of neither, and not as might be supposed, required as new and distinct causes of motion. In like manner, if A were to lend a sum to B, which C was to stand engaged to repay, a credit and a debt would be created which did not before exist, the whole situation being changed.

The most essential part of the principle however is derived from observation of the fact that, ceteris paribus, the more matter is moved, the more slowly it is moved. If the magnetic and non-magnetic needle be of equal mass, they will at the end of any time have equal and contrary velocities; but if the magnet be double of the other, it will in the same time acquire only half the velocity. In fact, confidently as we feel entitled to expect that, in some sense or other, action and reaction will be found equal and con-trary, the meaning of ceteris paribus is as long as we think only of velocity, and not of the quantity of matter in which velocity is created. A cause of motion once existing, and which was entirely expended in giving a velocity of 100 feet per second to a ball of two pounds weight, would by Newton's law be the same as one of one pound weight. Hence it is Momentum which is the measure of the action of matter upon matter, and the definite enunciation of the third law is as follows:—Whenever any matter gains momentum in one direction, it loses as much momentum in the contrary direction, or gains as much in the contrary direction. Action then is creation or destruction of momentum; reaction is destruction or creation: while the destruction of momentum in one direction, and its creation in the contrary direction, are equivalent effects.

The absolute strictness of this law, probable as it is ren-dered by terrestrial observations, is proved in the same way as that of the others, namely, by the observation of the evident consequences which are its necessary effects. But the law being once admitted, its necessary conse-quences may be carried to a point startling to those readers who are not accustomed to consider any degree of minute-ness which is undiscoverable by the senses. (See the remarks by Sir Isaac Newton in vol. ii. pp. 604, 605.) Thus, if we consider the fact, that, if the law of attraction be true, a particle of snuff in a terrestrial snuff-box does its part (though but a small one) towards the maintenance of the motions of the solar sys-tem by its attraction of the particles in a Saturnian snuff-box, (a small one it is,) the nebulae, which, (if the hypothesis be true, a point of luxury), will be able to comprehend that the earth itself feels (how slightly, we need not say) every motion which is made upon it. When Archimedes only wanted a point to rest his lever upon, in order to move the world, he little thought that his end could be gained by walking upon its surface, and not by pulling; but his strongest attempt when he hurried out of the bath to tell king Hiero of his new method of detecting the goldsmith's fraud. In walking forward upon the earth, which friction enables us to do, our feet obviously act upon it; and whatever momentum is communicated to ourselves, the same is lost by the earth, or gained in an opposite direction: and the same may be said of a person who jumps upwards. Thus the whole momentum of the universe, estimated in any one direction, is obtained by taking the velocity of every mass in that direc-tion, remains unacted upon by the same, unless there be somewhere in the universe matter which obeys other laws than those of our system.

The three laws of motion, then, may be thus enun-ciated:

1. Matter, unacted on by other matter, preserves the state which it had when action last ceased, that is to say, remains at rest, if it were then at rest, or if it were then moving, continues to move with the same velocity, and in the same direction. Relative uniformity of direction and velocity, can be maintained without the continuance of external action.

2. All force, or cause of motion, in any direction, produces its effect in that direction, and in no other; that is, the dis-sociation and acceleration of force is as necessary, and the partial acceleration as necessary, as the continuance of velocity or retardation of motion; and these effects may be acquired in any direction, without a loss of the same momentum in the opposite direction.

Professor Whewell (to whose 'First Principles of Mechanics,' Deighton, Cambridge, 1832, we should particularly refer the reader, observing that the French writers are remarkably vague and indistinct in their treatment of the subject,) has lately (Camb. Phil. Trans., vol. v., part ii.) entered into the question 'On the Nature of the Truth of the Laws of Motion'; that is, whether they are 'necessary,' and capable of demonstration by means of self-evident axioms, like the truths of geometry, or 'empirical,' and only known by experience, observation, like such general rules as we obtain in natural history. His conclusion is that there is a necessary and em-pirical part in each, as follows:—

Necessary.

1. Velocity does not change without a cause. Empirical.

2. The accelerating quantity of a force is mea-sured by the acceleration produced.

3. Reaction is equal and opposite to action.

The connection of the parts of a body, or of a system of bodies, and the action to which the body or system is already subject, are not either of them causes which change the effects of any additional action.

From the preceding it will appear that the necessary part of each law is either a verbal proposition or disputable. To say that velocity does not change without a cause, is a referen-cence to that permanent association of change with reason for change which habit derived from experience, if nothing else, would lead us to make in all cases, whether concern-ing the motion of a planet or a billiard ball, the same assumption in the empirical part. Again, the accelerating quantity of a force can mean nothing but the acceleration produced; for our only meaning of force is cause of motion or alteration of motion, and to our sensational knowledge the accelerating quantity of a cause of acceleration is measured by the acceleration produced. Thirdly, if in 'reaction is equal and opposite to action' we are to understand by action the production or alteration of Momentum (M x V), we do not
see the necessity of the proposition: while it if be merely understood that there is a somewhat which matter cannot give to other matter without itself losing the same, we may, as in the case of the presumed necessary part of the first law, deny that it is any peculiar property of matter which is stated. It is the mode of measuring this somewhat which makes this law a specific meaning with reference to matter.

The mistakes into which philosophers fell upon the laws of motion are uninteresting except in the applications which we shall make of them; and in the present, EARTH will be found enough of these to give an idea of the difficulties which such fallacies placed in the way of sound knowledge. A full account of the labours of Galileo is accessible to all in the life of that great man, published in the Newtonian Society of London. For an account of the notions of Descartes on the same subject, see Vortices. The first distinct enunciation of these laws appears in the Principia of Newton, since whose time they have been usually quoted in their present form and number.

Though all mechanical problems contain in their solution upon the assumption of these laws, in conjunction with those which may be called the distinctive properties of the solid, fluid, and gaseous states, yet the purposes of mechanical inquiry are better served by certain general principles deduced from them, as the laws of friction, etc., which in general may be taught by mathematicians, and are therefore referred to a purely mathematical article [Virtual Velocities]; see also Pressure, Force, Inertia, Centripetal and Centrifugal Forces, Velocities, etc. For an account of the particular article Inertia, for the reason of the non-introduction of that word.

Among the many absurdities which have arisen out of a misapprehension of the laws of motion, is the attempt to distinguish between aeronautic or floating, and a motion, the weight of which of itself would never stop. The earth and planets are such machines in their rotations on their axes; and we have seen that any particle of matter, unacted on by other matter, and once in motion, is a perpetual motion. If the weight of the earth were suspended at the pivots, and enclosed in a permanently air-tight and perfectly exhausted receiver, it would also, when once in motion, be a perpetual motion. But as long as any friction or resistance, however small, is perpetually retaining the motion, it is obvious that the velocity, if maintained, must be indebted to some external supply of moving power. To take the case of friction, which arises from the roughness of the supports, and which, independently of adhesion, may be considered as a rapid succession of very small jolts, by which the roughnesses of the one surface strike upon those of the other, and communicate a portion of momentum to the frame, and finally to the earth: to suppose that a wheel as above described could go on for ever, with friction, would be to suppose that there would be no friction without reaction. In fact, a perpetual motion, such as is intended to be made by the spectacles on the subject, is nothing less than a machine which will work for ever without new moving power; it being not one bit less absurd to suppose that it would perpetually overcome friction and atmospheric resistance, than that it would continue to supply the impetus necessary to carry on the sawing of a plank or the weaving of lace.

The theory of gravitation has placed this question on a footing entirely different from that on which it was argued, whether by Aristotelian or Copernican. Both of the latter parties supposed the existence of a fixed central body somewhere, which the first of them set to be the earth, and the second the sun. This centrum mundi, or centre of the universe, is exploded, and with it all the systems, whether Ptolemaic or Copernican, which preceded the discoveries of Newton. But as already noticed in Copernicus, the existing system represents all that great motion, within the earth and the universe, that its distinctive peculiarity is retained relatively, if not absolutely, namely, that the planets all move round the sun, or round a point near to the sun. But it is added to the real Copernican system, that sun, planets, and all, move, may be, and probably are, in motion; the translation, as it is called, of the whole system being very nearly rectilinear, and the curvation, if any, arising from the attraction of the fixed stars. Nothing but a long course of observation can settle this last part of the question.

In approaching the old controversy on the motion of the earth, we confine ourselves rather to the arguments by which it was opposed than to those by which it was supported. For this we have two reasons: firstly, that the latter are well known and extensively circulated, while the former, unless preserved in historical articles, will find the oblivion from which they have no intrinsic merit to rescue them; secondly, that the controversy may be usefully illustrated by recurring to the long-dead struggle between the Copernicans and their opponents. We have now among us those who would fetter all new truths by their mere wish, and concur, when the matter is anxiously acquiesce in the defeat which their own principle formerly received. The charges still brought against the cultivators of the sciences, 'to the distress and disgust of every well-constituted mind,' as Sir J. Herschel expresses it, 'there is nothing more distressing or alarming, than an alarm newly awakened by the circumstances of the present day, but as the effects of an abiding spirit, which has always opposed investigation, and which, if it had prevailed, would have smothered all the knowledge of nature which has been acquired in the latter part of the century. Among some of those who have constituted themselves successors of the cardinals who forced Galileo to recant, have learnt from the past history of their own cause, and from the abiding intelligence of mankind, though received with thanks and highly appreciated, should not be accepted as an equivalent for the removal of the obstacles which may be raised to place the great question of Revelation upon a false base.

The case of those who now endeavour to impede the progress of geology is so similar in its fundamental points to that of the former labourers to the same effect in the field of astronomy, that with the assistance of some of some of the latter of the seventeenth century, we may enable our readers to help themselves in forming their opinion of the former.

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and only repeated his own mode of treating Moses, Isaiah, and the writer of Job. But it would have been better to have argued by analogy, that if either of the latter had written a professedly philosophical work, he might, whatever appears to the contrary from religious writings, have admitted the motion of the earth. 

Copernicus had no predecessor as a mathematical reasoner upon the question. The first continental followers of the new system were Rheticus, Reinhold, Mauclius the inquisitor of Galileo. In 1536 appeared in England the 'Castle of Knowledge,' by Recorde [Recorde, Robert], in which a cautious and implied avowal of Copernican principles is made, and also the Ephemera of John Field, etc. In 1546 there may be included the Discorsi di Diego deo and his pupil Thomas Digges (son of Leonard) were both avowed Copernicans: the first absolute defence of the system is contained in the appendix to the 'Prognostication Everlasting;' &c. of Leonard Digges, republished by Thomas Digges (with the appendix) in 1582. This appendix is called 'A Perfit Description of the Celestial Orbs according to the most Ancient Doctrine of the Pythagoreans; lately revised by Copernicus, and by Geometrical Demonstrations approv'd to be the same for the subject (in the modern spelling) of what reasons moved Aristotle and others that followed him to think the earth to rest immovable as a centre to the whole world.' 

'The most effectual reasons that they produce to prove the earth's motion have been a source of the antients of the world is that of Gravity and Levity. For, of all other, the element of the earth (say they) is most heavy, and all the ponderous things are carried into it, striving (as it were) to sway even down to the inmost part thereof. For the earth hath a devilish principle of gravity, and doth therefore on every side fall, making right angles on the superiors, pass to the centre, seeing every right line that falleth perpendicularly upon the horizon in that place where it toucheth the earth, must needs pass by the centre. And those things that are carried up by the weight of the earth, should, says the antient, that there also they would rest. So much therefore the rather shall the earth rest in the middle, and (receiving all things into itself that fall) by his own weight shall be most immovable. Again, they seek to prove it by reason of motion which cannot be explained otherwise than by the making the same hypothesis. Hence we have been obliged to put on a character not our own. (Hinc silenam coacti sumus gerere personam.) But we profess obedience to the decrees promulgated by sovereign point and delation; and the motion of the earth, either downward or upward from the centre, or most swift and violent, that in twenty-four hours should let pass the whole circuit of the earth; and those things which, by sudden turning, are stirred, are altogether unequal to collect, but rather to disperse things united, unless they should by some other motive be kept together. And long ere this the earth, being dissolved in pieces, should have been scattered through the heavens, which were a mockery to think of; and much more beasts and all other weights that are loose could not remain united. But as the high points are thickest and the all things perpendicularly under them, neither should they fall directly thereto, the same being violently in the meanwhile carried away. Clouds also and other things hanging in the air should seem to us to be carried away. In the last place the peremptory doctrine of the earth, which was afterwards urged (by those who had not tried it) against Copernicus, as follows: 'Of things ascending and descending in respect of the world, we must confess them to have a mixed motion, and that is, of the right and circular, and when ascending, right and circular; and when falling, circular but not right.' From his 

professe Digges appears to have considered magnetism as the cause of the earth's self-sustaining power; an opinion carried further by Gilbert (the next English Copernican) in 1600, who, in his book on the magnet, endeavours to discount the earth's disturbance from magnetic causes, as well as the precession of the equinoxes.

Hitherto the theological part of the controversy has not made its appearance. We must date this view of the question from the discoveries of Galileo. Neither in antient nor modern times would they have been able to agree with their interpretation of the Scriptures ever taken alarm at hypotheses, until those hypotheses began to have facts in their favour. The inconsistency is worth noting; for taking these objectors on their own principles, the Book of God (the Bible here considered the Wheel of 

in prooving a theory which contradicts it; but there can be none in stating the results which follow from actual investigation: the thoughts of the mind may contradict revealed science (if such there be), but the works of the God of nature can hardly detect falsehood in the God of revelation. It was Copernicus then, and not Galileo, who was the heretic, if heresy there were in the case; but the former and his immediate disciples slept in peace, while the latter was forced to sign a recantation. The story of Galileo is one of the most affecting in the history of science. It is a warning of bringing its infallibility to the practical test of a declaration in philosophy. We say the Roman church, for though admitting that the seven inquisitors who signed the indictment against Galileo are not to be regarded, upon this point, as a church, as a church, we cannot but deplore the sufferance of men for two centuries must be construed as the act of a church which is jealous above all others of what is taught or done by its ministers. The Minimus Le Seur and Jacquier knew better than we can do how, in the spirit of the time, to carry on the process; their declaration at the commencement of the third book of their edition of Newton (1742), runs as follows: 'Newton in this third book assumes the hypothesis of the motion of the earth. The proof of this hypothesis cannot be expected less than by making the same hypothesis. Hence we have been obliged to put on a character not our own. (Hinc silenam coacti sumus gerere personam.) But we profess obedience to the decrees promulgated by sovereign point and delation; and the motion of the earth, either downward or upward from the centre, or most swift and violent, that in twenty-four hours should let pass the whole circuit of the earth; and those things which, by sudden turning, are stirred, are altogether unequal to collect, but rather to disperse things united, unless they should by some other motive be kept together. And longere this the earth, being dissolved in pieces, should have been scattered through the heavens, which were a mockery to think of; and much more beasts and all other weights that are loose could not remain united. But as the high points are thickest and the all things perpendicularly under them, neither should they fall directly thereto, the same being violently in the meanwhile carried away. Clouds also and other things hanging in the air should seem to us to be carried away. In the last place the peremptory doctrine of the earth, which was afterwards urged (by those who had not tried it) against Copernicus, as follows: 'Of things ascending and descending in respect of the world, we must confess them to have a mixed motion, and that is, of the right and circular, and when ascending, right and circular; and when falling, circular but not right.' From his 

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The controversy ceases to have any interest after the publication of the Principia of Newton. Even to this day, there are some who deny the earth's motion, on the authority of the Principia, as if it were conclusive. The following are some of the texts and arguments. We take them from Fienus, Fromond, Morin, Rosse, and Riccioli on the one side, and from their statements of their opponents' arguments, from Wilkins, on the other.

**Psalm xix. 4, 5, 6:** In them he hath set a tabernacle for the sun, which is as a bridegroom coming out of his chamber, and rejoiceth as a strong man to run a race. His going forth is from the end of the heaven, and his circuit unto the ends of it, and nothing is hidden from the heat thereof, as a bridegroom;* as a strong man,* but that the words which apply to the sun's motion are absolute assertion.

**Ecclesiastes i. 4, 5:** One generation passeth away, and another generation cometh;* but the earth abideth for ever. The sun also ariseth, and the sun goeth down, and hasteth to his place whence he rose. The wind goeth towards the south, and turneth about unto the north. Is the Vulgate the last sentence not repeated: "et sic dicat, et ad locum suum revertitur, ibique recensamis gyratur per meridem, et fluctuat ad aequinum."* 

**Joshua. x. 12:** Sun, stand thou still upon Gibeon, and thou, moon, in the valley of Ajalon. And the sun stood still, and the moon ceased, until the people had taken their victory over their enemies, a thing which is reported in the midst of heaven, and hastened not to go down about a whole day. It was contended that the earth ought to have been made to stand still, if Joshua had been a Copernican.

**2 Kings. xi. 11:** And he brought the shadow ten degrees upon the aërometer that was at Gibeon;* and it went down ten degrees on the aërometer.*

**Job. iv. 6, &c.:** Which shaketh the earth out of her place, and the pillars thereof tremble: which commandeth the sun, and it riseth not, and setteth up the stars.*

**Psalm xcvii. 1:** The world also is established that it cannot be moved;* Psalm civ. 5: The earth is fastened together*; who laid the foundations of the earth, that it should not be removed for ever.*
others to the same purport. Also Psalm lxxxv. 3: 'The earth and all the inhabitants thereof are dissolved: I bear up the pillars of it.' He adds all the places in which 'heaven above' and 'earth beneath' are mentioned.

The Copernicans, besides the very few passages which they could find alluding to the motion of the Firmament (and these only an unusual one), brought forward texts in which admitted errors exist; such as the Mosaic definition of the firmament, the circumference of Solomon's brazen sea (which, the diameter being ten cubits, must have been upward of 20 ft. in air, and that not a foot, and thirty, as stated), and the like. To this the general answer was, that there is a great difference between stating round numbers, according to usual measurement, and absolutely asserting untruth. Riccioli however lays it down that the object of light is the compensation of distance, even where it is manifestly false; that Archimedes had shown the proportion of ten to thirty to be false, but that no one had actually shown the earth to move. This was evidently coherent, but unfair; the motion of the earth was the thing in question, and it is that is of an immovable earth and a moveable sun; while if there be no astronomical system, it follows that vulgar notions are adopted in the modes of expression, which represent appearances without reference to their truth or falsehood. This course (which all contraries maintain) all can modern Urbans must be content to abide: will they go back to Ptolemy, or forward with the advance of science? Can they show any reason why the astronomical system of the Old Testament should be rejected, and those passages which professed to show the effects of a motion which they represent. Another, which they will find that it requires a better foundation than imposition of interpretations to bear the sort of support which the latter afford. A compact college of cardinals might more safely make the attempt than a miscellaneous party. This is the nature of the Copernican philosophy, whose doctrine we have seen, had the old system been thrown by the glaring light into which it was thrown when held up against the results of the philosophy of Galileo; and this not more by their mispronunciation of the Copernicans than of their opponents the Copernicans. The latter were taught that rational machinery was the thing in question, and it is that of the immovable system and a moveable sun.

That the attempt to enforce a system of science derived from an interpretation of the Scriptures will signal fail, should be taught by the history of the past. Not even the Church of Rome will ever again dictate on a question of fact, and must not (and Catho
tically too, unsuspect) public opinion must and will support absolute proof against doubtful interpretation. The opponents in this matter are, some of them men of learning, like Fro
don and Riccioli; others men of conceits, like Maffio. The questions against the Copernican are, some Calvinist, and they will find that it requires a better foundation than imposition of interpretations to bear the sort of support which the latter afford. A compact college of cardinals might more safely make the attempt than a miscellaneous party. This is the nature of the Copernican philosophy, whose doctrine we have seen, had the old system been thrown by the glaring light into which it was thrown when held up against the results of the philosophy of Galileo; and this not more by their mispronunciation of the Copernicans than of their opponents the Copernicans. The latter were taught that rational machinery was the thing in question, and it is that of the immovable system and a moveable sun.

motion of earthly bodies (as when falling) is in a right line; a body cannot have two natural motions, therefore the earth cannot move in a circle; if the earth moved, an arrow shot upwards could not fall on the spot from whence it was shot; the air, differing from the earth in substance, cannot be moved consequently, with a knowledge of the &c., would produce a wind if the earth moved: a stone let fall from a height would not fall directly under the point which it leaves; an arrow shot towards the east would go much farther than one shot toward the west, the first having its motion given in the direction of the sun, etc. the whole position of the earth produce no effect upon the latter; the excessive greatness of the fixed stars on the same supposition; &c. &c.

The Copernicans contend generally for the greater simplicity of their system, and the incredibility of the enormous velocity which the sphere of the fixed stars must have if the Ptolemaic hypothesis were true: to which it was answered, that God doth great things past finding out, and wonders without number (Isa. lxi. 9);—answer, that the heavens are incorruptible;—answer, that the wind, &c. give sufficient motion; that the most moveable part of man is underneath, since he walks with his feet; whence the most unworthy part of the universe cannot be the most moveable;—answer, that the Copernicans were absurd (as in fact they were) for taking the earth out of the centre of the universe upon an argument the force of which was derived from its being in the centre (or lowest part); also, which is theore
tically true, that the nearer the body is to the sun the faster it is;—answer, that the sun is no more moveable; answer, that the Copernicans had examined the sun, or they might perhaps have found good causes of motion there; that the Hebrew word for the earth has a root which signifies motion—which on the other side was contended to apply to the motion of animals upon its surface.

Such were the more common arguments of the Copernicans; others may be seen in a paper entitled 'Old Argu
tments against the Earth's Motion' written by R. Martyr to the Almanac for 1583. We do not charge every one, either of the Ptolemaists or Copernicans, with all the absurdities above noted; but we have not found one of either side free from such errors: attempts at the demonstration of the present paper. Our dispassionate Bishop Wilkins has less of this sort of argument than any one except Galileo, and he deals with the scriptural objections in a very learned and able manner. He points out the absurdities into which the Fathers had fallen by a degree of literal interpretation which had become obsolete even in the days of Frons
dom: how, for instance—Basil made the moon greater than any of the stars, because Moses calls the sun and moon the two greater lights; Justin Martyr and several others supposed the vast body of the moon to have been made for the use of the heavens; and Augustine concludes the visible stars to be innumerable; many fathers assert that the heavens are not round, but stretched forth as a curtain; some that the sea not overflowing the land was not a consequence of the usual laws of matter, but a perpetual action of the sun upwards; some others, that the earth is flat, because it is called 'atim,' translated by us 'the deep'; some that the earth is placed upon the sea; some that the stars have understanding and speech, and, according to Origen, moral responsibility. All these opinions are left by the Philosopher in the form of admitted species of inference, from the literal signification of words in the sacred Scriptures. These interpretations vanished first; those who sailed round the world destroyed the greater number of them; and the abandonment of this was accompanied even as the infant Galileo nai
ded the earth to a Hebrew word. The earth itself was next allowed to move, when Galileo had established a me
dical system which would reconcile such motion with terrestrial phenomena, as completely as that of Copernicus.
and Kepler with celestial. The time came when even divines might insist on this simplicity of motion in illustration of the wisdom of the architect. But the structure of the earth had not been examined; consequently when the conclusions of geology and motion moved the mind to speculation, the texts were forthcoming, neither was interpretation wanton, nor those who would raise an outcry against the results of examination and the investigators, because the former would not agree with the interpretation, nor the latter with the position. The conclusion can be run, with the exception only that the enemies of free inquiry and honest statement are not so numerous nor so powerful as in the seventeenth century, so that the effect will be less, both in extent and duration. So very slight have been scientific attainments of the way proving party on this occasion, that it becomes those who are interested in the history of the sciences to take some measures for the preservation of their writings, since it is found that the purely theological works against the motion of the earth are extremely scarce, while only those which unite science, such as it was, with theology, are now* in any degree diffused.

If we throw away all the arguments which would now be considered fantastical, we shall find the sense of both sides of the question within the limits of the strength of the Copernicans lay in the simplicity with which they exhibited the celestial motions; that of their opponents, in the then unanswerable argument of the throwing up of a stone. Both parties believed that the stone of itself would be thrown a constant distance above the earth, and that the opinion until the Galilean philosophy was fully received. Fromond shows his penetration when he says that the Copernican philosophy will finally be wrecked on this argument; had he admitted an alternative, and assumed either that the stone of motion would return to the earth, or the motion of the earth would lead to an entire change in the principles of mechanical philosophy, no one would now have disagreed with him.

We shall close this article with a mention of the actual practice of motion on the earth.

1. It is difficult to believe, in the present state of mechanical knowledge, that any heavenly body is at rest, and the burden of proof must lie upon those who assert rest, and not upon those who believe in motion, which a person instructed in mechanics must do, until the contrary is proved.

2. If a motion existed, a centrifugal force would arise, which would produce an effect on the oscillation of a pendulum tried in different parts of the earth. (CENTRIFUGAL FORCE) Such be the reduction corresponding to that which should be produced by the earth's rotation; nor have those who deny that rotation ever produced any explanation of the phenomenon.

3. An experiment has been tried, which it will be worth while to mention. A patch of water, which Debord says had "a sort of success." When we say that a stone left fall from the top of a high tower should fall precisely under the point from which it started, we say that which ought not to be perfectly true; the reason is as follows: The starting-point of the stone, being at a great distance from the centre, is, by the point directly under the earth, describes a somewhat larger circle, and moves a little quicker. The stone therefore at the commencement of its fall has a motion from west to east, a little more rapid than the under point of the earth's rotation. The motion of the air in respect to the fall of the stone, does not exist with respect to the motion from west to east, since the air, earth, and stone are carried together; consequently the stone should fall a little east of the foot of the tower. This experiment was tried at Bologna by Guglielemini, who published his results in a work called "De Motu Term diurno," Bologna, 1792; it was repeated at Hamburg: the heights were respectively 241 and 235 feet (French).

A little projected body fell a fraction of an inch to the east, and never to the west of the point directly under the point of projection. Had this departure been an accidental effect, it is incredible that it should always have taken place in one direction. Delambre does not suppose that the earth is not always round. If it were, this must be considered as a case of knowledge, and six, and if the chances of departure east or west had been equal, it would have been 63 to 1 against the departure being always in one direction. In the last two proofs we are made to perceive the earth's rotation, by phenomena which can be explained on no other hypothesis that is worth considering.

4. We perceive the earth's orbital motion only in the phenomenon of aberration, from which one of two things must be true; either the earth moves round the sun, or light does not move in a straight line; and what is more, the light from every star, in which best of the evidence may be found, changes its course with the position of the sun. The change, it is true, is minute, but it is well established as it would be if it were visible to the naked eye; and it must be remembered that twenty seconds is not a small quantity, and the eye is capable of measuring one second. Were there no other phenomenon by which to test it, the orbital motion would be conclusively proved by that in question.

5. The next argument is analogy, which, though not per se compelling the time of the earth, lends an additional force to the rest. The planets all exhibit motion round the sun; this can be proved; and the only question that remains is, whether the sun moves round the earth, carrying the planets round itself, or whether the earth and the moving round them. The planets also, in most cases, revolve round axes visibly, and there is no proof that any one does not.

6. The last argument is authority, properly used. There are many who do not know enough of the sciences between Newton and the Frenchmen, whose name is unnecessary to mention, who thinks he proves the planets to be reflections of the sun upon the polar sea and the southern hemisphere of stars to be a reflection of the northern upon a very considerable crystal plane, but how placed we are not exactly know. With such persons authority must decide, if there be any decision at all in their minds; and it is of some importance to them to know what sort of authority they trust to. The argument from analogy may be dispelled by the few facts, that the motions of the other celestial bodies are irregular, particularly those of the moon, which, when closely examined, exhibit irregularities, the cycles of which never were determined from observation alone. At the time when the controversy about the earth's motion was at its height, those who, being placed in a situation, for instance, could not be predicted within several minutes. By means of the labours of Newton and his successors in theory, and Flamsteed and his successors in observation, the prediction now rarely differs from the result by more than a few seconds, and the opinion of those concerned in bringing astronomy to this state, not merely that the earth has a motion both of rotation and orbital progression, but that the proofs are such as to leave no doubt whatsoever on the subject; nor is it worthy of the consideration of such a person as Newton to read the writings of Newton ever entertained any hesitancy upon the subject.

MOTIONS OF PLANTS are phenomena connected with specific vital forces, and not capable of explanation upon any known principle. As they are very common, but, excepting in a few cases, usually overlooked, it is necessary to notice their existence. Locomotion, that is the power of transporting themselves wholly from one place to another, is a property assigned to animals as one of the most obvious and characteristic of them; and if such a motion not to occur among plants; nevertheless locomotion in its exact sense does occur among some of the lower plants. Amongst Coniferous is a genus named Oscillatoria, consisting of green articulated filaments, deriving their name from the oscillating motion observable in them; these plants not only move their limbs, but shift their station with some rapidity; for example, if a patch of them is placed in water in a plate, and a black bell-glass is inverted over them as a bell, in such a manner that its edges do not quite come down on the Oscillatoria from where they were first placed, and glide out on the side of the bell-glass which is exposed to light. The late Captain Carmichael observed their motions with great care, and sufficiently proved that they move in such a manner, and not to agitations of the air, but to agitations of the water in which the Oscillatorias are placed. Let, he says, a small portion of the stratum be placed in a watch-glass nearly filled with water, and covered with a circular film of tale, so that its edge may touch the
glass; the water will be rendered as fixed as if it was a piece of ice. The glass may now be placed under the microscope, and the oscillation of the filaments viewed without risk of disturbance from the agitation of the water. By following this course, it will be speedily perceived that the kind in question is entirely independent of that cause. The action of light, as a cause of motion, cannot be directly disproved, because we cannot view our specimens in this way. The influence of the watch-glass, charged with a bow, be laid aside for a night, it will be found that, by the next morning, not only a considerable depression has taken place, but that multitudes of the filaments have entirely escaped from the stratum, both in the upper part of the glass tube and at the bottom, and that the latter will show itself in a prolongation of the filaments, but will not account for this oscillation to the right and left; and still less for their travelling, in the course of a few hours, to the distance of ten times their own length from the stratum. This last kind of motion almost unexamined in the vegetable kingdom.

Another kind of locomotion has been seen in the reproductive particles or spores of certain Convolvulaceae. At a particular period of their life, these spores move about spontaneously, forming a kind of apparatus in the filaments which at length force themselves out into the water wherein the another-plant is floating. Once plunged in this element, the spores move about with velocity, in a gyration manner, till they find a place, when the tube, by one end, produce a root, and loss all power of after-motion so that such plants have locomotion when young, and are destitute of it when old. Many such phenomena are known to occur in plants of the same kind of organization.

But while locomotion thus unquestionably occurs among some kinds of plants, vegetable movements are more commonly confined to the limbs, in which they are visible in different ways. A kind of motion occurs in roots, although not preceded by any intimation, in the efflux of certain juices that lurk in the roots. Many kinds of Orchidaceous plants appear one season in a spot at some distance from that which they occupied in the previous season, and thus appear to travel; in such cases however the shifting of place is effectuated by means of underground suckers, and not by the parent, which projects them to a certain distance from herself, and then perishes. The corm, or bulbs, as they are called, of many Iridaceous plants exhibit the same kind of property, raising themselves upwards year after year, so that if originally buried some inches into the ground, they will last in the air; this is effected by each cormus forming a bud at its apex, which bud grows into a new cormus and kills its parent, forming a new cormus at its own apex, and then perishing in its turn. This power of rising upwards, and then again falling, is generally manifest in those plants that take place in a different way; some palm-trees, which originally had their stem resting by its base on the surface of the ground, force it upwards by protruding the bases of their roots, till at last the plant is entirely in the air; these are cases by which the column or trunk of the palm-tree is upheaved. A case of this kind is mentioned by M. Poiteau, in the 'Annales of the Horticultural Society of Paris,' vol. iv., p. 5, 16, where the arches of the roots were high enough to allow a man to pass beneath them. Here it is evident that the elevation of the trunk is caused by some special power of extension in the roots, which exercise that power in the direction of least resistance, namely, of the air, rather than of the solid earth.

In the grasses under the shining sun, of which everybody is aware, are strictly referrible to the class of vegetable motions, although these occurrences may be owing to some irritation exercised upon the tissue by light, they ought perhaps to be considered of a different order. The elongation which takes place under the influence of the light, as well as of the heat, is independent of external stimuli. With the unfolding and closing of flowers must also be arranged those singular motions in the parts of fructification which occur upon the flower being touched: if the filaments of the barberry are touched, they rise up and strike the anthers against the stigma; if the sexual column of stylum, which is bent over one side of the surface, is touched, it swings over instantly to the other side. Several cases of this power of motion occur in other cases: if the tendril of the pollen masses of Catasetum is disturbed, it springs up so violently as to separate itself from the column on which it grows, and to dart to a considerable distance. A very singular instance of motion in the flowers of another plant of this kind, growing in the Swan River Colony, has been described by Mr. Drummond (Gardener's Magazine, vol. iii. p. 468) by the lower lip, he says, in which the anthers are placed is a boat-shaped box; the upper lip, which he supposes to be the stigma, forms a lid which exactly fits it; the hinge on which the leaves move is so arranged that the upper part of the flower, and is attached to its centre; and when the box, which turns round within the box, comes out at the bottom, turns up and back; so that when fully expanded it stands fairly over the flower. The moment a small insect touches the tube, it forces a small nectar gland to issue from the sides of the point of the lid at the bottom of the box, so that it has to pass the anthers in its way, and makes prisoner any small insect which the box will hold. When it catches an insect, it remains shut while the insect moves about; but if the insect be not caught, the box soon opens again. The plant here imperfectly described is perhaps a species of Caleana.

Another kind of motion, more resembling spontaneous action, especially as it is not apparently connected with the application of stimuli, is that which occurs in the sexual organs of certain plants. For instance, the plant is called Zygynema, which at the period of fructification brings itself together in such an effect as to the opposite processes of the organ. The most striking phenomena of this nature occur, however, in Asclepiadaceae, which have their pollen grains closely packed in bags, from which it would seem that there is no escape: at the period of impregnation, each of these bags opens by the action of anthers, which are found in the tube all direct themselves spontaneously towards a thin space on the side of the bag that holds them. Piercing this bag, they succeed in extricating themselves and reaching the vicinty of the stigma, but are still at some distance from it; they then push themselves back, and succeed in reaching it, wherever it may be, either by directing themselves at right angles, or downwards, or even upwards, as the peculiar structure and location of the stigma may require.

In the Sensilysteae, various species of Mimosa, especially M. pudica, the leaves fold up on being touched, and this so slowly, that it is easy to perceive that the folding is effected by the gradual communication from leaf to leaf. In a leaflet, the midrib and other parts in the portion of the end of one of the leaflets of the Mimosa is cut off, the whole of the leaflets of that pinna gradually fold up, one after the other, from the point to the base; then the neighbouring pinnae will fold up their leaflets from the base with a row of strong teeth, and when spread open, is strikingly similar to one of the toothed iron traps when set as used for catching game, that is, it consists of two roundish
sides, each furnished with a row of strong teeth. Near the middle of each side there grow three stiff bristles, placed in the form of a triangle; if one of these bristles is touched by an insect or any other means, the two sides of the leaf spring up instantly, the teeth cross each other, and the insect is held so fast, that it can only be extricated by forcing the sides of the leaf asunder, an operation of some difficulty, so that the leaf, on being once forced to pass the habit of the insect is effected. These movements are all owing to a specific irri-
tability resident in the moving organ, and must be dist-
tinguished from the following, which takes place, to all
appearance, spontaneously.

Beginning with the Gora-chand of Bengal, was first
mentioned in systematic botany by the younger Linnaeus,
who speaks of it as a wonderful plant, on account of its
singular motion. 'No sooner,' he says, 'had the plants the
erase from seed acquired their ternate leaves, than they began
in motion, in every direction, and without any
imagination that they are not attributable to the sun's rays, nor to any
currents of air, is shown from the fact that the plant loves
the shade, and that the motion is most evident when the
store is closed and the atmosphere quite still. These
movements have more the semblance of spontaneity than any
others that have been observed in the more perfect
plants; for the leaflets, if held quiet between the fingers
for a short time, and their movements thus prevented, are
said immediately on their release to revolve with accelerated
force, as if desiring to occupy the time of the
interruption.' De Candolle describes the motion thus:—
the leaves consist of three leaflets, two of which are lateral,
very small, linear, and oblong, and an odd one, separated
from the two others, much larger and oval-oblong: the
six leaflets are in almost continual motion, which takes
place by little starts, like the small hand that marks the
seconds in a watch. One of these rises so as to mount
about 30° above the level of the petiole, and the other falls
on the opposite side to about the same distance; when the
latter is rising, and the petiole inclining on the other
side, the oscillation is maintained. The central leaflet also moves, but much
more slowly, sloping first to the right, then to the left, and
so on.

What the cause of these singular motions may be has
never been explained, and it seems useless to inquire: they appear
to belong to the class of first causes, concerning
which we can know nothing further than their effects. It
is evident that they are quite distinct in their nature from
such motions as that of a snail being towards the light,
in consequence of the process of its solidification taking
place more on the side exposed to light than on the other
side.

If no mention is here made of the motions of internal
muscular contractions, they are when flowing in water,
such as were remarked by Brown and others in
pollen, and as may be found very commonly upon bruising
plants in water, it is because such particles appear in
every case to be starchy, and their motion, however singular,
to be a phenomenon of a partial phenomenon.

On Motion of Sap see SAP.

MOTRIL. [Granada.]

MOTTE, ANTOINE HOUARD DE LA, was born at
Paris, 17th January, 1672. His father was originally a
hatter at Troyes, where he possessed a small estate called
La Motte, whence the surname of the family was derived.
After completing his studies at the Jesuits' College,
he turned his attention to the law, which he shortly after gave
up to an actor's life, and to assist at a private
theatre in the representation of Motte's comedies. In 1695 he
being then only twenty-one years of age, he produced at the
Théâtre Italian his first piece, entitled 'Les Originaux,' with little success. This piece has not been inserted
among his works, but is printed in the 4th volume
of Green's 'Dictionary of the French Language,'
and is inserted as a 'miserere.' Disappointed at his failure,
he resolved to renounce the world, and retired with one of his
friends to La Trappe, but the Abbé de Rancé, setting little
value on the momentary enthusiasm of two inexperienced
young men, dismissed them at the end of two months, with
out giving them the character of Jesuits, with which the habit of the
school is connected.

After returning to Paris he produced his opera 'L'Europe
Galanite,' which was very successful; in 1678 a volume of
Odes, which, although much read, added nothing to his
reputation; and in 1710 his 'Academical Discoveries,' a model
of the kind.

The most presumptuous and extravagant act of La Motte
was his translating the Iliad, without knowing a single word
of Greek, and abbreviating that poem with the intention of improving it.
This translation was preceded by a discourse, in
which he ridiculed the learned men of his time, and
particularly Homer, was a modern precursor.

Madame Dacier refuted this discourse by a tract entitled
'Des Causes de la Corruption du Gout,' to which La Motte
replied by his 'Réflexions sur la Critique.' At the age of
70, he published his 'Explication de la vie de Molière,' which
was an abusive book, and in which he remained for many years, and died
25th December, 1731.

His works, including his letters to the duchess of
Mme., were collected in 1754, and filled 10 vols. 12mo. [Broc.
Univ. 4th Vol.]

MOTTEUX, PETER ANTHONY, was born at Rocha
in Normandy, in 1660, at which place he also received his
education. After the revocation of the Edict of Nantes he
went over to England, where he got the best education
he was able to obtain for himself, and kept a large East India warehouse
in Leadenhall-street. Being master of several languages, he
obtained a situation in the foreign-letter department of the
Post-office. His death, which was attended with suspicious
circumstances, took place on the 19th February, 1714, in
a disorderly house in the parish of St. Clement Danes, and
the anniversary of his birth, completed his 58th year.
His remains were interred in the church of St. Mary Axe,
London.

This gentleman so completely acquired the English
language as to be able to produce a translation of Don Quixote,
and subsequently to write several songs, prologues,
and epilogues, one of which will be found at the end
of Sir John Vanbrugh's comedy of 'The Mistake.' He
also wrote several plays, and the 'Lies of
Venus,' Lond., 1697, 4to.; 'Beauty in Distress,' a tragedy,
Lond., 1698, 4to.; 'The Temple of Love,' 1706, 4to.;
'The Amorous Miser,' a comedy in 3 acts, 1705, 4to.;
also a poem on 'Tese,' 1722, 8vo.; with several French works translated
from the Italian.

MOTTO, an Italian term, shortened by some of our old
writers to mot. It means a word or sentence added to
a device; and is commonly used, when put upon a
scroll, as an external ornament of coat-armour. The use of mottos
is so general in this purpose as is universal, and as applauded by
all arms that are frequently hereditary in families. In strict-
ness, the motto should bear allusion to something in the
achievement, but in modern times the taking of it rests
entirely with the fancy of the bearer, and it may be changed
at pleasure. A sentence or quotation prefixed to anything
written is also termed a motto.

MOULINESS is a name applied to all minute fung,
which appear in masses upon organic bodies. It appears to
be caused by the damp atmosphere and diminution of light,
both of which conditions are favourable to the growth of those bodies whose spores or reproductive particles are float-
ing everywhere in the atmosphere, ready to spring rapidly
into growth whenever they chance to fall upon suitable
substrate.

All the fungi that constitute mouldiness are so small as
to escape observation, except when from their numbers they
form microscopical forests, and then they clothe the surface
of the body which they attack with light patches of yellow,
blue, white, green, red, and various other colours. The spe-
cies of these plants are extremely numerous, and are distributed
in the following manner:

La Motte's tragedy, called 'Lise de Caen,' is maintained by Voltaire; 'Sobre de
Llobris' in the same magazine, is the most elaborate of any that have been
in this place on the stage.

It appeared, however, in the title-page of an edition of 'Des Commentaires,'
London, 1754, 4 vols. 8vo., that Motteux was the only publisher, and that the
work was translated by several hands, and printed for Samuel Becket,
in the Dolphin, Little Britain.
by writers on fungi into many genera, chiefly belonging to the Hyphomycetous division of the order, the combining character of which is, that the plants are flocculent, naked (that is, not enclosed in a case, or seated upon a peculiar receptacle), distinct, but interwoven into a general mass, which looks like a thin web, or a collection of cobwebs.

One of the most common is the Ascomphora Mucedo, which forms a blue mould upon bread, paste, and similar substances prepared from flour. This plant forms a fine horizontal cobweb-like bed, from which rise up slender branches terminated by an expansion which bears the spores.

Ascomphora Mucedo, very highly magnified.
a is a special branch arising from the horizontal bed; b is the termination of a branch covered with spores.

Another form is that of Penicillium, in which we have the same entangled flocculent bed, and a similar elevation of perpendicular branches: but the latter are not terminated by a disk covered with spores; on the contrary, they end in a jointed tuf, every division of which produces at its point a necklace of spherical sporelets.

Penicillus verticillatum, highly magnified.
a represents a cluster of perpendicular branches springing up from the horizontal bed; b is one of the penicillus heads which terminate the branches.

Mouldiness is occasionally produced by Coniomycteous fungi—that is, by those very imperfectly organised species which have no flocculent bed, nor any special part on which the spores are generated, but which merely consist of a series of joints within which reproductive bodies are formed. Of these, the Torula Casei, found in the crevices of putrid cheese, may serve as an example.

Many of these plants are capable of living under circum-
stances that would be fatal to any other form of vegetation; for example, Ascomphora Mucedo springs up plentifully in paste poisoned with corrosive sublimate.

A mould of Torula Casei, very highly magnified, after Gerdak.

Their general station is upon decaying animal or vegetable matter; but one species, the Botryis Bassiana, attacks the living silkworm and kills it; others destroy houses, etc., which may be seen in the autumn glazed by these parasites to the window, on which they have alighted in a semitorpid state.

The following are the botanical names of some of the more common species of fungi that cause mouldiness:

- **Hydroporpha sporeoidea** (yellow, turning black), on the dung of various animals; **Macor mucedo** (bluish black), on fruit, pastry, &c.; **Eurotium herbarium** (white, yellow, or orange), on damp plants in Herb-aria; **Cladosporium herbarum** (green, turning black), on various decaying bodies, damp paint, &c.; **Aspergillus candidus** (white), very common; **Aspergillus glaucus** (blue), very common.

**MOULDINGS** (in Architecture), any assemblage of narrow surfaces projecting from the face of a wall or other surface and also advancing one beyond the other. They are bounded by straight lines, either horizontal or vertical, according to their situation, but the surfaces themselves are plane or curved, and if the latter, concave or convex, or else compounded of both forms; and again are either plain or curved. Sometimes indeed, instead of projecting, mouldings are sunk, as is the case when they form a border within a sunk pannel, for though they project with respect to the surface of the latter, they recede within the general surface of the wall. The mouldings within the pannels of doors are of this description. Mouldings are employed as borders to doors, windows, and other apertures, as arches, in which latter case they are termed *architect mouldings*; while those forming the impost from which the arch springs are called *impost mouldings*. The bases of columns likewise consist of mouldings. They are also employed to mark the horizontal divisions of a wall, both internally and externally, and every member to which they are applied is said to be moulded. As their outlines are straight lines, their courses can be shown in drawings only by their shadowing, and by the outline which they produce at their extremities, as in the case of a cornice. But as this is insufficient, except to afford a general idea, in working drawings and those of detail mouldings are shown on a larger scale, and by means of a section through them, by which their *profile* is accurately defined; and upon a good profile, that is, one where the mouldings are well proportioned to each other, and so combined as mutually to relieve each other, and to produce both an agreeable variety of surfaces and of light and shade, much of the beauty and finish of a building depends.

Mouldings are distinguished by different names, according to their *profiles*, their sizes, or their situations. Thus the fillet, tenia, and band, are all plane or flat mouldings, the only difference being that the first-mentioned is narrower than the others, and frequently is not so properly a distinct moulding as a space left between other surfaces, or else a rim to a larger moulding, as to a cymatium terminating a cornice, &c., while *tenia* is the name given to the broad fillet separating the architrave from the frieze in the Grecian Doric entablature, and *band* is applied to any still broader plane surface—thus if instead of dentils, in an Ionic or Corinthian cornice, a projecting plane surface be left where they would occur, it is called an *uncut dentil band*. The *corona* (one of the principal members in every cornice) is also a mere plain band, except that it is occasionally enriched.
in Roman architecture. Again lesser convex mouldings are termed beads, but the larger mouldings of the same kind in the bases of columns are termed tori or toruses. The \textit{cyma recta}, or \textit{cymatium}, is a compound moulding, con-
cave above and convex below; while the \textit{cyma reversa}, as it is technically termed by workmen, the ogive or ogee moulding, is convex below and concave above. The \textit{casetto} is a mere hollow or sweep intervening between and serving to connect two mouldings, one of which projects beyond the other. The hollow, being deeper and broader than the torus of the base of a column, is a moulding of this kind upon a large scale, and has therefore a distinct name assigned to it, which also points out its situation. The \textit{ooolo} is a simple convex moulding, so called because it is general-
ly a capital or ornament, being cut off and placed within hollows. The ooolo of the Doric capital (which is always uncut) is distinguished by the name of \textit{echinus}. All the other mouldings may be carved or enriched, except the \textit{cornice} and \textit{fillet}; the pattern being accommodated to the masking of the moulding. The \textit{cyma recta}, or \textit{talon}, as it is sometimes called, is cut with a peculiar kind of tongued or arrow-headed ornament.

These mouldings are common to both Grecian and Roman architecture. The former, however, being more principales in the latter style, they have this marked difference, that in Roman architecture the curved mouldings, whether simple or compound, are described by quarter circles, whereas in Greek they describe other curves obtained from conic sections, and therefore much more elegant in their contour, but susceptible of far greater variety. Some of them are also occasionally \textit{undercut}, that is, hollowed out below and behind, whereby, while a greater depth of shadow is obtained, a greater sharpness of lines and lightness of form is produced; and therefore they are classed among the elegant. Of this kind is the 

\textit{Oololp} or \textit{echinus}, distinguished by the name of the \textit{bird's-beak moulding}, because its section produces an outline very much resembling that of the hooked upper and lower mandible in the beaks of some birds. In Gothic mouldings, undercutting is very common, and it may be considered as almost essential in those cases where there is least necessity for it, and therefore guess by whose recommendation it has been almost universally adopted. In that style the mouldings are so numerous, and the profiles produced by them so complex, as to render it impossible to describe or characterise them further. They are however of the utmost importance, and therefore re-
quired to be studied and perfectly understood, for they purpose such works of detail as Pugin's 'Gothic Specimens' and 'Gothic Examples,' Moller's 'Denkmale,' &c., may be recommended. One circumstance however which ought to be mentioned is that the mouldings all recede within the face of the wall (like those of pannelling) except labels, but for 
mouldings, and others, that come under the general denomi-

\textit{nation weather mouldings}, because made to project in stead of recede, and therefore more exposed to rain and weather.

In regard to Grecian mouldings, it remains to be observed that many of those which are uncarved, and therefore supposed to have been quite plain, were painted with some orna-
ment, and that not unfrequently in the most brilliant colours. But this singular mode of decoration is treated more at length in the article POLYCHROME.

MOULINS, a town in France, capital of the department of Allier; situated on the right or east bank of the river \textit{Allier}, in 46° 34' N. lat. and 3° 19' E. long.; 161 miles from Paris. It is a south-south-east of Fontainebleau, Montargis, and Nevers.

This town is scarcely noticed before the thirteenth centu-
ry, when Robert, Count of Clermont, son of Louis \textit{IX. (St. Louis)}, king of France, ancestor of the Bourbon family, founded here an hospital. 

It began to be called the \textit{bourbon}, and the name of the number of water-mills which were formerly here. It 

became capital of the Bourbonnais, and the residence of the dukes of Bourbon, one of whom, Louis \textit{II.}, built a castle at \textit{Moulin} on the river \textit{Allier} and a fortress on the height of the castle of the Count of Bourbon, after the character 

of the Count of the Bourbon, in the early part of the sixteenth century. Of this castle there is only a part remaining; namely, a square tower used as a prison, and some buildings occupied by the gendarmerie.

The town is agreeably and advantageously situated in a fertile plain, on one of the roads from Paris to Lyon, and on the bank of a navigable river. The immediate vicinity is very delightful; it is well wooded, and among the trees were formerly many mulberry-trees, planted for rearing sil-

worts; these trees thrived exceedingly, until the decay of

the silk manufacture consequent upon the Revolution, and

their being neglected or destroyed. The town is a fine site, and is tolerably well built.

The houses are chiefly of brick; the fronts are ornamental with figures formed in black bricks, the others being re-

There are several of the roads being more than 700 feet long and more than 42 broad, with foot pavements.

It was built in the middle of the last century; immense cost and labour were bestowed in fixing the foundations, the depth of the water and the shifting banks rendering the task extremely difficult. The bridge was not finished till 1830, and was opened in the previous century. Beyond the bridge is a fine avenue of trees, extending about two miles in a straight line along the road to Limoges and Clermont. Mouins contains several pleasant promenades, and some注射 and little chapels.

Of the squares, that of Allier is the largest and most

regular. There are a handsome town-hall with a clock, and a court-house lately built. In the church of the Vio-
tation is the monument erected by the \textit{Princess de Clermont} and \textit{Monsieur de Canrobert} on the town of Moulins, or \textit{Moulins-en-Verneais}, beheaded at Toulouse by order of \textit{Cardinal de Richelieu.} There are fine barracks near the bridge, public halls, two

large hospitals, and a small theatre.

The population of Mouins, in 1831, was 14,672 for the


MOULIN. [HINDUSTAN.]

BRAS, &c.,

MOUNT VERNON. [VIRGINIA.]

MOUNTAIN LIMESTONE. Mr. Smith euphori-

ted this term to designate the calcareous rocks which underlie the coal strata in England. It is the equivalent of the 

carboniferous limestone of \textit{Conveyer} and many other English geologists. Some German writers have transferred the term into berg-kalk, while in France the corresponding version of Mr. Conveyer's title, 'calcere carbonaticus' appears, or is sometimes used. In English, 'carboniferous limestone' is divided into two names, cantons or districts, each under a justice of the peace.

The population, in 1831, was 66,937; in 1856, 90,562.

MOULTAN. [HINDUSTAN.]

MOUNTAINS. Though the term mountain be u-

necessarily understood, yet it will be found very difficult to define exactly what is meant by it. From the more hill in a meadow, to the gigantic Chimborazo, the gradations are endless, from the little hill in a village to the highest mountain. Moreover, the name is sometimes given to a single elevation or peak, as Mount \textit{Bluna}, &c., and at other times to a whole and extensive cluster of mountains, as Mount \textit{Caucassus}. Isolated mountains are rare, and what they do exist are generally in the remote interior.

The general disposition of mountains is in groups or chains. The word group explains itself, but what is a chain may not be so clear. When hills or moun-

tains are so arranged as to form a line or band whose 

length greatly exceeds its breadth, such a disposition, whether its line be straight or curved, is called a chain, and some-
a ridge; though the latter name is more exclusively applied to the lesser chains. We are not however to understand by a chain of mountains, a single unbroken longitudinal eminence, like that formed by the connected roofs of a row of houses. A chain of mountains, on the contrary, is very irregular and composed of many subordinate parts. In a complete chain there are three parallel, or nearly parallel ridges; the centre one is usually the highest. These three ridges, though distinct, are seldom equidistant from each other, and they are frequently united. From the points of junction, and from different parts of the outer ridges, other chains strike off at various angles; and though there are many other ramifications, which go on dividing and diminishing in height till the last undulations are lost in the general surface of the plain. These different branches of a chain have received various names. Some divide the whole system of a chain into the principal, primordial, or great chain, and secondary and tertiary chains; but these names having now reference to the order of formation of rocks rather than to their disposition, though they may so be, are at that particular spot, higher than elsewhere, so that between two consecutive elevations there is an apparent depression; hence the summit or ridge-line of the main chain is divided into heights, which are called peaks, or, as they are sometimes improperly termed, spurs. These are the places where the passage over the chain from opposite valleys is most easily effected. These passages or passes are termed cols, in France, the Pordoi in the Pyrenees, and passes, in the Alps. These names are incorrectly, for the gorge is properly the contracted part of a valley, and the defile a very narrow passage at the foot of the mountains or winding amongst them. The ridge-line of a mountain-chain is also called the axis of the chain, and it is sometimes very narrow and sometimes very broad, and in some places spreads out into what is termed table-land (Langfjeld in Norway). Table-lands, or plateaus, are however not always of this termen form; they are not frequently such, if we may so say, into the broad summit of the ridge, so as to be surrounded by lofty eminences and peaks. Table-land is also sometimes ascended by gentle activities, without any appearance of mountains.

The valleys which are situated between the parallel ridges of a chain are termed longitudinal valleys, with their axis, and consequently the principal watercourse, is nearly parallel to the direction of the chain. The valley of the Rhône above the lake of Geneva, the valley of the Magdalena in South America, &c, may be taken as examples of these longitudinal or principal valleys:—first, that there is sometimes so perfect a conformity between the re-entering angles on one side and the salient angles on the other, that if it were possible to bring the two sides into contact, they would perfectly correspond, so as to leave no trace of their having been separated; and, secondly, it has been observed, that the side of the valley opposite to the centre ridge is the steepest. These observations are true as regards many places, but are by no means to be received as universally correct. The other valleys, which are as irregular as the prominent valleys of a chain, are the principal valleys of a country, and are usually designated by the names of the chief rivers which flow through them. The valleys of the tributary streams which empty themselves into the river which forms the principal valley of a chain have often obtained names of their own; the upper and lower valley are sometimes used to denote the parts of a valley as they lie along the higher or lower part of a river’s course. Such then are the parts of a regular chain of mountains, but we are not to suppose that all those groups which consist of about 16 or 17 miles are thus regularly formed. Mountains are sometimes grouped, as we have said, so as to present no appearance of a chain; sometimes the chains run parallel, but wholly independent of each other; in some cases they radiate from a common centre or nucleus. Indeed nothing can reveal the manner in which the arrangement of mountains, and they differ as much in height, steepness, and particular appearance. By some (Bergmann) it has been imagined that in chains running north and south the western slope is the most abrupt, and that when the chain runs east and west the southern slope is the steepest. But this is far from being always the case. One great and chief principle is that the steep side of a chain of mountains is that which looks towards the higher part of the general slope on which the chain is set. This opinion is doubtless better founded than the former; but it is not strictly correct; and there seems reason to believe that no general law obtains on this subject.

The appearance presented by chains of mountains is not only very different in different parts, but the very same chain, altered in its situation in consequence of some new event, e. g. the alluvial plain, may apparently divide the latter from the former. These may either present the aspect of needles or sharp pointed masses, or the summits may be dome-shaped, or stretch along like a vertical wall, either entire or bearing a resemblance to ruined battlements and towers; some times the whole mass is piled into a succession of gigantic steps or terraces. Individual mountains and hills also vary in form; those which are volcanic are generally conical; others are round, oval, lumpy, saddle-backed, &c.

Mountain-chains are the natural water-sheds (the divitium aquae), but it is not always the case that they have frequently been the case, that all water-sheds are mountain chains. This erroneous idea has covered our maps with mountains where in nature not a hill is to be seen.

In the same manner erronous dies are the mountains of the earth as so many connected chains, which, by starting from some particular point, may be traced stretching and branching continuously over the whole surface of the globe. The fallacy of such pretended continuity is evident from the difference in the arrangement and deportment by different writers. The truth is, that mountains are scattered over the surface of the land in the greatest confusion, here isolated, there in groups or in chains; the chains being in some places single, in others branched, and thus the first place running in parallel directions, in others intersecting, crossing, or branching off at different angles; in some cases completely enclosing a certain extent of country so as to form an entire and perfect basin, in others only partially enclosing a space. In one country the mountains are set in the centre, or near one of its coasts, and in the direction of the greatest length of the country; in another, they are set across the country. In fact, the chains are observed to be in all possible directions, both as regards their course and as regards the direction of their coast-lines. Thus, with the exception of the Andes and the Rocky Mountains, the Appalachians, the Ghats of India, the Scandinavian Alps, and the Apennines, there is very little conformity between the direction of mountain-chains and the coast-lines.

Mountains have a very important part to perform in the general economy of the earth; they arrest the fleeting clouds, whose precipitated waters they store up in their interior, and exhaustless reservoirs, whose springs are continually issuing, which unite and form those streams that fertilise the plains, or, collected into mighty rivers, favour the transport of commodities and facilitate the intercourse between the ocean and the interior of the continents. The influence of mountains on local climate is all the greater, as they give rise to a great variety of climates. Thus in ascending from the sea towards the summit of the Andes, every kind of climate is passed through as completely as if the traveller were to proceed from the equator towards the pole. At an elevation of about 16,000 feet, the temperature is almost that of the ocean, and the limit of perpetual congelation; and mountains in that region which exceed that height have their summits covered with eternal snow. The line of perpetual congelation is however far from being parallel with the general surface of the earth. It approaches that surface as it advances towards the poles, but the laws which determine this line are still very imperfectly known. [CLIMATOLOGISTS]

The limits of perpetual congelation, as ascertained from the stability of snow on the mountains, are subject to vary
with the particular aspect of the mountains and other local circumstances. Thus, generally speaking, the snow-line is highest on the south side of mountains in the northern hemisphere, and rice versu; but this is not always the case; and according to M. Jaquemont, the line of perpetual snow is much higher on the northern than on the southern side of the Himalaya mountains. Mr. Pentland states that the limit of perpetual snow is at an elevation of 15,800 feet on the mountains of Vilcanota in South America, which are as much as 12 degrees south of the equator.

The fact of the cold increasing as we ascend mountains is due in part to the greater rarity of the atmosphere in the higher regions, and to their greater distance from the radiated heat of the plains; nevertheless the particular circumstances of the various parts of the mountains as regards the sun, and the conformation of the higher valleys, greatly modify the cold of particular places; and a much greater heat is sometimes experienced in a high valley than is felt in one much lower down. To this circumstance is due in part the seeming anomalies that are met with in the habitations of plants, many being found at heights where they would be little expected.

Though mountains are such striking objects, and, when contemplated only with respect to their absolute elevation above the level of the sea, are certainly but a small proportion of the earth's surface, they are very inconsiderable when compared with the whole mass of the globe. The habitable parts of the earth, at least those where population is most dense, and human industry is most concentrated, are all within a few hundred feet above the sea, which may be regarded as a part of the true surface of the sphere. But even the height of the loftiest mountains, which is about five miles, is only about one eight-hundredth part of the radius of the earth. In the book of Revelation we often find the distance mentioned at which a particular mountain is visible. As assertions of this kind are sometimes loosely made, the following rule will serve for rough estimating the distance at which a mountain of known height can be seen, namely, multiply the height of the mountain in feet by 1·2247; the product will be the distance in miles at which the mountain is visible.

With regard to the heights of mountains it may be observed that they vary considerably. Some authors however regard every eminence below one thousand feet as a hill. Since the application of the barometer to the admeasurement of heights, there are few mountains of any importance in Europe at least, whose elevation above the sea is not known. We are able to approximate to the principal mountain heights on the globe with a fair degree of accuracy. It may be sufficient here to give the heights of the principal peaks of some of the more important chains.

Blanc, A., 15,658 feet; Mont Perdido, Pyrenees, 11,283; Monte Corvo, Apennines, 9523; Lomnitsa, Carpathians, 7962; Snechetta, Doversfield, Norway, 8122; Mulhacen, Sierra Nevada, Spain, 11,678; Mont Mezin, Cevennes, France, 6567; Puy de Sanci, Auvergne, France, 6206; Aetna, Sicily, 10,870; Olympus, Greece, 9754; Vesuvius, 3932.

Asia.—Dhaulagiri, 28,077; Jewahir, 25,747. These two are peaks of the Himalaya. Mowna Ros, Sandwich Islands, 15,988; Ophir, Sumatra, 13,849; Egmont, New Zealand, 11,430; Iitalaski, Atlas chain, 10,735; Ararat, Armenia, 17,260; Adjash, Anatolia, 10,000; Olympus, Anatolia, 6500; Lebanon, Palestine, 9600; Avakasa, a volcano in Kamtchatka, 12,000 feet.

Africa.—Geesh, in Abyssinia, 15,000?; Peak of Teyde, Teneriffe, 12,180; highest peak of Atlas chain, 12,000, and perhaps more.

America.— Nevado de Sorato, 25,230; Illimani (the richest gold mountain of Peru), 24,450; Chimborazo, Andes, 21,600; Antuana, 19,156; Cotopaxi, 18,867; Pichincha, 15,931; Mount Aretu, 17,720; the last four are volcanoes of Rocky Mountains, 11,000; Mount Washington, Appalachian, 6650.

For the details of particular chains and remarkable mountains see their several names.

The MOUNT SORREL was a very celebrated volcano in the north end of Maine, being 12,180 feet high. It is now extinct.

MOURZUCK. [Freezean.]

MOUSE. [Mundane.]

MOVEMENT, in Music, a detached and independent portion of a composition. Symphonies, concertos, quartets, sonatas, vocal pieces of various kinds, &c., are divided into portions commonly differing from each other in time, as well as in key, and every such portion is called a movement. Thus, the Pastoral Symphony of Beethoven consists of six movements, viz., i. A Country Scene; 2. The Riders; 3. The Village Dance; 4. The Storm; 5. as a finale, The Shepherd's Song.

MOVING FORCE may be defined as force considered with reference to the momentum it produces, as in the case of accelerating force means force considered as the cause of acceleration. Imagine a ball to be thrown to a certain height, and it be shown to be a very fast and high one. The action of the earth will cause a parabola to be described, and as the feather must move with the bullet, all the alterations of velocity (accelerations or retardations) in the parabola will be the same for both. But if we take into account the masses of the two substances, we see that very different degrees of pressure must be applied to them. The acceleration for the ball is the same as for the feather, but, starting and the action of the earth applied very different degrees of pressure to the two.

MOVING force is applied to the cause of Momentum; the same sense as accelerating force to the cause of momentum. This is a force of weight of ten pence such as will in one second produce a velocity of ten feet per second; apply another pressure to a weight of seven pence such as will also in one second produce a velocity of five feet per second: the momenta produced in one second are as 7 to 5, or 118 to 130; and the new forces are said to be in this proportion. The moving equation is made the measure. —

MOVING force = mass x accelerating force

but this is on the supposition that a unit of momentum produced in a unit of mass shall require the same pressure which is taken as the unit of moving force. [MOMENTUM.]

The consideration of momentum and acceleration are developed in Velocity and Virtual Velocity it is necessary to remind the young student in mechanics that accelerating force is a mathematical abstraction, the conditions of all problems which actually occur involve, by no means, accelerating forces; but, however to the problems which usually come earliest in the hands of men are containing only accelerating force, use their data, or given laws of acceleration without reference to the masses in which acceleration is produced, or the forces which produce them, the learner is not sufficiently credited.

MOWBRAY, SIR ROGER DE, of Barnsdale the younger, lord justiciar of Lousin in the eleventh century. Sir Roger de Blainville, son of Sir Robert de Blainville, 45 and 50, having engaged in a conspiracy against King Robert Bruce, he was sent to be put in prison. He died here before trial: but notwithstanding, process was led against him, and sentence pronounced on his dead body. (Fordun, lib. xii.)

MOX was a word of uncertain origin, signifying—

substance whose gradual combustion on or near the earth was used for the relief of a curse or of disease. This mode of early practised in the East, particularly by the Chinese, was not, when it was copied by the Portuguese, having fallen into disuse, it was revived by the English surgeons during the Egyptian campaign. The method employed by the Chinese is formed of the dry leaves of the Artemisia Moxa (De Candolle), and, down and other plants, or wood, having engaged in a stalk containing the pith of the common sun-flower (Helianthus annuus) is a very convenient means, when the proper moxas cannot be procured. Those used in Britain are imported from France, and generally contain the pyrethrum, from which a substance is steeped in a solution of nitrate or chloride of potassa of this size of generally about eight lines high, and four to five broad. It is ignited at the end, and the combustion gradually extends to the root of the stalk from the actual combustible material of a red-hot iron; much as the latter produces immediately its medicinal effect, which progressively diminishes, while in the moxia the heat gradually increases, and the medicinal effect is produced towards the end of the stroke. It is also different from a blister, both in the mode of sexual
ir. the stage of a disease in which it may be most advantageously applied. The general principles which should regulate the use of blisters having been already explained [B19], and the arrangement of the apparatus connected with the cautery [Escharotica], the following observations refer to its distinctive characteristics. We may remark that the pain is not so great as might be expected, indeed less than often attends blisters, and that it is often borne by females and children without complaint.

Besides the secondary effects of the local application, which, being of a counter-irritative kind, are common to blisters and moxa, in the case of the latter there is the additional influence of a certain amount of caloric. Caloric, applied locally upon the body of a certain extent and in certain circumstances, stimulates in a powerful manner the capillary vessels, causing them to contract their diameters, and to circulate their blood with greater velocity; and, either by this action on the capillaries, or by a direct one on the lymphatics of the part, it has the advantage of exciting the function of the absorbents in a remarkable manner. The direct effects of moxa are seldom, if ever, confined to the skin; and if the moxa be applied, through the medium of a needle, the third method is the most common, and for this the part to which the moxa is intended to be applied is marked out, and the moxa being surrounded with a piece of card-paper, which has been moistened with a solution of common salt, to protect the adjacent skin, the moxa is ignited, and the combined effect, necessary, by means of a blow-pipe. For the cure of obstinate sciatica and deep-seated diseases of the joints a frequent repetition of the moxa may be required, but it seldom fails to give relief. When the moxa and scapular nerves are considered together, a moxa of a proper size is to be perforated by a needle of such a length as will be sufficient to reach the seat of the disease, and at the same time extend so far from the surface of the skin as to keep the moxa about one inch from it. The needle is then introduced, and the moxa is now put in a state of combustion, and the heat disengaged from it is communicated to the needle, and thence conveyed to the seat of the disease. [Acupuncture.] When the pain from the third mode of applying the moxas is very great, a linseed-meal poultice will generally mitigate it.

Prejudice against this remedy, on account of its apparent severity, has prevented its being extensively used, but almost all practitioners who have made trial of it can attest its efficacy, which may be either deep or superficial; or it may be employed with the acupuncture needle. In the first form, it is burnt near, but not in contact with, the part affected, and is oftentimes of great service in healing indolent ulcers; it generally requires to be applied only a few times, is very useful in reducing the size of the eye with very good effect. In the second form it is also to be held near the skin, and continued till a blister results. In tense duolourex of very superficial nerves this is sometimes employed as a supply food for the needle, and is a loop, surrounding the cylinder near the base, is sufficient. The moxa may be applied in various ways. 'It may be used so as not to cause any injury; in a greater degree, so as to produce vesication; and in a still greater degree, as an exsiccating, which may be either deep or superficial; or it may be employed with the acupuncture needle.' In the first form, it is burnt near, but not in contact with, the part affected, and is often of great service in healing indolent ulcers; it generally requires to be applied only a few times, is very useful in reducing the size of the eye with very good effect. In the second form it is also to be held near the skin, and continued till a blister results. In tense duolourex of very superficial nerves this is sometimes employed as a supply food for the needle. [Acupuncture.] When the pain from the third mode of applying the moxas is very great, a linseed-meal poultice will generally mitigate it.

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The population, amounting to about 6000, consists of a small number of Portuguese, and a larger number of Cannibals, an appendix to the Cape Colony, and the Mozambique and the other Portuguese settlements in the East Indies. There is also a considerable number of Banyans from Hindustan, but the free coloured people and the slaves constitute the bulk of the population. The commerce of Mozambique has greatly declined, and in recent times it was chiefly supported by the exportation of slaves to Brazil. In addition to slaves, only a small quantity of ivory, gold-dust, and a few articles of smaller value were sent abroad.

Mozambique was first visited by Vasco de Gama in 1498, who at first received a friendly manner, but became an object of hatred as soon as it was known that he was a Christian. It was only by force that he could obtain the requisite necessaries and a pilot. The town was taken in 1506 by Tristan da Cunha, and by Albuquerque, and as most of the commercial places of the coast are all very hot, a few of the officers of the government, who had been there, were allowed to come out, and the town was the capital of the Portuguese possessions in those seas, and the seat of a viceroy, to whom all other governors in Africa were subordinate. As long as the Portuguese possessed their extensive conquests in India, Mozambique and the other settlements on the coast were in a flourishing state, but they began to decline in the seventeenth century, and have continued to decline ever since. The governor of Mozambique has still the supreme authority over all the Portuguese settlements from Cape Delgado on the north to Delagoa Bay on the south. He remains only three years in office, and is then promoted to some other government.

(Own's Narrative of a Voyage to explore the Shores of Africa, Arabia, Madagascar; and Prior's Voyage along the Eastern Coast of Africa.)

Mozambique, the Coast of, is a term used to designate that portion of the eastern coast of Africa which is situated between Cape Delgado (lat. 14° 43' E. long.) and the northern mouth of the river Zambezi (17° 30' S. lat. and 33° E. long.) on the south, constituting the western side of the wide strait by which the island of Madagascar is separated from the main land of Africa, and which is called the Channel of Mozambique.

Though this country lies along a sea frequently navigated by vessels sailing to the East Indies, and though the Portuguese have had settlements on it for more than three centuries, the country is still comparatively unknown, and possesses only a few principal features, with the exception of the coast-line, which was surveyed by British officers in 1823 and 1824. The Portuguese have several forts along this coast, but their
MOZ

authority hardly anywhere extends more than ten miles inland, and in many places it is not even acknowledged on
the shores. The interior is inhabited by a peaceful but
powerful and brave nation, the Makawas, who maintain a
commercial intercourse with the Portuguese, but do not
permit them to visit their country.
The narrow beach is generally lined by a shore from
twelve to fifteen feet high, covered with bushes, and composed of sand. This strip of elevated ground seems to be
of moderate width, and behind it extends a plain dotted
with clumps of trees on some elevated mounds. This plain
is o morass of great extent and considerable depth, and is
impassible, being covered with grass nearly six feet above
the water. Between it and the sand-hills is a narrow strip
of dry land covered with jungle, the haunt of elephants,
hippopotami, deer, lions, and tigers. Along the course of
the numerous rivers the country is higher and drier ; it is
also generally covered with forests, whilst along the seashore trees are scarce, and grow principally on the water's
edge. It is not known how far the morass extends inland,
but about thirty miles from the coast the banks of the rivers
are high and the country cultivated, though still intersected
with extensive swamps. The mountains and hills which
constitute the eastern border of the table-land of southern
Africa occur on the banks of the Zambesi river, about 1 80
miles from the sea, but that is the only place in which
Vessels sailing along the coast
their situation is known.
perceive no mountains on the continent
The sea along the shores of this country is considered
very dangerous to navigators, and many vessels are lost
For a space of ten to twenty miles, it is lined by shoals, on
which rise several small islands ; some of them consist of
dry sand, and are bare, whilst others are well wooded. Most
of them are coral islands. The channel which divides these
islands from the continent has generally deep water. The
sea east of the shoals is nearly everywhere unfathomable.
The most remarkable of these islands are Fuego or Fogo,
Mafamede, and St. Antony, all of which are situated south
Towards Cape
of Mozambique: they are uninhabited.
Delgado are the Querimba islands, which are of various

but all low and formed of coral, with long flat reefs
extending seaward, and rising abruptly from an immense
Between these islands there is good anchoring
depth.
ground, vessels being sheltered by the mainland to the
westward, and in every other direction by islands and reefs,
sizes,

so as to afford security to vessels in the heaviest gales. The
best harbour is formed by the islands Ibo and Matamo. lbo
and Querimba are the only inhabited ilands.
Here, as in all tropical countries, the year is divided between the rainy and dry seasons. The rains commence in

November and continue

to the

end of March.

They are

abundant, and the country along the rivers is then overflowed to a distance of several miles. The heat in summer
being very great and the country not well drained, the
numerous swamps render nearly the whole coast unhealthy,
especially for Europeans, who are not inured to the
climate.

The

grains which
are cultivated are rice, millet, maize, and a small quantity
of wheat ; the most common vegetables are cabbage, lettuce,
spinach, peas and beans of different kinds, tomatas, pumpkins, and cucumbers. The fruits are cocoa-nuts, mangoes,
oranges, limes, acajoa- apples, custard-apples, pineapples,
guavas, bananas, and plantains. Different kinds of pimento
are also cultivated. Fish and turtle abound on all the
coral -banks and islands. Cattle, sheep, and especially goats,
are numerous. The exports are ivory, the tusks of the hip-

The country

is

rich in productions.

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popotamus, gold-dust col umbo- root gums, and some amber.
Formerly a great number of slaves wore exported.
The settlements which the Portuguese still maintain on
tho eastern coast of Africa do not extend to the north of
Cape Delgado. The most northern is lbo (12° 20' S. lat
and 40° 30' E. long.), the harbour of which is formed by
tho Querimba island. It is strongly fortified, but does not
appear to be a place of trade. Farther south is Pomba,
which ban one or the finest harbours on the coast the entrance being a channel between two rocky points, one mile
and three-quarters across ; but the basin into which it opens
six broad, and has sufficient water for
is uino miles long by
15° S.
the largest ships. This place has some trade. ' Near
excellent and spacious harbours, Port Conlat. are three
ducia. Port Mozambique, and Port Mokamba, but only the
ftoond is used for commercial purposes.

The most southern Portuguese settlement on

this coast

is

Quilimane, built on the northern bank of the norther*
branch of the river Zambesi, which branch is likewise called
Quilimane. It is about eight miles from the sea. The
river at its entrance is a mile broad, and immediately lacreases in width considerably. The place contains only
thirty-two houses, built of brick, which are inhabited by the
Europeans and their descendants, and a great number of
huts for the slaves. The population is about 2800. The
trade in slaves was considerable till very recently.
Beaidn
rice, it exports ivory and some gold and silver.
(Owen's Narrative of Voyages to Africa, Arabia* mad
Madagascar; and Prior's Voyage along the Eastern Coatt
of Africa.)
MOZAMBIQUE, THE
OF, divides the
island of Madagascar from the continent of Africa, washing the western shores of the island and the coast of Mozambique. Opposite the town is the narrowest part of the
channel, but even here its width is 250 miles. The length
of the channel, between 12° and 25° 45; S. lat, may bt
about a thousand miles. Towards its northern extremity
are the Comoro Islands.
[Comoro Islands.] Along the
coast of Mozambique are extensive shoals with several low
coral islands, and along the Madagascar shore several rocky
islands, but only a few small islands occur in the middle
the channel. The shores of Madagascar are tolerably high,
but those of the coast of Mozambique are all low. Tbr
depth of water is very considerable, it being impossible in
many places to get soundings close to the shore on the sid*
of Madagascar, or close to the shoals on the opposite aide
This channel is much navigated by vessels bound to lb*
East Indies, as it affords at certain seasons a more spee-dj
passage than any other course ; this however depends on
the monsoons, or periodical winds, for the current alwar>
sets in the same direction, which is southward, and with considerable force.
From April to November the south-em*
monsoon prevails, the winds blowing from south-west, we*,
south-east, and east-south-east along the whole extent of
the channel. In the beginning of November the north-east
monsoon is experienced at the northern extremity of the
channel near the Comoro Islands, and in the course of that
month it proceeds farther south, and about the end of it
reaches St Augustin's Bay. But it does not extend fart her.
the sea south of a line drawn from St. Augustin s Bay in Madagascar to the Bazaruta Islands near the coast of Sofals
being all the year round under the dominion of the sootheast monsoon, or rather trade-wind. According to the prevalence of these monsoons, vessels going to and coming from
India frequently pass through this channel. It is also occasionally visited by whalers, as the black whale, whJchviakLi

CHANNEL

U

the spermaceti, is very abundant in these seas.
Waterspouts are of frequent occurrence, as well as in some parts
of the Indian Sea towards its eastern border.
(pwen's Narrative of Voyages to explore the Shores </
4/rica, Arabia, and Madagascar; Prior's Voyage along
the Eastern Coast of Africa.)

MOZART, JOHANN-CHRYSO'STOMUS- WOLFGANG-GOTTLIEB, was born at Salxburg, January 17,
1756.
His father, Leopold, the son of a bookbinder, was
sub-director of the chapel of the prince-archbishop of Salxburg, and employed the hours not devoted to the duties «f
his office in teaching the rules of musical composition, and
also in giving lessons on the violin.
His VtolinsehuU* a
work in quarto, published at Augsburg, in 1 769, was much

day, and may atill be profitably read br
scientific students.
He married Anna-Maria Peril, and
what has been pointedly noticed by M. Schlictegroll (whose
Necrology has proved highly useful to us in the preamt
instance), will not perhaps be thought altogether unworthy
of remark by those who investigate moral and physical
causes and effects, namely, that this couple, tho parents of
one so admirably organised for creating beautiful harmonies, were distinguished by personal beauty of the rarest
kind. They had several children, all of whom died when
but a few months old, except the subject of this notice arid
a sister four years his senior. The latter received instructions on the harpsichord from her father when her brother
had scarcely completed his third year, and at that early
period the child evinced in the roost decided manner the
pleasure afforded him by combined sounds, as well as his
aptitude for music generally. His amusement was to eeefc
out thirds on this instrument* and his success waa followed
by the strongest demonstrations of tu&ntile joy.

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When the young Mozart was four years old, his father, hardly in earnest, taught him a few easy minutes and simple lessons, each of which he learnt in about half an hour.

In less than two years more appeared the first dawn of his talent for composition; he invented short pieces of musique du salon, and his father noted down that it was evident that not one of those curiosities was preserved.

That great sensibility which almost invariably is a concomitant of genius, and which never forsok him, was apparent from the moment he could express himself better than you love me not has been made by the vanity of the world.

And when he was ironically answered in the negative, his tears began to flow. In all his pursuits his ardour was extraordinary.

While learning the elements of arithmetic, then, and the theory of the harpsichord, he was as quick as a child in the marks of his calculations. And it may not be irrelevant to state,* says the author of his Memoir in The Gallery of Portraits, that what we believe has never yet appeared in print—that his talent for the science of numbers was only inferred from him; and he afterwards progressed by genius of a higher order, it is probable that his calculating powers would have been sufficiently remarkable to bring him into general notice.

Not long after he had completed his sixth year, the child exhibited his father the products of a harpsichord concerto, methodically and correctly written, and wholly unobjectionable, except that it contained too many difficult passages. The appearance of such a phenomenon (for as such it could only have been viewed) determined his father to publish it, and some of the German courts.

He first took him to Munich, where the elector received him and his family with every kind of encouragement. In 1762 the party proceeded to Vienna, and performed before the emperor Francis I, who, was not less pleased by the facility of his accomplishment, than by his powers.

In the following year the Mozart family made an extensive European tour: in Paris they resided many months, where the youthful wonder performed on the organ in the Chapelle du Roi, before the whole court. There the part was published, and his admirers, and in that city, in the same year, Mozart published his two first works, when he had not finished his eighth year!

In 1764 the Mozarts arrived in London, and remained till the summer of 1765. Here, says the above-mentioned memoir, 'the boy exhibited his talents before the royal family, and underwent more severe trials than any to which he had been before exposed, through which he passed in a most triumphant manner. So much interest did he excite in this country, that the Harpsichord concerto, an eviency of his musical performances, was read before the Royal Society, and declared by the council of that body to be sufficiently important to be printed in the Philosophical Transactions, in the 60th volume of which it appeared, is his opera that was performed at the Haymarket in May.

Burney remarks:—Of Mozart's infant attempts at music I was unable to discover the traces from the conversation of his father, who, though an intelligent man, whose education and knowledge of the world did not seem confined to music, confined his music: had he not been the progressed of his son during the first stages of infancy.

However, at eight years of age I was frequently convinced of his great knowledge in composition by his writings; and that his invention, taste, modulation, and execution in extenuation of the subject of his composition, is of forty years of age.' During this residence in our metropolis, he composed and published six sonatas, which he was permitted to dedicate to the queen of Great Britain. The family then returned to the Continent. At the Hague, Mozart composed his concerto in G minor, and his harpsichord concerto in D minor, a second long visit to Paris, and returned to Salzburg in 1768.

In the same year Mozart, by desire of the emperor Joseph II., composed an entire opera, La Finta Semplice, which was much commended by Haydn, who, however, distinctly stated, that it never was publicly performed, is now unknown either as a whole or in part, and probably its chief merit was of a relative kind.

In 1769 Mozart, at the age of fourteen, was appointed director of the archbishop of Salzburg's concert.

Soon after he went with his father to Italy, and at Rome gave a remarkable proof of the power he possessed of fixing his attention, and of memory, by noting down the famous Miserere of Allegri, after his return from the pontifical chapel, where he had heard it performed. At Bologna he was introduced to the celebrated Padre Martini, who, after testing the youth's abilities, became one of his warmest admirers. While in that city, he was unanimously elected a member of the Accademia Filarmonica; and at Rome the pope conferred on him the order of the Golden Spur.

In 1771, he composed his second opera, Idomeneo, which was performed twenty nights consecutively. In 1773 appeared his Lucio Silla, which had twenty-six successive representations. In the same year he produced other works, among which were, an opera buffa, Le finta Giardinieri, two Masses for the Virgin of Rosary, &c.

In 1775, at the desire of the archbishop Maximilien, he composed the cantata Il Re Pastore; and from that period till the year 1779 he continued to labour with his pen, though so few of his operas were obtained, or ever obtained, a celebrity at all equal to that which his subsequent productions have so justly acquired.

In November, 1779, Mozart finally settled in Vienna, the inhabitants and manners of which city were very agreeable to him; and, evidently, having reached his twenty-fourth year, he exhibited the rare example of one who had been astonishing as a child, had disappointed not even the most sanguine hopes, and become proportionately great as a man. 'In his twenty-fifth year he was captivated by the charms of a girl. Constanze, a very young woman, accomplished, celebrated actress, to whom he soon made a proposal of marriage. This was courteously declined by her family, on the ground that his reputation was not then sufficiently established. Upon this he composed his Idomeneo, and plans were put in order to produce some of his works some of the German courts.

Some of the airs, though too superior to those of his contemporaries, are too much in the operatic style then prevailing, a style now becoming rapidly obsolete. Four or five years ago, when he was about to bring out Idomeneo at the King's Theatre, in the same year, he became evident that, if performed as originally written, its success would be very doubtful. To Madile, Weber, on whom the composer's affections were additionally fixed, was assigned the principal character, and the high reputation which the author acquired by his work having immediately silenced the objections of Constanze's family, her hand was shortly after the reward of his efforts.'

(Gallery of Portraits.) The union proved a most happy one; in his wife, Mozart found a true friend, a useful counsellor, and, when his health began to decline, a patient, unwearyed, devoted attendant.

In 1782 Mozart produced Die Entführung aus dem Serail (L'Enlevement du Sérail). It was at a rehearsal of this piece that Haydn first heard of Mozart's genius, saying, 'This is too fine for our ears; it has too many notes,' 'I beg your majesty's pardon,' replied Mozart, with his characteristic independence, 'there are precisely as many notes as are necessary, and no more.' Joseph, according to this memoir, was delighted with the piece, and, when the opera was performed and heard in a perfect state, he loaded it with praises. Le Nozze di Figaro, the libretto of which is well abridged from Beaumarchais' admirable comedy, was produced in 1786, by command of the emperor, 'by those authorities which, as an Italian conspiracy against it was suppressed.' In the same year was brought out his Schauspiel Direktor (director of the comedy), a short opera, possessing little merit.

In 1787 appeared, at Prague, the chef d'oeuvre of Mozart, Don Giovanni, the libretto made up, with considerable ability, by Lorenzo Da Ponte, from the many dramas founded on the same popular subject. This was received with enthusiasm by the Bohemians, but was then above the common range. Indeed, the peculiar instruction of its superiority, and the consciousness that it would prove 'caviare to the general,' said,—'I have written this opera to please myself and my friends.' And when it was performed, more than thirty years afterwards, at the Académie Royale at Paris, it was so little understood on the stage and in the orchestra, that Garat, the celebrated singer, exclaimed, 'Don Juan a paru incongé à l'opéra.' It never found its way to our Anglo-Italian stage till the year 1817, when it was performed in a manner that surpasses all former representations, and has never since been equalled. The pro-
duction of Don Giovanni at the King's Theatre, which put ten thousand pounds into the lessee's pocket, and forms an era in our musical history, was so entirely opposed by an Italian cabal, that, but for the courage and perseverance of the director of that season, it would have been put aside, even after all the expense of getting up and trouble of rehearsing had been incurred. *The comic opera Cost fan tutte* was composed in 1786; *Die Zauberflöte* (The Magic Flute) in 1791, for M. Schickaneder, the proprietor of a theatre in the suburbs of Vienna, who himself wrote the almost incomprehensible libretto; and *La Clemenza di Tito* (Clemency of Titus), Bellini's last opera, in the same year, for the coronation of Leopold II.

Haid Mozart's life had been extended but a few years longer, he would have repeated his visit to this country. When the spirited and liberal Salomon engaged Haydn to write symphonies for his concerts, and to repair to London in order to superintend their first performance, it was settled that Mozart should succeed his illustrious friend the following year, an agreement which death alone prevented from being carried into effect.

One of his symphonies, quintets, quartets, sonatas, &c.,—of his masses, motets, detached vocal pieces, and many other works—we cannot afford space for even a bare list. His additional accompaniments to *The Messiah*, which exhibit such knowledge of effect, so refined a taste, and so very rare a combination of the greatest that had ever lived, prove that it is possible to decorate the lily and add fragrance to the violet. They were written for the Baron von_SWIET in 1788; and we may venture to say, that this masterpiece of H.m.s. was never again be heard unattended by these invaluable contributions of a congenial spirit.

The last, and, taken as a whole, the most sublime work of Mozart, his *Requiem*, was written on his death-bed; and having been left without an authentic inscription in regard to minor details, his pupil, Süssmayer, filled up some of the accompaniments. This led, a few years ago, to a dispute concerning its authorship, an indiscreet friend of the latter having claimed as Süssmayer's composition the best parts of this work. The claim was successfully opposed, and the arguments in its favour, proved unavailing against the convincing evidence afforded by the work itself, and the controversy can never be successfully renewed. A story too that an anonymous mysterious stranger commissioned Mozart to compose the *Requiem*, raised many idle conjectures, some of them of the most grossly superstitious kind. The matter however has since been satisfactorily explained.

In bestowing on Mozart so abundant a share of genius and an exquisitely sensible Nature seems to have thought that she had been sufficiently bountiful. Physical strength she denied him: small in stature, slight in construction, and feeble in constitution, he was not calculated to reach even the middle period of life. His health was so precariously dependent on climate and nourishment that in full vigour to the last, and an attack of fever, prevalent at the time in Vienna, hastened his dissolution, which took place on the 5th December, 1792. He left a widow and two sons—one of the latter adopted his father's profession, and, as we believe the other, inherits more of his parent's goodness of heart than of his talent. The other is in the employment of the Austrian government, at Milan. Mad. Mozart, at the expiration of many years, entered again into the musical world by the intervention of Baron von SWIET.

"It has been said of Mozart that his knowledge was bounded by his art, and that, detached from this, he was little better than a nonentity. That his thoughts were almost wholly bent on music was not a matter of choice, but of necessity. Had not his ill-remunerated labours occupied nearly all his time, his means would have been still more limited than they were, for a salary of less than a hundred pounds from the imperial court was all the permanent income he possessed. But his greater than is generally supposed, in proof of which we have the best authority for saying—(we quote again, and have an undeniable right, from the before-mentioned memoir)—that one, at a court masque given at Vienna, Mozart appeared as a physician, and most appropriately, in Latin, French, Italian, and German, in which not only an acquaintance with the several languages was shown, but an excellent knowledge of the character and manner of these countries. As this communicated to us by the late Mr. Attwood, his pupil and companion on the occasion) to be true, he could not have been a very ignorant man, nor always a dull one, or of his profession. But still stronger evidence in favour of his understanding may be derived from his works. That he who, in his operas, adapted his music with such felicity to the different persons of the drama—who represented the passions so accurately—the characters so nobly—whose music is so expressive, that without the aid of words it is almost sufficient to render the scene intelligible—that such a man should not have been endowed with a high order of intellect is hard to be believed; but that his understanding should have been below mediocrity is incredible."
dawn, at noon, at four o’clock in the afternoon, at sunset, and at night-close. The muezzin cry is a substitute for bells, which are not used in Mohammedan countries. The words of the ezan are:—"God is great; I attest that there is no other God but him; I term Mohammed the prophet of God: come to prayers; come to the temple of salvation: God is great; there is no God but God." Each of these sentences is repeated several times in succession, with pauses between, and in a kind of slow chanting, and occasioned the sound of a cymbal. The muezzin’s melody is peculiarly impressive, especially when suddenly breaking upon the silence of the night. On hearing the muezzin’s call, the devout Mussulmans turn their faces towards Mecca. The word muezzin is derived from the Arabic name, muezzin al-din, i.e. the ‘call of religion.’

MUUFFLI, a vaulted flat-bottomed earthen vessel in which substances may be strongly heated, and at the same time protected from the contact of the fuel; in this smaller vessels are placed containing the substances to be acted upon.

MUFTI, the general denomination of the head doctors of the law in Turkey, of whom there is one in every large town. The mufetti of Constantinople is the highest in rank, and has a jurisdiction over the muftis of the provinces, and also presides over the Senate of the whole body of the olemus, or lawyers. He is styled sheikh ul islam, or ‘chief of the elect,’ and is consulted in important matters of law. He is appointed by the sultan, who can also depose him. His decisions, called ‘fetwas,’ are as binding as any to both parties by his judgment. His secretary, called fetwah emin, has an office with about twenty clerks for the dispatch of business. The dignity of sheikh ul islam is one of the principal in the empire, and is equal in rank to that of grand-vizier. He is usually placed next in the empire.

The moulin (Muggil cheilo, Cuvier), according to Mr. Couch’s MSS., communicated to Mr. Yarrell, seems to be abundant on the coast of Cornwall, but no other British naturalists appear to have noticed it. It is distinguished from the common grey mullet chiefly by its large and flabby lips, the margins of which are ciliated; the teeth resemble hairs; the maxillary bone curved, and of soft mouth. Three species of mullet are added to the list by Mr. Yarrell, who proposed for it the specific name of curtais, from its comparatively short form. The length of the head, as compared with that of the body and tail, is as one to three, the proportion in the common grey mullet being as that of one to two, and certainly less than in C. capito, being equal to the length of the head: the head is wider, the form of it more triangular, and also more pointed anteriorly; the eyes larger in proportion; the fin rays longer, particularly those of the tail; the ventral fins placed nearer the tail; the number of rays in the number of some of the fin rays: the colours of the two species are nearly alike; and in other respects, except those named, they do not differ materially. (Yarrell’s British fishes.) Mr. Yarrell also sought this new species at the mouth of Poole harbour.

MÜHLHAUSEN, in France. [MULHAUSEN.] MÜHLHAUSEN, the capital of a circle of the same name, in the government of Erfurt, in Prussian Saxony, is in 51° 13’ N. lat. and 16° 28’ 45” E. long. It is situated in a very pleasant country on the banks of the Unauht, which is here joined by the Schwarza, which flows through the town. It is surrounded with walls and ditches, has four gates, and consists of the upper and the lower town and four suburbs. There are four Lutheran churches, of which that dedicated to the Virgin Mary and the cathedral of St. Blasius is the most remarkable. Several charitable institutions are an infirmary, three hospitals, and an orphan asylum. The town possesses a gymnasium, numerous parochial and other schools, a society for the promotion of science, and other similar institutions. The population is nearly 12,000. The manufactures of woolen cloth, serge, calicoes, leather, snuff, and tobacco, are very considerable. The breweries, distilleries, and tanneries are flourishing. Large quantities of starch, glue, and oil are made here. There are likewise dyeing-houses and fulling-mills, and the manufacturers of the neighbouring district of Eichfeld send their woollens to Mühlhausen to be fulled, dyed, and prepared for the market. The inhabitants carry on a very great trade in their own manufactures and in corn. Mühlhausen was the oldest city in Saxony, and it boasted of having enjoyed its liberty from time immemorial, and preserved its democratical form of government till 1802, when the town and territory were assigned to Prussia, and finally confirmed to that power in 1814.

MULBERRY, the fruit of Morus nigra, the only species of Morus worthy of being cultivated as a fruit-tree. It is a native of Persia, and its indigenous range appears to be extensive. Its introduction to Europe dates from the end of the sixteenth century. Under great vicissitudes it proves very tenacious of life; and under ordinary circumstances it attains, even in this climate, a considerable age, for some trees planted in 1548 are still alive. The fruit is used at the dessert, fresh or dried, and at the same time ought to be so ripe as to be just ready to drop from the tree; indeed the fruit may be said to be in the highest perfection with regard to ripeness when it actually drops, and hence a grass plot surrounding the trunk is desirable; but the trees
are found to thrive better when the soil is kept stirred; however, as grass will be generally preferred, all strong-growing sorts of grasses should be avoided; and it should also be kept very closely mowed till at least immediately before the fruit ripens. By this means the sun's rays will be permitted to penetrate the soil to a greater depth than when obstructed by a covering of long grass. Mulberries are also preserved in the form of a syrup; and their juice, mixed with alcohol, forms a beverage of a deep port-wine colour, called mulberry cider.

The soil for mulberry-trees should be of a light, rich, and moderately dry nature. If the subsoil be not naturally pervious, it should be rendered as much so as is possible. A good bed of brick rubbish will prove beneficial with regard both to the growth of the tree and the flavour of the fruit.

The propagation of the mulberry may be effected either by seeds, cuttings, or layering. The last is the preferable in the nature it can be conveniently adopted; and the shoots or branches used for this purpose, as also those intended for cuttings, should be selected from those trees, or parts of a tree, that have been observed to be most fruitful; for although the plant is generally monocious, yet some trees under the same named dimensions, are, in consequence, altogether similar, likewise seedling plants are not so desirable as those propagated from trees previously ascertained to be prolific; and moreover seedling plants are a greater number of years in attaining a bearing state.

As the acquisition of a good mulberry-tree is very desirable, the following directions for obtaining a bearing tree readily and quickly will be useful. If a tolerably large branch of a vigorous tree is 'ringed,' and the annulation is executed with rich and slightly lacteal mucilage, it will hold as much as will preserve a somewhat uniform temperature, or at least an approximation to that which the roots of a tree naturally experience in the ground, roots will be readily emitted into the earth, and in due time the branch may be detached. A cover of moss is used partly for maintaining an equal temperature, and partly for preserving moisture. The mulberry-tree requires very little pruning beyond that of regulating the head. The season for this operation should be always early winter; for in its growing state the plant bears amputation very ill, especially as regards large limbs. Mulberries have been trained against south walls, over which a single plant has been known to extend upwards of ninety feet horizontally; additional size and flavour are acquired with the increase of age, but not so much not so much as to render a standard on a proper bottom as to compensate for the great extent of wall-room occupied.

Medicinal Uses.—The fruit (popularly, but incorrectly, termed a berry) of Morus nigra is used in medicine. It is found that the juice of the entire branch of an unripe mulberry tree, especially the young leaves, contains a stimulant, astringent, and a diuretic, which are found in the leaves of the elder. The fruit, when dried and ground, has a disagreeable and nauseous taste. It is not generally used in medicine, but is occasionally employed in the treatment of certain diseases, such as dysentery, bloody flux, and the like.
logist whose opinion have just quoted. Professor Owen, for instance, in one of his valuable notes on another part of this very paper, truly observes that John Hunter’s assertion that the trilobite of common with an individual of the same breed proves the fact of identity of two supposed distinct species equally with the production of offspring from the connection of hybrid with hybrid, cannot be admitted.

To prove the identity of two supposed distinct species, considerations of time and place are absolutely necessary, and the hybrids from the two to be the proof required, it should be shown that such hybrids are fertile inter se, and capable of propagating indefinitely an intermediate variety. Now this is precisely the fact which is wanting in the evidence adduced by Mr. Eyton. If all the species very nearly allied to each other will produce a hybrid offspring, and that the hybrid is again productive with an individual of the pure breed; but this only illustrates the general principle, that the hybrid to the pure breed is provided for; while, on the Labrador, the intermixt of the distinct species is guarded against by the aversion of the individuals composing them to a sexual union. And it is no contradiction to this general rule, to show that in some instances this aversion is overcome, as in the case of the lion and tigeress—to cite an example, among the Carnivora [Lion, vol. xiv., p. 35], and in that of the pheasant and common fowl; and the hen canary-bird with the goldfinch, linnet, &c., among birds. [Canary-Bird, vol. vi., p. 228.] These cases are the exceptions, and prove the generality of the rule or law.

Doubtless there must be a concurrence of predisposing accidents to bring different species, in their anxious desire to propagate their kind, into contact and intermixture; and the presence of such predisposing causes may be generally traced in most of these erratic alliances. In the great majority of them the species thus mingled are very nearly allied. Thus there are several instances on record of the House Finch and the English Robin. The latter species nesting in spring with the Carrion Crow (Corvus corone); the male of Montagu’s Harrier (Circus pygmeus) and a Ringtail (Circus cyaneus) having been shot at the nest feeding their young (Yeall), ex relatione Sweeting. Mr. Berry notices the intention of breeding from these union, and adds that the broods, which were strongly marked hybrids, for two successive years. (Magazine of Nat. Hist., vol. vii.)

Mr. Yeall, who, in his beautifully illustrated and interesting "History of British Birds," now in course of publication, mentions the last-named cases in detail, adds that several instances are known in which the female of the Black Grouse, usually called the Grey Hen, has bred in a wood with Partridges, and of many instances communi-

cated to the Zoological Society of London an instance of the Common Wild Duck breeding with the male Pintail (see further Ducks, vol. ix., pp. 181, 185.)

The author of the "History of British Birds" above quoted has had so much experience on this intricate subject, so far as it relates to birds, that the following observations by him are worthy of all attention:—

Several experiments on the productive powers of various hybrid birds are now in progress on the east coast, and others are at an earlier period which may be elicited, I may briefly refer to what has fallen under my own observation. Some degree of restriction, either accidental or imposed, and arising from various causes, appears to be necessary for the production of hybrids, and the union of species; but the influence of the divine command to "increase and multiply" is so irresistible, that some birds unite with strange partners, rather than have no partner at all; when putting two birds of different species together, with no其他的 from the nearest natural wild stock likely to take place if they are kept within sight or hearing of other birds of their own species. The two sexes of the broods produced by such unions take little or no notice of each other when adult, even during the nest-building season, and are probably unproductive among themselves if so restricted; but if allowed an opportunity of uniting with the true species of either parent, they are then prolific, and the young birds produced soon lose all intermediate character. (Hist. Brit. Birds, part xiii.)

Our limits will not permit us further to pursue the zoological part of this subject, one of the most interesting that can be presented to the practical breeder or to the physiologist, who will anxiously expect the results of the experiments above alluded to by Mr. Yeall.

MULHAUSEN, or MULHOUSE, properly written Mulhouse, a town in the department of Haut Rhin, situated on the banks of the Ill, a feeder of the Rhine, in 47° 45' N. lat. and 7° 21' E. long., 237 miles in a direct line east-south-east of Paris, or 278 miles by the road through Troyes, Langres, Vesoul, Belfort, and Atterach.

This town deserves a notice in this work, because it is one of the most ancient in France, and is the site of a house and a mill established on the Ill by the Frisian hermits of the order of St. Augustine. In the eighth century it is noticed as a village, and from 1268 it ranked as a free imperial city. It was long time harassed by the rival rights of Alsace, whose attacks induced the townsmen to ally themselves, in 1466, with the Swiss Cantons of Berne and Soloucre, in 1506 with Basel, and in 1515 with the whole Helvetic Confederacy, of which it was considered a candidate to become a member. These advances procured to the townsmen peace and security; and Mulhausen, with its small territory, though surrounded on every side by French, preserved its separate existence till A.D. 1788, when it was incorporated with the French republic. It has ever since remained incorporated with France.

Mulhausen is divided into the old and new towns. The old town is built on an island formed by the Ill, which here flows in several channels, and is crossed by a number of bridges. The town forms an irregular oval, with streets, which, being intersected, divide it into three main parts, with well-built houses. There are a Catholic and a Protestant church, a town-hall, and a high school. The new town, to the south-east of the old town, is on the right bank of the Ill; the streets are straight, provided with foot-paths, and adorned with handsome houses.

The population of the commune of Mulhausen at the commencement of the year 1828 was 6628; in 1831 it had increased to 13,306, of whom 13,187 were in the town. Mulhausen includes the residence of the Duke of Berry, 7090; and 577 are subjected to the town from the neighbouring communes to follow their several employments. It is the centre of the trade of the department, and of that manufacture of printed cloths and silks, so much esteemed for their brilliant and fast colours, and other cloths, of fine and ordinary woollen cloths, of cotton hose, straw hats, morocco leather, and soap. There are dye-

works, which produce high quality chemicals, and make steam-engines and other machinery. A commercial gazette is published. There are four yearly fairs.

The Canal de Monsieur, which unites the navigation of the Rhine and pass to the Ill, passes the town; there is a large basin for boats in the new town.

MUL'NIA, Mr. Gray’s name for a genus of conchifers, allied to Macraea, having the ligament, properly so called, internal, and the lateral teeth simple.

MULL, an island on the western coast of Scotland, in the sound and county of Argyll, comprised between 56° 16' and 56° 40' N. lat., and 4° 45' and 6° 23' W. long. Its length from north to south is 30 miles, and the greatest width, from Treaslinch point on the west coast to Craigmore point on the east, is 12 miles. The coast is bounded by Loch Sunart and the headland of Ardmur-

chan, to the south by Loch Linhno, and to the west by the Minish channel. On the north-east it is separated from the mainland by a narrow strait called the Sound of Mull. The island is bounded from the sea by Loch armadale, whereof the northern forms the parish of Kilninian, and the southern the parishes of Kilfinichen and Torresay. At the entrance of this loch are a number of small islands, including Ulva, the Treshnish islands, and Staffa, noted for its coastal caves, and the romantic cave of the Fairy. The south-west in a headland called Roxy, or the Ross of Mull, a short distance off which is Iona. (Iona.) The substance of the island is principally trap rock. The highest
MÜLLER. [REGIMONANTUS.] MÜLLER, OTHO FRERIC, a Danish naturalist, born at Copenhagen, March 11, 1730. His parents were poor; but being fond of literary pursuits, and of studious and regular habits, he obtained in 1753 an appointment as tutor to a young count. In this situation he had ample opportunities for cultivating his taste for reading and for the observation of nature. It is said that the countess de Schulin, his pupil's mother, who was a woman of great ability, persuaded Müller to devote his talents to natural history, for we find that previously to this time his principal study had been theology. Botany seems to have engaged his attention (though he owes his celebrity to his zoological researches), and he employed his leisure time in collecting plants, and in making drawings of them. He visited every country within a reasonable compass for a considerable period, with a view to collect animals, and in consequence of the many difficulties with which the investigation of these microscopic animals is surrounded. The Infusoria were a new kingdom of animals which he received to the naturalist, and previously to the modern researches of Ehrenberg his labours stood alone in this branch of science. [INFUSORIA.]

In 1779 Müller commenced the magnificent Zoologica Danica, a work which was intended to correspond, as a natural kingdom, to the 'Flora Danica' in the vegetable kingdom. He only published two parts, which were in folio, each containing 40 coloured plates. The text, which was in Latin, appeared first in 1786, but was republished in 1790 of the same size as the plates. Two other parts of Zoologica Danica 'have since been published, the first by M. Aibildgaard, and the other by M. Rørbye, and appeared in 1806. This work, which was intended to embrace all the species of the animal kingdom found in the Nordic Europe, still remains very incomplete, only 160 plates having appeared; it is however of considerable importance, from its containing descriptions and figures of a great number of new species of molluscan animals and zoophytes.

Besides the great works which we have mentioned, Müller wrote a general catalogue of the animals of Denmark, entitled Zoologism Danica Prodromus, published in Copenhagen 1777, and several memoirs on different subjects. The Danish government marked his sense of the merit of this laborious naturalist by making him a councillor of state, and giving him several other honorary appointments.
MULLER, JOHN, born at Schaffhausen, in Switzerland, in 1752, was the son of a clergyman and schoolmaster in his native town. He studied at Göttingen, under Heyne, Schlözer, Walch, and other eminent professors, and showed an early taste for historical research. On his return to Schaffhausen he was appointed professor of Greek in the gymnasium of that town. He afterwards went to Geneva, as tutor to the children of Counsellor Tronchin of that city, where he became acquainted with the naturalist Bonnet, Bonstetten, and continued his researches in history and law until an intimacy which lasted till his death. In 1778 he delivered a course of lectures on universal history, which were afterwards published in twenty-four books. It is a rapid but well-written abridgment, and useful to young students.

Müller shows no partiality for great states and empires, and he bestows particular notice upon small communities which have struggled hard and succeeded in maintaining their independence. He gives some interesting particulars relative to the history of the Swiss confederacy, and his ‘Histoire de la Confédération suisse; ou de l’édification de l’Empire Helvétique,’ which he afterwards brought down to the end of the eighteenth century. About the same time he published the first volume of his great work, which has placed him in the first rank of historians, his history of the Swiss confederacy, which he delivered at Lausanne as a tutor. It was published in French, ‘Histoire Universelle, par Jean de Müller,’ 4 vols. 8vo., Paris, 1813-17.

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lions, if they have not the character suitable to the style. Modern architects are apt to be too negligent in this respect, and to make their mullions too poor and meagre, a defect for which no merit in other parts can, stone, the whole will have an air of dryness and insipidity, and there will be little, if any, of that relief and vigour which ancient examples possess: the spirit of the style is lost. There is indeed no express rule for determining their proportions, yet no one who knows anything of the style, or has feeling for it, can be at a loss. The breadth of the mullions should never be less than one-fourth of the width of the intermullions or lights between them; and in many examples even more than one-third. It is also important that they should have projection or depth as well as breadth, that is, the glazed surface of the window should recede considerably from the line of the outer face of the mullion. Unless the bevel is of importance, there will be little otherwise a deficiency of that spirit, boldness, and richness depending upon such particulars of execution, let the outline of a design for a window be ever so good. When, as is now generally the case in modern churches, the windows are glazed with ground glass, a greater rather than a less degree of boldness in the mullions is requisite, in order to produce that relief which the semi-opaque surface of the glass tends to diminish. It is the neglect of such apparently trifling matters that causes the prodigious difference between modern and ancient works of the same originals, which almost every one feels, though few can explain.

Subjoined are the horizontal sections or plans of two mullions; one of the simpler and usual form, the other of a richer character, and with more mouldings; but both of them, as invariably the case, agree to a point externally, presenting merely a narrow face or fillet. Each mullion exhibits also some variation of the same general form, in its darker and lighter tinted sides. The cut further instances the spacing of the mullions, which are here not quite three times their own width apart. It will be seen that the depth of mullions, or their thickness through their external and inner face, is greater than their width. In the second of the two here shown, the depth is double the width.

MUltinominaL [PolyNomiaL]

MULTIPLE, SUBMULTIPLE, MULTIPLICATION. Any number of equal magnitudes added together give a multiple of any one among them. Thus 4 + 4 + 4, or 12, is a multiple of 4. And submultiple is the inverse term to multiple: thus 12 being a multiple of 4, 4 is a submultiple of 12. The term submultiple is equivalent to Aliquot PART.

The derivation of the word is from multi-plex, mani-fold, and multiplication is the process of forming a multiple. Thus to multiply 184 yards by 275 is to repeat 184 yards 275 times in the result. But this is the first and fundamental meaning of multiplication. Its usual symbol is \( \times \); thus 4 \( \times \) 3 is 12.

If we look at the primary rules of arithmetic, we shall see that multiplication is the only one which cannot be entirely performed upon concrete quantities. To or from 100 yards 50 yards can be added or subtracted, and 100 yards can be divided by 50 yards; but 100 yards cannot be multiplied by 50 yards. The very definition of multiplication requires that every question should contain a number of times, which another number, abstract or concrete, is to be repeated; and this number of times or repetitions cannot be a number of anything else. Thus to talk of multiplying 10 feet by 7 feet is a contradiction in terms; if it mean that 10 feet is to be multiplied by 7 feet, that 7 repetitions of 10 feet are to be made, 10 feet is multiplied seven times, not seven-feet times. But if it be meant that 10 feet is to be repeated as often as 7 feet contains one foot, the question has three data, and belongs to a class which will be considered as Proportion: it is in fact a question of multiplication in which the number of repetitions is given, but is to be extracted from the result of a question in division. On this subject see also RECTANGLE.

It being now distinctly understood that a number of times or repetitions is an essential element of every question of multiplication, the extension is obvious by which a fraction of a time, or a fraction of a repetition, is allowed to enter. Thus 12 + 12 + 12 + 6 is 12 repeated three times and half a time, or 12 multiplied by \( \frac{3}{2} \); 12 + \( \frac{1}{2} \), or \( \frac{3}{2} \) or \( \frac{3}{2} \) taken 3 times. Up to this point it is no violation of any rule: a multiplication of a multiple is called multiplying by itself. But 7 is 7 taken once, or 7 \( \frac{1}{2} \) is the 1, though, etymologically, multiplication does not take place. Again, when the half a number is taken, or when it is half taken a time, it is said to be multiplied by 7; and so on for any other fraction. The advantage of such extension in practice more than counterbalances its obvious defect, namely, that the beginner must, without great care, be confused by the application of a word in a sense diametrically opposed to its literal meaning.

The proposed process of multiplication rests upon the following principles. (1.) If the parts of a number be multiplied, and the results added together, the whole is multiplied: thus 18, composed of 13 and 5, is taken 7 times by taking 13 and 5 each 7 times, and adding the results. (2.) Multiplication by the addition of the results, is equivalent to multiplication by the whole: thus 13 taken 7 times and 8 times gives two products, the sum of which is 13 taken 7 + 8 or 15 times. (3.) Successive multiplication by two numbers is equivalent to the product of these two numbers, and taken 7 times or 8 times, and the result taken 4 times, as taken as many times as there are units in 4 units, or 12 times. (4.) If one number be multiplied by another, the result of the multiplication is not changed; thus 7 times or 8 times the same thing as 9 times.

In the decimal system, the annexing of one cipher multiplies by 10, of two ciphers by 100, &c.

The application of these principles requires that, in the system of notation, the problem of multiplying up to 9 times 9 should be remembered: this is usually done by learning what is called the multiplication table, and this table, which is only absolutely necessary up to 9 times 9, is usually committed to memory up to 12 times 12. This being supposed to be done, we shall now show the process of multiplying 1234 by 5073. By (2) we must take 1234, some times, 70 times, and 3 times, and add the results. To take 1234, 3 times, we subdivide it into 1000, 200, 100, and 34, each of which taken 3 times, and the results added together, gives

$$\begin{align*}
3000 & = 1000 \\
900 & = 2\times 1000 \\
12 & = 3\times 100 \\
23 & = 3\times 34 \\
6830 & = \text{total}
\end{align*}$$

Similarly 1234 taken 5000 times, gives 6,170,000. Now put the three results together, and add them; which gives the final column following.

$$\begin{align*}
3702 & = 1234 \\
86380 & = 5073 \\
6170000 & = 3000 \\
62500002 & = 900 \\
62500009 & = 12
\end{align*}$$
MULTIPLE POINTS. When two or more branches of a curve pass through the same point, it is called a multiple point; and this, whether the branches touch or cut one another. When two or more branches intersect, it is obvious that as many distinct tangents may be drawn in a multiple point as there are branches which there intersect, that is, for one value of the abscissa the differential coefficient of the ordinate may have more values than one. In most cases the points at which this happens may be ascertained by inspection of the equation of the curve.

Thus in

$$y = (x - b) \sqrt{(x - a) + c} < a$$

$$\frac{dy}{dx} = \frac{x-b}{\sqrt{(x-a)}} + \frac{c}{2\sqrt{(x-a)}}$$

we see that, in general, there are two values, and so has \( \frac{dy}{dx} \) to each value of the former belongs one of the latter. But in the single case of \( x = b \), both values of \( y \) become equal, or \( y \) has only one value; while \( \frac{dy}{dx} \) has the two values

$$+ \frac{c}{2\sqrt{(b-a)}}$$

and

$$- \frac{c}{2\sqrt{(b-a)}}$$

There is then a multiple point when \( x = b \) and \( y = c \); and as two branches cut one another, it is called a double point. Similarly, had there been three, four, &c. branches, it would have been called a triple, quadruple, &c. point.

It is not worth while to go further here on the general method of determining double, &c. points. (See Lib. Usef. Kn., 'Differential Calculus,' p. 182.)

MULTIPLICATION. [Multiple, &c.]

MULTIVALVES, the name formerly used to designate those shells which were made up of more than two pieces. Thus the Cirripedia (Lepas) were all multivalve shells of Linneaus, and so were Chiton and Pholus.

MULWIA. [Marocco.]

MUMMUS, L. [Cornith.]

MUMMY is a name derived from an Arabic word mum, signifying wax, and which is now applied not only to those dead bodies of men and animals, in the preparation of which wax or some similar material was used, but to all those which are by any means preserved in a dry state from the process of putrefaction.

The art of embalming, by which the greater part of the mummies now existing were prepared, was practised, with more skill than has ever since been acquired, by the inhabi-
tants of ancient Egypt, of whom we have but few remains. In Egypt, the process was to wash out the viscera, which they wash with palm wine, and clean with powdered aromatics. They then fill the belly with the purest powdered myrrh and cassia, and other perfumes (frankincense excepted), and sew up the wound. In the next place they cover the body with natrum (a mixture of...
carbonate, sulphate, and muriate of soda), and bury it in the same material for seventy days, a longer period not being allowed. When the seventy days are passed, they wash the body and envelop it all in bandages of fine linen covered with gum. The relatives, on receiving the body again, have a wooden case made in the form of a man, in which they wrap it, and having shut it in, they put it in a sepulchral building, setting it upright against the wall.

'Those who would avoid the heavy expense of this method of embalming, have the bodies thus prepared:—they fill it with a mixture of cereal and olive oil, without either extracting the viscera or removing the viscera; then preventing the egress of the injected fluid, they salt the body for the fixed number of days, and at the end of that time let out the cedar oil, the power of which is such that it brings out all the impurities with the viscera, and by consuming the flesh, the skin and the bones only of the corpse remain. This being done, they return the body. The third mode of preparation is that with which the bodies of the poor are treated. They wash out the abdomen with a cleansing liquid, put it for seventy days in natrum, and then return it to the relatives.'

To this account Diodorus Siculus (Biblioth. Hist., lib. i., cap. 91) and some others, while generally confirming it, add a few unimportant particulars; and though it has been supposed by some that this account is derived from authors, yet the researches of those whose authority is next in importance, the members of the Institute who accompanied Napoleon in his Egyptian campaign, have proved that as far as it goes the process is exactly the same. The results of these researches, in which MM. Jomard, Rouyer, and Larrey were chiefly engaged, are contained in the great work, Description de l'Egypte. Those of M. Rouyer especially illustrate the process of embalming. He found that the body of which he examined is covered by two different classes of mummies; those in which an incision had been made above the groin, and those in which there was no such opening. In both the brain had in general been extracted by breaking through the roof of the nose, or murrain, and the orbit; but not without a certain aperture in the skull, and the brain had been left in it, a fact which is confirmed by the examination of some of the mummies that have been brought to England. (Petigrew, History of Egyptian Mummies.)

Among the mummies which have an incision in the flank (and which are probably the bodies of the rich, in whom that measure was necessary for the complete cleansing of the interior), M. Rouyer distinguishes those which were dried with the assistance of balsam and aromatic substances, and those which, in addition to these means, were salted.

Of both these kinds some are filled with a mixture of aromatic resins, and others with asphaltum or pure bitumen. The mummies which are filled with aromatics or asphaltum are filled with olive-coloured. Their skin is dry, flexible, and like tanned leather, and contracted. Their features are distinct, and appear to be like those that existed in life. The resins which all their cavities contain are dry, light, brittle, and aromatic. The teeth, hair, and eye-brows are generally perfect. Some of them are gilded all over the body, or on the most prominent parts.

The mummies which are filled with bitumen are reddish; their skins are hard and polished as if they had been varnished; they are dry, hard, inodorous, and difficult to unroll; their features are but slightly altered; the hard black resinous substance with which they are filled possesses little odour, and they are scarcely alterable by exposure to the air.

Those which have been salted, as well as thus prepared, differ little in their general appearance from those just described; but they are usually less perfect, the features being altered, and their hair having commonly fallen off. When these have been removable and exposed to the air, a certain efflorescence forms upon them, which consists of different salts of soda. The intestines and other viscera, which in all these kinds of mummies were removed through the aperture in the flank, after being washed with palm wine and sprinkled with aromatics, were usually placed in an earthen vessel, and then, with prayer for the pardon of the sins in eating and drinking which they had led their possessor, were thrown into the river; but sometimes, after being thus cleansed, they were returned into the abdomen, or were preserved in a separate vase by the side of the body.

The edges of the incision in the flank are always placed in simple contact, not sewn together as Herodotus mentions.

Among the Egyptian mummies which have not had the viscera removed by opening the abdomen, M. Rouyer distinguishes two kinds; in one of these the whole body has been salted and then filled with an impure kind of bitumen (pissapphalt), while in the other they had only been salted and dried. M. Rouyer thinks that instead of the viscera being destroyed, as Herodotus mentions, by oil of bitumen, it was only the outer coat which was destroyed, and that afterwards, when it had destroyed the viscera, the cavities were washed out with the oil of cedar. The mummies which, after having had their viscera thus removed, were filled with bitumen, are known as the 'balsa mummies, and they preserve some of their features. Not only are the cavities filled with the pissapphalt, but the surface of the body is covered with it, and it has so completely penetrate, into all the tissues, that the whole forms but a single mass. It is probable therefore that the material was injected very hot, and that the bodies were plunged into a vessel containing it in a state of fusion. It is an impure, grey, and strongly smelling substance, less black and brittle than the pissapphalt with which the other mummies are filled, but long preserved, and a valuable source of coal and bitumen. The mummies which were filled with asphalt and dried are even less perfect than the preceding. Their features are entirely destroyed; all their hair is fallen off; and the body and the bandages by which it is enveloped fall into pieces when brought to the air, or may very easily be broken loose from the body, when dried, and in one instance, though hard, dry, and whitish, like dirty parchment.

The bandaging, to which all the Egyptian mummies were subjected, was one of the most remarkable parts of the process. Their envelopes are composed of numerous layers of bandages, and the whole is made up of fifteen or twenty times, and surrounding first each limb, and then the whole body. They are applied and interwoven so accurately, that one might suppose they were intended to restore to the dry shrivelled body its original form and size. The only difference in the bandages of the different kinds of mummies is in their greater or less fineness of texture; they are applied on all in nearly the same manner. All the bandages and wrappings which have been discovered are adjusted on the right side; the body is first covered by a narrow dress, laced at the back and tied at the throat, or it is all enveloped in one large bandage. The head is covered by a square piece of very fine linen, of which the centre forms a kind of mask, and which is wrapped around the head and neck, and put one over the other, and the last is usually painted or gilded in representation of the embalmed person. Every part of the body is then separately enveloped with several bandages impregnated with resin. The legs, extended side by side, and the arms crossed over the chest, are fixed by one great bandage which surrounds the whole body; and these long which are commonly covered with hieroglyphs, are fixed by long, crossing, and very ingeniously applied bands which completely the envelope. Most of the bodies are placed in a large casket; those of the rich were enclosed in cases. The cases are usually wooden, the interior being composed of boards made of several portions of linen glued together, and the exterior cut from a piece of wood.

The Egyptians practised embalming almost as extensively on some animals which they deemed sacred as men. The list of the mummies of animals which Dr. Petigrew gives includes the monkey, bat, dog, cat, lion, wolf, wild ass, shrew-moose, adder, pike, owl, hawk, shrew-mouse, goat, sheep, oxen and calves, hippopotamus, vulture, eagle, falcon, hawk, owl, ibis, goose, swallow, crocodile, lizard, snake, adder, cerastes, carp, pike, and some other fish, and a few species of insects. Some vegetables also have been occasionally found, one of which, the orris root, had sepulchres appropriated to their species, but sometimes they are mixed, and very rarely they are found in the combination of human mummies. The most frequent mode of preparation was by cutting out the viscera by the mouth, and salting them, and then bandaging them like the
human bodies. The ibis and the hawk however usually received more care, and were prepared with resin and asphalt. After being embalmed, each bird was usually placed in a mud jar.

The Egyptian mode of embalming was imitated occasionally by the Jews, Greeks, Romans, and other nations, and has sometimes been adopted in modern times, but never to the same extent or perfection as they attained. The only other mode to have been adopted in modern times is the national custom that was practised by the Guanchees, the antient inhabitants of the Canary Isles. [CANARY ISLES.]

Their mummies are particularly described by M. Bory de St. Vincent, in his 'Essai sur les Isles Fortunes.' Numerous vaults were found in the town of Göttingen, which, since the year 1772, has been inhabited by less than two thousand souls, containing hundreds of mummies, of whom a large portion is of very ancient date. These vaults consist of the two vaults of St. Michael's church, and the other vaults of the city, which were formerly the place of burial of the dead of the town.

The method of embalming adopted by the Guanchees consisted in removing the viscera, in either of the same ways as the Egyptians practised, then filling the cavities with aromatic powders, and afterwards wetting the body down and lastly drying the body very carefully for fifteen or sixteen days in the sun, or by a stove. So complete is the desiccation of these mummies, that a whole body which Blumenbach possessed weighed only 74 pounds, though the dryness of the bones renders it impossible to make any judgment of its size.

In some situations the conditions of the soil and atmosphere, by the rapidity with which they permit the drying of the animal tissues to be effected, are alone sufficient for the preservation of them, for instance in the neighbourhood of Göttingen, where the soil is sandy and the air dry, the bodies are in a state of preservation as perfect as that of Egyptian mummies. The remains of the body, the nails, hands and even the nails of the hands, of the Egyptians not embalmed have been found in perfect preservation. The Egyptian mummies do not appear to have been subjected to any particular preparation, the dry and absorbent earth in which they are placed being sufficient to prevent them from putrefying. M. Humboldt found the blood of the mummies of the tombs of the kings of Egypt, and those of other nations, to be of the same size as usually prepared weighs at least 9 pounds.

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of jacob's and marbles, which retain water all the year round, and furnish extensive pasture-ground for cattle and horses. the villages are built either upon the edges of the slopes connecting the bases of the mountains with the valley, or on the banks of the imphal tooel, which are generally higher than the country behind them.

the range of mountain which forms the western barrier of the valley is more elevated and extensive than any other between sylhet in bengal and the western boundary of the birman empire; it runs in a direction nearly south-south-west, between 34° and 35° latitude, and is distinctly marked from the southern limits of the muneepoo valley, where it gradually declines, and at length terminates in a series of broken and rugged heights. it slopes gradually into the valley by a succession of lower hills. but on the western side it does not yet enter a general valley, but falls away off numerous precipitous ridges, whose upper portions are too steep to admit cultivation, which is consequently limited to the lowest part of their declivities. on this side it is an almost unbroken mass of magnificent primeval forest and luxuriant vegetation, whilst the eastern face of the range, which fronts the valley, has been almost entirely cleared, and is annually cultivated with rice and cotton by the nagas. the elevation of the principal range varies from 5730 to 9200 feet above the sea. the range which bounds the valley on the east, is less extensive and elevated. its extreme length is about 50 miles, and its eastern declivity is the more precipitous. it is united with the valley by a gentler slope. its elevation varies between 4900 and 6720 feet above the sea. the ridge extends within the limits of muneepoo, but the valleys beyond it belong mostly to the birman empire; the most important and extensive is that of kubo.

on the north and south the valley is not enclosed by a continuous range, but consists of numerous ridges, which issue from two extensive mountain-tracks which lie in that direction; the northern has been explored very imperfectly and the southern not at all by europeans. the northern is immediately connected with the main range of the mungpoor or rangoon range, in the extreme north-eastern parts of the arakan mountains, which, separating arakan from birma, terminate with cape negros (16° n. lat.). the ridges project from both mountains and adjoin in the direction of the vale, and are separated by narrow defiles, through which a small stream generally flows.

the principal river of the vale of muneepoo is the imphal tooel, which rises with two principal branches in the mungpoor ranges on the north and falls into the river, which is called the eril, and the western the kholanga river. the latter, which is the principal branch, unites with the eril two miles south of langthabal, near 24° 40' n. lat. ten miles lower down, it is joined by the thoil river, whichlikewise descends in the same direction from the northern mountain-region. the imphal tooel traverses the centre of the vale in a southern direction, and enters the southern mountain-region at the village of shogoomoong, near 24° 15' n. lat. its course from this point is not known, but it is said to form a tremendous fall, which is very probable, as the difference of level between the vale of muneepoo and the low lands of kule amounts to more than 1500 feet. this difference of level must be overcome either by a rapid succession of numerous falls or by one or two of stupendous magnitude. after leaving the mountain-region at 22° 33' n. lat., it enters the plain of kule, belonging to birma, where it is called nankath khyoung, and after receiving the united waters of the myetshu and muneepoo rivers, which flow from the south, it enters into the mouth of the thoil by a bold bend in the vale, in the direction for about 35 miles, when it bends east, and traversing the ungoching hills, enters the nintha or kueduen river, the great tributary of the irrawaddy. the whole course of the imphal tooel is upward of 300 miles, but, excepting in the neighbourhood of muneepoo, which is richly cultivated, no fallable falls or skiffs formed of a single tree, which are the only description of boats used in muneepoo. during the floods it flows with a velocity of five or six miles an hour, and has a depth of 29 or 30 feet, owing to its contracted channel; but if the season is colder than usually wet, the waters rush over the banks, and convert all the central portions of the vale into a vast swamp.

at about 24° 30' n. lat. the imphal tooel is joined by the koreth river, or the outlet of the lake logta, which is about four miles long and two wide, and occupies the south-western corner of the vale. it is formed by numerous small streams descending from the western mountain range. near its southern extremity are three ranges of small islands; the central range, called tangsku brother, is 478 feet above the level of the lake. these islands are principally inhabited by fishermen, who are particularly well adapted to the culture of fruit-trees. the lake furnishes twenty species of fish, eighteen common to the rivers of bengal, and eight not found in any of them.

the muneepoo tooel, or muneepoo, which lies to the west of the vale, and separates it from cashar, is traversed by the barak or soomir river, an affluent of the brahmapoota, or megha, into which it falls near the village of suunarampoor in bengal. the sources of this river are on the western mountain-range which lies between muneepoo and assam. it runs through muneepoo in a south-south-west direction, and forms at the most southern corner of the country a bend, by which its course is changed into a northern one. it flows north for about 50 miles, and here forms the bary line between muneepoo and cashar up to the mouth of the jeevre river. its course through muneepoo is upwards of 180 miles; but it is too rapid for navigation. it is only at the mouth of the jeevre river that it becomes navigable, and it is easily otherwise at any but certain times.

the climate of the vale of muneepoo is modified by its elevation above the sea and the mountains which surround it. in december and january the thermometer at muneepoo falls to 20° below zero and hoar-frost occurs frequently during the night. in november, the thermometer is at noon between 60° and 68°, and in june generally attains from 80° to 85°. the difference between the temperature of muneepoo and calcutta in winter (december and february) is from 11 to 18°; but in summer (june, july, and august) it varies only between 6 and 8°. the quantity of rain is much less at muneepoo than at calcutta, though the number of rainy days is greater. at calcutta there are only 77 rainy days in 12 months, and there the temperature in january is 13° 20', while at muneepoo it rises to 53° 39', and at muneepoo only 45-13 inches of rain. on the slopes of the mountains surrounding the vale the showers are more frequent than in the level country; but the cold months, from november to february, are almost entirely exempt from rain. in march the showers become very frequent, and in the month of april the rains are sometimes more abundant than in other parts of the year. in may the rivers begin to rise, and continue to do so until the middle of october, when they are nearly at their highest point. the rains continue until ten or eleven o'clock in the morning, the valley is enveloped in a dense fog, which, on dissipating, leaves a beautifully clear and cloudless atmosphere; but an hour after sunset the vapours become again condensed, and evaporation increases the humidity of the atmosphere, which descends to the ground as hoar-frost. the climate of muneepoo is peculiarly favourable to the constitutions of both europeans and the natives of hindustan.

the agricultural produce of muneepoo consists principally of rice, which forms the staple article of food, and the crops are everywhere very abundant, as the numerous streams which issue from the mountains surrounding the vale ensure an adequate irrigation even to the fields which are above the level of general inundation. tobacco, sugar-cane, indigo, mustard, and different kinds of rice and opium, are also cultivated, and cotton in the valleys of the mountainous districts. in the gardens which surround each house vegetables are extensively cultivated; and tea, coffee, and all other kinds of tropical productions, which are not distinguished by far the most delicate in taste, are raised. different varieties of greens and cabbages, carrots, radishes, beet-root and turnips; the two first have proved so acceptable to the people, that they now are almost universally cultivated. the vegetables do not differ widely in the same species, except pineapples, which are not inferior to any on the face of the globe, and the oranges grown on the islands of lake logta. the other fruits are apples, apricots, raspberries, currants, gooseberries, dates, pomegranates, guavas, mangos, and jack-fruits; they are all produced, owing to a want of care and skill in their cultivation. saffron is collected in considerable quantities in some villages on the northern borders of the vale.

in no part of india do the forests afford a greater variety
of excellent trees than those which cover the mountains surrounding the vale of Muneepoor. Cedar of gigantic size, fir, and pine, occupy the highest portions of the ranges; oak of every size occurs on the several hills and mountains, and is employed in some instances for building purposes. The other forest-trees, commonly found in countries in the latitude of Muneepoor, are abundant. The tea-tree however, and the keo, from which the celebrated Burmese varnish is obtained, are only met with on the south-eastern ranges bordering on the vale of Kutoo. But all this wealth is of little use in a commercial point of view, as the nature of the country precludes the possibility of transporting the timber to foreign markets with any prospect of advantage.

The animals employed in agriculture are buffaloes and cattle, more especially the former. Elephants are frequently seen in the glens and defiles on the north of the vale; deer are abundant, and grow to a very considerable size. The wild hog is not less common, but the buffalo is by far the most abundant animal. Their cultivation has extended in the vale. A wild dog is found among the hills, where it hunts in packs. Fowls, ducks, geese, and pigeons are sufficiently numerous.

Gold is not found in Muneepoor, though it occurs in the Kyauk-taung hills; and some very small mines are very common in several parts, especially in the beds of small rivers south of Thobal and in the hills near Langthabal. This metal is worked and manufactured into axes, hoes and plough-shares, spears, arrow-heads, and blades for daggers. There are occasionally wealth of tin, quartz, and salt springs are found on the eastern side of the vale, not far from the foot of the hills. The quantity of salt manufactured from them is not only sufficient for the consumption of the vale, but is also used as an article of traffic with the surrounding districts, who barter for it their tobacco, ginger, cloth, and cotton.

The Muneepoorees, or inhabitants of the vale, appear to be the descendants of a Mongol colony, which in ancient times penetrated into this country: they rather resemble the Chinese and the Burmans than the inhabitants of Bengal, being taller, stronger, and possessing a more vigorous mind than the latter. They have made considerable progress in the arts of civilization. They make several kinds of cotton; and many varieties of the rice are remarkable for strength and the brilliancy of their colour, especially a kind of large rice, which sometimes are very richly embossed and exported to Ava. Capt. Pemberton estimates the whole population at about 50,000 souls, and states that the revenue is more than sufficient to meet all the present expenses for agricultural purposes. He ascribes it to the continual inroads of the Burmese before the last war. The language of the Muneepoorees is of a different form from that of Bengali, but the Bengali is generally understood, which is highly esteemed by the prevailing religion.

The mountains which enclose the vale are occupied by different tribes of mountaineers. All the tribes north, west, and east of the vale partake strongly of the characteristic features of the Tartar countenance, and are remarkable for their large and prominent forehead, when compared with the tribes which occupy the southern borders of Muneepoor. The last-mentioned tribes rarely average more than five feet one or two inches in height, and their colour is nearly as dark as that of the Bengalees and Burmans. The Malays and the Malaes of the west are the most numerous. All these tribes are cultivators of the soil, and reside in villages. Among the Burmans the system of cultivation is very generally prevalent; but the other tribes only clear the forest and burn the wood, after which they cultivate the ground until it is exhausted. Tobacco, cotton, ginger, and pepper are universally cultivated; and cloth is manufactured of their own cotton which is highly prized by the inhabitants of the adjoining low countries.

The town of Muneepoor, which is nearly in the centre of the vale, was destroyed in the wars with the Burmese, and has not been rebuilt. The jaga of Muneepoor, who, since the peace of Yandabo (1856), is placed under the protection of the British government, resides in the village of Langthabal, near the union of the rivers Khongba and Eeral. There is no place in this country which carries on any commerce, but it will probably become the entrepot of an extensive trade, as the most easy route by land between Hindostan and China passes through the country of Chinese merchants from Yunnan formerly advanced as far as Muneepoor in their commercial travels. The greatest difficulty which opposes such an extension of trade is the mountainous country between the lowlands of Cashar and the vale. This tract is traversable only from four to seven mountain-ranges within a space of between 80 and 90 miles, and can only be used during the dry season. The country between Muneepoor and Cashar seems to offer fewer obstacles to the transport of merchandise (Pemberton's Report of the Eastern Frontier of British India; Ritter's Erdkunde von Asien, vol. v).

MUNICH (in German, München), the capital of the kingdom of Bavaria, is situated on the left or west bank of the river, from which it is but little removed. The streets of the town are ranged from four to seven mountain-ranges within a space of between 80 and 90 miles, and can only be used during the dry season. The country between Muneepoor and China seems to offer fewer obstacles to the transport of merchandise (Pemberton's Report of the Eastern Frontier of British India; Ritter's Erdkunde von Asien, vol. v).

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The population of Munich and the suburbs was, in 1815, 60,215. In 1824 it amounted to 66,125 without the garrison; being the census for 1827, 52,117. The number of the inhabitants in 1833, was 74,067. Cannabis (1836) says that, according to the latest census, the total population, including the garrison, was 95,536. The latest account we have seen (1836) gives 95,716, of whom 72,017 are Roman Catholics, 925 Lutherans, 697 Calvinists, 92 Jews, and 48 of various other sects.

The number of illegitimate children known to be in Munich is very great, and seems to be increasing, as appears from the following statement:

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
</tr>
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<tbody>
<tr>
<td>1809</td>
<td>1187</td>
</tr>
<tr>
<td>1814</td>
<td>1037</td>
</tr>
<tr>
<td>1818</td>
<td>1029</td>
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</tbody>
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Some account of the last two or three years state the number of illegitimate births as equal to and even exceeding that of the legitimate; but such statements require to be supported by very good evidence.

Munich has numerous scientific and literary institutions, most of which have been imported from Berlin. The University of Munich, founded in 1823, and situated in the quarter of the Palais de Fontaine; it consists of faculties of theology, law, medicine, and philosophy, and is under the direction of the imperial government. The library of this university contains 1,000,000 volumes and 6,000 MSS., the Museum of Natural History, the Brazilian Museum, and the Cabinet of Antiquities, the Chemical Laboratory, the Observa
tery at Bogenhausen, &c. There are two gymnasia for the higher branches of education, the Royal Academy of Arts, the Military Academy, the Veterinary and Medical-Clini-

cal Schools, the seminary for forming teachers, the Central Polytechnic School, and many others. The university was

founded in June, 1472, at Ingolstadt, was transferred in 1800 to Landshut, and in 1827 to Munich. In 1835 it celebrated its 373rd anniversary, on which occasion the new regulations for the studies and discipline were promul-
gated. It has 480 professors, and between 1300 and 1400 students. The uni-
versity is well furnished with all the necessary requisites, and has a library of 105,000 volumes. Besides many private

schools, there are 13 elementary schools for boys and girls, which are attended by above 5000 children; and Sunday-schools, chiefly for servants and work-people. The charitable institutions are numerous, and on a very liberal scale. Such are the general hospital, for women in pregnancy and childbirth, 260 patients;

an asylum for the blind, and for the deaf and dumb; the military lazaretto, the poohouse, the lusatric hospital, the lying-in

hospital, and many others. The house of correction is considered as a model of its kind. It contains a manufac-
tory for the manufacture of the necessary clothing and other articles. In one year the cloth manu-
factured was worth 100,194 florins, and the gain of the 442 prisoners 36,467 florins (10 florins = l. sterling). The suc-
cessful exertions of Count Rumford for the suppression of mendicity at Munich are well known. His establish-
ments for preparing and distributing economical soup still

subsist.

The manufactures of Munich are of many different kinds, chiefly for the consumption of the city and neighbourhood: the articles made are linen, woollen cloth, calicoes, damask, silk, cotton, pottery, furniture, printed calicoes, pictures, engravings,

articles of gold and silver, coaches, excellent mathematical, surgical, optical, and astronomical instruments. Frauen-

hofer's (now Utschneider's) manufactury of astronomical and optical instruments is celebrated throughout Europe.

In 1824 it produced the great telescope for the university of Dorpat, which is 160 Paris inches in length and 10 in
diameter. There are likewise manufactures of leather, stuff, and paper (the latter, established in 1347, is probably the oldest in the world). The extensive brewing industry is distin-
guished.

But all these are on the whole of little importance, and the inhabitants owe their support chiefly to the numerous

public establishments, the government offices, the expen-
diture of the court, and of the numerous landowners who reside in the city. Lithography was invented at Munich by M. Senefelder.

The environs of the city are very pleasant, and contain numerous places of public resort and amusement, which

are very much frequented. The English garden, as it is called on account of the rich variety of the plants, is a famous

place of resort in summer. The river Isar flows through it, and
has a near bridge over it. In the vicinity are the royal country-seats of Nyphenburg and Schleissheim, both of which contain fine picture-galleries. The inhabitants of Munich are very fond of their gardens and parks; they enjoy the open air in the country; and in the winter, besides the carnival, frequent concerts and balls. There are likewise three theatres. Though Munich is so far south, the climate is by no means mild, in consequence of its elevation of 1387 feet above the level of the Adriatic and the vicinity of the mountains of the Tyrol. The changes of

temperature are sudden, and injurious to health.

Within the last twenty years Munich has raised itself to a European city as a seat of art. The most

remarkable distinction she is mainly indebted to the patronage alone, but to the personal enthusiasm of the present

sovereign Ludwig I. of Bavaria, in behalf of art. The number of public buildings erected within that
city and its environs in the last twenty years is comparable to the works of a century or more, as would be deemed ornaments to any of the largest capitals in Europe, is astonishing, when the limited resources of such a small kingdom as Bavaria are taken into the account. Neither is it merely as buildings—as works of architecture alone, that these additions to the capital are worthy monu-
ments of art; for painting and sculpture, fresco, and in

some instances polychrome also, have been unsurpassed employed to embellish them. The interiors of our British

Museum and National Gallery are of quaker-like plainness in comparison with that host of muses, altars, shrines, and cothek—nor have we anything whatever that can even con-

vey an idea of the frescos of the Hof-Arkaden and the

Allerheiligen Kapelle, or of the Ionic polychromy temple at what is called the English Garden. It would in fact require not only a volume, but one copiously illustrated with en-
gravings, to describe at all satisfactorily those edifices above mentioned, or which are still actually in progress. We shall therefore merely give some account of the principal, after first noticing one or two of the more remarkable of the older buildings.

The cathedral, or Frauen-kirche, which was begun by Duke Sigmund in 1486, and completed twenty years after,
is, in a poor and mean style of Gothic, besides being founded on very different principles, and little the work of the school of Dibdin, 'which are of red brick, are frightful at

the extreme; without ornament, without general design, without either meaning or expression of any kind. The

towers cannot be less than 330 feet in height, but the has never been built. The nave is very

able chiefly for its size, although its dimensions are by

means extraordinary, the length being 321 feet English, the greatest breadth 122, and the height to the summit of the

vaulting of the nave 110. Neither does the interior exalt

itself by other interesting features. It was long an

large and sumptuous mausoleum in the middle of the choir, which was erected in 1603-12, by Maximilian I., to the

memory of his great-grandfather the emperor Louis IV. The splendid work of art, which Dibdin declares to have

been done "in the best terms of praise. 'I can recollect nothing," says he, 'to be put in competition with it as a comparatively modern edifice. The interior is, as to Roman architecture, what

that of St. Ouen is to Gothic, although the latter is of

more value. It is indeed the very charm of interior architecture.'

The church of St. Cajetan, a work of the seventeenth century, when it was founded by the electress Adelaida, and completed in 1672, was designed by an Italian architect. The foundation stone was laid in 1669, the church was begun in 1703, and not completed until 1731; it is 120 in its greatest width, being in the form of a cross, and it

has a centre cupola raised on Corinthian columns. The

façade however is of much later date than the rest, not being built until 1767, when it was executed after the de-

struction of the old façade, and the erection of the new one. The church, that it is quite of the Italian school of art, and seems to be a St. Peter's at Rome in miniature—the façade beau-

tiful and striking. Again, 'It is doubtless one of the most

beautiful churches in Bavaria.' But correct as such spec-

ulation is in its meaning, it is in error as to the internal

structure of this church. It is indeed the very charm of

interior architecture.
What is called the Schöne or Reiche Kapelle well deserves its latter epithet, being composed of and filled with the most costly materials; lapis lazuli, jasper, amethysts, gold, ivory, display themselves everywhere, even in the mosaic floor; in short, such is its marvelous gorgeousness that this single apartment is said to have cost Maximilian I. several millions of florins. To attempt to give any idea of the other contents of this palace and its numerous cabinets—of the works in painting, carving, bijouterie, &c. of which it is the repository, is here utterly impossible. Yet, vast as this pile before was, it has been prodigiously extended by two others, namely, the Neue Residenz (new palace), or Königsbau, and the Pestáhu, which may be considered as incorporated with it, and forming together with it one enormous mass of building, as is apparent from the accompanying situation's plan, comprising the whole of that extensive and varied group of architecture extending from the façade of the post-office to the old picture-gallery on the north side of the Hofgarten and that end of Ludwigs Strasse.

The Königsbau (b), begun in 1526, from the designs of the celebrated Leo von Klenze, adjoins the Old Palace at its south-west angle, and forms the north side of the Max-Joseph's Platz, the east and south sides of which are occupied by the theatre and post-office respectively; while the centre is adorned with the splendid bronze monument of the late king Maximilian Joseph, a sitting colossal figure on a double pedestal, whose sides are covered with reliefs, and the lower one has the figure of a lion partly projecting from it at each angle. Of the Place the façade of the Königsbau, 406 feet in length, forms one entire and the longest side, it being somewhat narrower at the other end, or the side occupied by the Postgäbude. Not only the style of the Königsbau, but the design itself, bears a strong resemblance to that of the Palazzo Pitti at Florence; more in fact than is at all desirable, because if noble and imposing, it is also too severe and monotonous, and by no means corresponds with or suggests the more refined style of decoration employed in the interior. The ground-floor and that above have each twenty-three arches in one continued line, of which the centre ones below are larger than the others, and form open entrances to the loggia or carriage vestibule, as in the Strand front of Somerset House. The third story rises above the rest of the elevation, it being only eleven windows in length, and has therefore a balustraded terrace on each side of it, forming the flat roof above the remainder of the building; in which respect the latter resembles the original one at Florence. Closely however as the architect has followed his model for the most part, he has not scrupled to innovate upon it in some respects, since, besides giving a Doric entablature to the round-floor, he has introduced a pediment and an order in the same at each of the upper ones; the first with Greek Corinthian capitals, the other with Roman.

After all, it is the interior of the Königsbau which has been retained for the building of its celebrity; the magnificent and classical taste displayed in its decorations, the extensive employment of fresco-painting and sculpture, and the high talent manifested in them by Schnorr, Zimmermann, Kaulbach, Schwanthaler, and other artists, who have here had ample scope allowed them. Those who visit any particulars respecting them, may be referred to the 'Visits and Sketchees' of Mrs. Jameson, who has spoken of some of the apartments rather at length and with no warmth of admiration. Unfortunately however there are prevailing defects unobserved, or at least unmentioned by her, and which, as far as the architect is concerned, detracts very materially from his praise, and from the merit of all the rest; which is, that there are no beauties of any kind in the plan, consequently nothing has in that respect been sacrificed to architectural effect, notwithstanding which, the arrangement is most inconvenient and faulty. In fact, it is decoration alone, rather than architecture, which here displays itself; whatever praise therefore may be due to Von Klenze for the share he may have had in conceiving, designing, or carrying on in designing much of the embellishment, he certainly has shown neither ability nor study in regard to anything else. The staircase on the east or king's side leads through two state-rooms (whose walls are of scagliola in imitation of luted marbles, with painted friezes, representing respectively the history of Orpheus and subjects from Hesiod's 'Theogony') into a saloon or reception-room 32 feet square, the walls and ceiling of which are adorned with a series of subjects from Homer, painted in fresco by Schnorr. Next in course is the throne room (58 ft. 6 in. by 33 ft. 4 in.), the walls of which are entirely covered with gildings, with the exception of the pilasters and mouldings, and decorated with arabesques in polished and dead gold, while the friezes by Schwanthaler exhibit different subjects from Pindar. The gilding alone of this single room is said to have cost 78,000 florins. Here the rooms on this side may be said to terminate, further progress being interrupted by the majesty's private apartments. The throne room may be approached from the staircase at the north-west angle of the building, which leads to nearly the same number of rooms terminating in the queen's throne-room and drawing-room, the former decorated with encaustic paintings by Kaulbach, of subjects from Homer, in fresco by Schnorr. Another striking oversight in the plan is, that the dining-room (painted by Zimmermann with a series of subjects from Anacreon) is placed immediately behind the king's throne-room, in such a manner that the latter must be made use of as a passage to it. It cannot therefore be denied that the plan is positively bad; and even many more defects in it might be pointed out. The whole indeed seems to be fitted for nothing more than a series of rooms not intended to be occupied, but too for free walks along an unbroken and continuous gallery exhibiting a succession of stances, each appropriated to one set of wall-paintings and other decorations; and as far as concerns embellishment, each is in itself a study. It is impossible to particularize further than we already have done, except merely to mention, that on the upper floor, forming the loftier part of the façade, there are apartments for entertainments, among which is a ball-room, 62 feet by 37, and 27 high, with semicircular ends, and adjoining it a Blossburg, which is 100 ft. long, opening to the terrace over the east end of the building; and the four Nibulingen-scale (on the ground floor, at the west end of the front), so called from Schonn's magnificent fresco, the subjects of which are taken from the celebrated German epic of Nibulingen, by Leid.

The second and later addition to the Residenz, which is also by Klenze, is what is called the Festbau (c); it has a façade towards the Hofgarten (of which it extends along the south side about 500 feet in length) in the Roman style,
with an Ionic colonnade in the centre, upon which are a series of allegorical figures by Schwatthaler. The throne-room is intended to contain eighteen colossal statues of bronze gilt. The Hofgartensaal (or Court-Saal) is about 1100 feet from east to west, and 700 from north to south. The west side may be considered the Palais Royal of Munich, it being lined throughout its whole extent by arcades, beneath which are cafes, the larger portion, which face the Bayreuth, while that distinguished by the name of the Hof-arkadon (k) is decorated with a series of sixteen frescoes by Stürmer, Förster, Zimmermann, Schil- gen, Eberle, and other artists, illustrating as many events in the life of Charlemagne. This natural historical gallery, as it well deserves to be called, was completed and opened to public view, October 5, 1829. In continuation of the Hof-arkadon are the arcades of the bazaar, where, in compartments between the doors and windows, are twenty-eight smaller frescoes representing Italian views, all of which are by Rottmann, who has here shown great ability as a landscape painter. The principal front of the bazaar itself (l), another of Klenze's productions, faces the Odeons-Platz of which it is the west side. It is a simple but tasteful style of Italian architecture, with enriched pannels between the larger arches of the ground-floor, and grouped windows above, consisting of lesser arches, whose archivolts rest upon Corinthian pilasters. Above the portico of the Hof-arkadon extends the old picture gallery (l I), arranged in a suite of rooms over another lengthened arcade. The rooms themselves are not well adapted for their purpose, being lighted by windows on each side; but they are about to be appropriated to the exhibition of casts of ancient monuments, and all the choicest pictures will be deposited in the Pinakothek, as will those from Schleisheim and the other royal collections, the total number of which is not less than nine thou- sand. The whole of the works of art in Munich is quite prodigious, and that not in painting alone, but in sculpture, as is testified by the Glyptotheca alone.

Though by the same architect (Klenze), this last-mentioned museum of sculpture is very different in style from that in the English House, to the Restauration at which it may be said to be purely Greek, yet not so much a copy as a free application of Greek architecture. The building is at a considerable distance from any others, standing with its south or principal front towards a large open space called the Königsplatz. It is not more than about 90 feet square in plan, with a porch in the centre; yet, although in point of magnitude it is by no means remarkable, it is far more imposing in appearance and of larger proportions than many edifices of much more pretension. Although the building is somewhat encomiastic in her account of the Glyptothek, Mrs. Jameson says little of the façade, and that little is incorrect; for she describes it as having a portico of twelve Ionic columns, raised on a flight of steps; whereas the latter cannot properly be so termed, since it consists of three, which form a base along the whole front, like those in some of the ancient Greek temples; while what is said as to the number of the columns, though correct in itself, is apt to lead into a singular error as to their disposition, only eight of the columns being in front and the others behind, in such manner as to form a second range of four columns and four antis, or seven intercolumns, five of which are open, and the one between the two antis at each end closed up or blank. Consequently it may be termed a compound of a portico and loggias, and might be described technically, both clearly and briefly, as consisting of an Ionic octastyle projecting before a tetrasyle in antis. [CIVIL ARCHITECTURE]

Hence there is a richness and intricacy of columnation, and a variety of light and shade, to which none of our por- ticos make any pretension; nor can we refer to anything at all similar, except it be the small but highly picturesque architectural bit at the north-west angle of the Bank of England in its day, as it was sometimes called. This differs very much from that of the Post-Office or that of University College, London; but it is of much lovelier proportions than the latter, and more classical in style and in intercolumniation than the former; besides which, while it rises, like that of University, to the untoward height beyond a greater degree, it is relatively much smaller than that or any other which we possess, for we have not one example in which the portico itself is so small in comparison with the mass to which it is attached. Another circumstance where- in this portico differs far more markedly from anything of our own, is the richness of its cornice and acroteria, and more than all, the splendid display of sculpture in its pediment, which is not filled with sculpture as usual, but consists of groups, and the detached figures and statu- aires, as was the case in the temple of Aegina, and may be seen in the models of its pediments at the British Museum. The composition itself, intended to exhibit the various op- erations of the sculptor, is not to be seen in its whole. This decoration of the front, still remains to be added; and what shall that have been done, this façade will be a fine and consistent example of modern Greek architecture, not so no- able in all its embellishments, but free from any of those insignificant features which too often mar it.

The interior is divided into a series of rooms, of which the two rotundas at the angles of the place are lighted from above, through lanterns and domes; the others by semi-circular or lunette windows above their cornices. The first rooms, beginning with those on the left hand, or west side of the vestibule, are appropriated to Egyptian antiquities and other works of early art; to these succeed the Ægæan Hall, or Hall of frocked pictures, and the Niobiden Saal, last in the south-west angle of the building, reached by a hand-clove of frescoes from the celebrated Corinthe and his pupils. At the north-east, answering to the Niobiden Saal, is the Heroen Saal, from which there is a descent into the Racam- on the same level as the south-east angle of the front, and which is lighted by one of the two windows that side of the building. The space between that and the corresponding part of the race is occupied by what are called the Raca- sal and the Raca- sul. The rooms are large, the most spacious of all, and which, as a consequence of its floor being lower than the general level, is more lofty than the rest. This is far exceeds the other sculpture-rooms in the splendour of its architecture, at least in extent, and it is divided into three compartments, each divided again into two, by an imitation of dorico marble, and the whole a splendid combination of embellishment. An ascent of steps at the farther end leads up into the Saal der forseh- Bildwerke, or hall of coloured marbles, the rotundas at the south-east angle of the front, adjacent to the great hall of modern sculpture, containing those two admirable spec- imens, Canova's Paris and Thorwaldsen's Adonis. The room is the last of the suite, and brings the visitor again to the arcades, and in the space between, the un- ity is kept up throughout, there is also a very pleasant degree of variety, not only as regards colour and decora- tion, but the forms, dimensions of the rooms, their doors, win- dows, and ceilings, and their enriched pavements.

Mr. Hume has written a catalogue of the antiquities which remain upon the ancient sculptures here collected. For a catalogue of the whole collection, we would recommend Schomn's Beschreibung der Glyptothek; and for further information as to the building itself, we refer our readers to the plates of it in Klenze's own Entwürfe, where, besides the plan, and various sections, &c., will be found the principal ornamental details, and several interior views in sections.

The Pinakothek, or Pinacotheca, another, and as we expect the best, of Klenze's works, is a much more impres- sive edifice than the Glyptothek, and altogether different both in its plan and its style of architecture, although it resembles in it being perfectly insulated, and standing on an open situation at no very great distance north-east from the other building, and in the immediate vicinity of the spacious infantry barracks. The first stone was laid April 7th (Raphael's birthday), 1826, by the royal founder him- self, and the building was completed in about two years. The present plan, which is that of the upper floor of the building, is a bridge description of the idea both of the form of the edifice and the arrangement of the galleries.

Although each side of the building presents an architec- tural feature which demands the建筑师's attention, the south may be considered the principal one. The lower consists of a lofty ground-floor, with a series of arched windows within square-headed framings, surmounted by cornices, and resting upon a socle, or rather podium, formed by four courses of large rustics. In the centre of this side
that is beneath the loggie (marked mm in the plan) are eleven such windows on each side of the entrance portico, or rather porch, as it rises no higher than the ground-floor, which consists of four Ionic columns, whose entablature supports a balcony in front of the three central arcades or windows of the loggie above. Along the upper floor the same order is continued throughout in half-columns against the piers of the arches between them, which, although glazed, cannot so well be considered so many separate windows as one connected arcade. This order is crowned by a bold cantilever cornice and anta flx, terminating the elevation; for the attic does not rise immediately over the order, but is set back as far as the hinder wall of the loggie. The projecting ends of the plan assist greatly, not only in giving an air of solidity as well as variety to the general mass, but also greater importance to the lateral façades. On the lower floor, at the west end of the building, are a library, and rooms for collections of prints and drawings. The rest consist of rooms required for the keeper and other officers of the establishment. The upper floor is sufficiently explained by its plan. The larger rooms in the centre are lighted from above; and although the height to the top of their lanterns is rather more than fifty feet, their seemingly unnecessary lofty appearance, while it contributes greatly to architectural importance, and affords ample space for decoration above the cornice of the rooms (of which full advantage has been taken), also causes the light to fall upon the upper part of the walls themselves, the height to the cornice whereas the ceilings spring not being more than twenty-five feet, so that the tops of the highest pictures can never be more than twenty feet from the floor, and must have the light fall upon them. Not only the ceiling but all the decorations of the rooms may be pronounced magnificent, and both the floors and the dados, or lower parts of the walls, are of Bavarian marble, one practical advantage of which last is that no pictures can be hung lower than within three feet of the ground.

In addition to these magnificent rooms, and about 1500 of the choicest pictures in the world, there is what almost anywhere else would be considered a museum and gallery of itself, namely, the Loggie, forming a line of 400 feet in extent, decorated throughout with arabesques on its walls, and with historical frescoes in the lunettes facing the arches, and subjects in each of the small cupolas covering the twenty-five compartments of this corridor. These frescoes, which have all some reference to the history of art, were designed by Cornelius and executed by Zimmermann and others.

The same year in which this Pinacotheca was begun was also distinguished by the commencement of another monument of architecture, which itself would have almost suffered for the same either of Klenze, or his royal patron, namely, the Allerheiligen Kapelle, or Chapel Royal (d), on the east side of the Residenz. In its style however it does not at all resemble any other portion of it, but shows rather a distinct composition. Neither does it all resemble any other works of the same architect, being in the Byzantine or Lombardic fashion (Lombarbico Architecture), and the façade bearing some resemblance in parts to that of San Zeno at Verona. It may be described as about 70 feet wide and as many high, exclusive of the lower portion on each side, covered with a half-gable, and whereby the entire width is increased to about 100 feet. The centre, which is the breadth of the chapel itself, terminates in a flat gable, beneath whose sloping mouldings is a series of small pendent or corbelled arches. These mouldings and arches are returned horizontally at the extremities, all above being ornamented with coarse dividing elements, which are surmounted by small tabernacles serving as pilasters to the angles, as is also the case with the half-gables. Slenderer pilaster shafts, whose carved caps do not reach quite up to the corbelring of the gable, divide the front of the chapel itself into three compartments, the middle and widest of which contains a rich portal, with receding columns and arches, with a bas-relief in the lunette or semicircular tympanum over the square-headed door, and a statue on or above the cornice of the niche which crowns this entrance. Above it is a large circular or wheel-window; and in each of the other compartments are two round-headed windows, one above the other; there is also a single window of the same design, beneath each of the half-gables. With respect to the plan of the interior, although it may be said to be simple in arrangement, it is such that it is exceedingly difficult to describe it verbally with precision: the body of the chapel is 105 feet in length within, exclusive of the apses, or large semi-circular tribune, for the altar, at its western extremity (elevated about three feet above the rest of the pavement), which gives about twenty feet more. This space cannot be described as nave and choir, or either separately, but as consisting of two square compartments of thirty feet, each covered by pendentives and a dome, and separated or united by an intermediate narrower space. On each side these compartments have below three circular-headed arches on columns, opening into what may be properly designated loggias, as side aisles; and above as many windows of the same form, not however immediately over the arches just mentioned, as the clerestory windows over the arches in the nave of a church, but at the back of the upper recesses, or tribunes, corresponding with those below. Consequently the width in the upper part of the building is, in appearance at least, greatly extended, and increased from thirty to nearly sixty feet across. Further than this, description as to plan must not be attempted; and if that has been attended with difficulty, we ought to despair of conveying anything like a distinct notion of the profuse and gorgeous yet solemn decorations of the whole interior: the pavements, walls, arches, pendentives, domes—all are embellished and buttressed in such a manner as to give them the effect of a mosaic, or mural painting, or even marble or mosaic is painting and gold. The columns are of red Salzburg marble, with white bases and gilded capitals; the socle, or bottom of the walls, is also of red marble throughout; and the rest, to the height of the upper loggie, enframed with different coloured marbles or scagliola, of which the prevailing masses are of a greenish hue; the next, veined red or blue; and the smaller surfaces dark-grey or black. The parapet of the recesses over the side-loggie and some intermediate parts are ornamented with a variety of coloured mosaic-like patterns, on a ground of stucco lustre. All the rest is entirely covered with fresco painting, upon a gold ground, after the manner of the mosaic in St. Mark's, Venice, and the cathedral of Monreale near Palermo. The subjects were designed, and chiefly executed, by Professor Hess: those of the first compartment and its cupola are all symbolic of the events of
Old Testament; those of the other, the New; while those introduced in the large intervening arch refer to the connection between the two. Thus what, judging by the three windows as a rather frequent arrangement into equal spaces, without any central cupola, is beautifully ‘motived’ and full of meaning. Many of the figures are colossal; those, for instance, of the Redeemer and the Dey himself, in the large tribune of the principal altar, which would be the fact if one were to be expected, if the gold ground colour of the frescos contributes in no small degree. The building was consecrated and opened for service, Nov. 1st, 1837, within little more than ten years from its foundation.

On the south side of this magnificent chapel is what was formerly the monastery library, and now used as the principal theatre. The present structure, which has a fine Corinthian portico of eight columns, towards the Max-Joseph-Platz, was originally erected by Karl Fischer (died 1829), and rebuilt according to the first design, after being burnt down in 1832. On the south side of the same plat is the new façade of what was formerly the Döring Palace, but is now converted into the post-gebäude, or post-office (Ausbahnturm). In korinthischer, or in what is now termed the Florentine style, of a different character. The length is 290 feet, the whole of which, exclusive of thirty-two feet at each end, is occupied by an open loggia of the ground-floor, with columns of granite. The width of the windows above them, besides two in each of the end compartments, is one on the ground-floor and one above it. All these windows are arched, but enclosed within square architectonic mouldings, and crowned by cornices. There are also windowed divisions of the same description within the loggia, but only three on each side of the entrance, corresponding with the alternate arches. The whole is crowned by a cornice, with an enriched band or narrow frieze beneath it, the pattern of which is white upon a dark ground. There are niches in the thick building, but they are not exhibits, to a certain extent, the application of polychormy, the general surface being coloured of a greenish hue, and that of the interior of the loggia of reddish-brown; while the rusticated columns, arch-vaults of the arches, window-lights, &c., are left white. On the west side of the Odeon-Platz (D), where, in front of the bazaar, is an obelisk of cast metal, ninety-six feet high, are the Odeon (m) and Leuchtenberg Palace (n), whose opposite fronts to one another form the present position of its own a handsome and uniform façades in the Italian style, of two stories above the ground-floor, of eleven windows in each, and with a small Doric portico, or entrance porch, of four columns. The concert hall, or building, is the principal building of the Odeon, is 124 feet by 71, and 50 high.

Northwards from the Odeon-Platz runs the Ludwig-Strasse (o), by far the handomest and most regular street in Munich, having on its east side the Kriegs-ministerium, the new public library, and new Ludwigs Kirche; on its western side, the Maximilians-Palast, Blind Institute, &c., and terminating in the spacious quadrangle of the new Georgium, or university buildings. We shall speak of these as they occur in the course from the Odeon-Platz to the other extremity of the street, therefore first of the palace of Duke Maximilian, a large insulated structure in the Italian style, of about 200 by 300 feet. The façade towards the Ludwig-Strasse (200 feet) somewhat resembles that of the Königsbau, although it is far less severe in character and more varied in its features. The ground-floor has three large arched doors in the centre, between four insulated Doric columns supporting a balcony in front of the three centre windows above. On each side of this portal are five windows, the arches of the Postgebäude and lower floor of the Pinnekaule, are round-headed within square dressings. Those of both the upper floors are square-headed, the first with pedestals, the second without; the upper story of the principal royal is enriched, the recessed floors and rich ceilings, are magnificent; the walls of the large reception-room, or first saloon, are adorned with six large compartments in fresco by Langer, representing mythological subjects. The bathroom, sixty by forty feet, and thirty-five high, is properly not insulated.

The next building, almost immediately opposite the preceding, is the Kriegs-ministerium, or war-office, and is the work of the same architect (Klinse). The façade, 248 feet in length, is also in the Florentine style, and consists of a centralt portico of twenty-four columns with doors on either side, two rows of windows on the ground-floor, and two stories above it, with two wings or lateral divisions, five windows in width, and a story lower; at the external angles and those of the centre are courtes of bold massive rustics, and the windows, which are of great breadth, are adorned with arches of large proportions, set on the upper floors, although the wall itself is left plain. The spandrels, or spaces between the arch-stones, of the seven arcades of the ground-floor are entirely filled up with multi-figured paintings, very ornamental, and of the most unusual richness and character to the whole. The building stands at the angle of the Schonfelds Strasse, towards where its south side presents a far more extensive and varied façade (363 feet), uniform as to general style, but different to the colossal columns and arched windows of two stories, and eight arched windows in the third story. Each of the upper floors has twenty-five arched windows and the whole is crowned with a cornice of very peculiar design.

The adjoining public buildings are all by Gärtner, and the first, immediately after passing the Kriegs-ministerium, is the new public library and archive, whose lofty façade (495 feet in length) is a compound of the Florentine and Corinthian orders. It forms a massive rustic- ed basement, 44 feet high, with three windows on each side. Each of the upper floors has twenty-five arched windows and the whole is crowned with a cornice of very peculiar design.

The Ludwigs Kirche, which is also in the Lombard or round-arch style, but treated with considerable originality, is no less remarkable for the beauty of its execution that for the richness of its design. The front, somewhat more than 100 feet to the summit of the gallery, has two towers of decoration on either side, with the addition of three, the central one, or that corresponding with the nave within, being an open vestibule, with arches resting upon delicate sculptured columns. Immediately over this porch are five niches with colossal statues of Christ and the four Evangelists, and crowned with arches decorated with arabesques after the mode of Giott. Above these is a large rose window, and then the gallery ornamented with foliage and open work, with a cross on its summit, and colossal statues of St. Peter and St. Paul below. At either side of the entrance is its own a double, the principal floor of the Odeon, is 124 feet by 71, and 50 high.

Nearly opposite this church is the Blind Institute, called the Damenstifts-gebäude, two more of those extensive masses of building which give so much grandeur to this street. The former of these is upwards of 220 and the other 400 feet in length; both are by Gärtner, and both somewhat similar in style to the Public Libraries. The same may be said of the Georgium, or new university buildings, at the northern extremity of this noble street where they form a large quadrangle, into which the street itself runs.

The church of St. Maria Hilf, in the Au suburb, the front of which was laid 28th November, 1831, is another noble architectural work, yet quite different in character from any of the preceding, being in the pointed or old German style. The building, with its four large windows, five in the west front, and three in its own a large rose window. The tower is upwards of 250 feet in height, and the upper part of it consists of ornamental open work, and the windows of the nave are enriched with statues and niches. The general height of the main body of this church is nearly 80 feet high. Independent of its architecture, this church deserves notice on account of some of the most splendid pictorial paintings by A. Hermiller and others, which show the high degree of perfection to which the art of art has been brought in Bavaria. These paintings were executed chiefly from the designs of
Ruben and Schraudolf, and under the inspection of Gartner, although not the latter, but Ohmiller (who died April 22nd, 1839) was the architect of the building.

The new Basilica of St. Boniface, by Ziebland, now in progress, promises, when completed—which it is expected to be in 1842—to surpass every other religious edifice in the city, hardly excepting the Allerheiligen Kapelle itself. Like the building, it is in the Byzantine or Lombard taste, both as to architecture and decoration; but is in many respects much more extensive in scale, being 250 feet long and 120 feet wide: it is divided into a nave and two aisles on each side of it, by sixty-four marble columns of a greenish tint, disposed in four rows. Of the columns, twelve, the width is 51 feet and the height 70; of the others, the width 15 feet and the height 40 feet. The pavement is of marble mosaic, and the roof of open timber work, the beams of which are not only carved, but richly decorated with painting and gilding, and the ceiling between them above, with gold stars. The walls of the outer side aisles are stuccoed with scagliola in imitation of different coloured marbles, but those of the other parts of the building will be painted in fresco by Hess, with subjects from the history of St. Boniface. In the rear of this magnificent church (the front of which, towards the Karl-strasse, has a portico of eight Corinthian columns with three bronze doors) will be another building attached to it, intended as a theological seminary, directly facing the Glyptotheca, which will form a corresponding piece of architecture, on the south side of the Königs Platz.

Several other buildings and public monuments might be mentioned, but however deserving of notice in themselves, they are only of secondary rank. What has been accomplished at Munich within little more than twenty years, reeking from the foundation of the Glyptotheca, constitutes an epoch in the history of modern art, not only as regards architecture and sculpture, but also fresco and glass painting. Instead of therefore being at all an hyperbole, the title of the German Athens does no more than simply characterise a city that is, as it were, one vast museum of architecture and fresco-painting. In fact, on comparing a map of London with that of Munich, the latter, though so very much smaller a city, strikes the eye by the number of its public buildings and the great space which they occupy. The plan of Munich, published in the series of maps by the Society for the Diffusion of Useful Knowledge, will be useful to those who take any interest in the present article. This plan does not however show the situation of all the buildings here mentioned, nor the situation of any of those beyond the Kriegs-ministerium in the Ludwigs Strasse, nor the Basilica of St. Boniface. But two very conspicuous features in it suggest the propriety of mentioning the spacious new Friedhof, or public cemetery, and the beautiful park near the north-east angle of the Hofgarten and Picture Gallery, called the English Garden. The latter is laid out with plantations, intersected by streams of water, and embellished with statues and various ornamental buildings, the most remarkable of which is the circular monopteros of twelve Ionic columns, erected in 1833, as a monument of temple in honour of the elector Karl Theodor, the founder of the garden; nor is it so remarkable on account of its design, as for exhibiting the first modern application of Greek architectural polychromy, the capitals of the columns and the mouldings of the entablature being enriched with various colours painted in encaustic. The other spot, the Père la Chaise of Munich, has, at its southern extremity, an extensive range of building consisting of a chapel and range of arcades, disposed in the form of a crescent about 550 feet in diameter.

The following architectural synopsis, on the plan of that accompanying the article London, will serve as a general recapitulation, and facilitate reference with respect to the architects and the dates of the buildings, as far as it has been possible to ascertain the latter correctly.

N.B. The measurements are reduced to English feet.

| Table of the Principal Buildings, &c. |

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MUNICIPium, a term which properly denotes, according to its etymology (murus and capio), the capacity of enjoying rights with the liability to duties. It is however used in the antient Roman law to express a class or body, the members of which are called municipes.

Municipium, as a collective name for a number of individuals, had different significations at different periods of Roman history. In its oldest sense, it signified those inhabitants of a place, to whom, in common with the Roman state, by which the citizens of such towns, though not Roman citizens, enjoyed, when at Rome, all the privileges of Roman citizens, except the suffrage and the eligibility to the honours of the state (magistratus, &c.), which were confined to the Roman citizens, but not to the Roman municipes. The Fundani, Formiani, Cumani, Accrani, Lanuvini, and Tusculani are mentioned as examples. A Roman jurist (Servius, the son) says that municipes originally signified those who, such as others, had then the same state, their own state remaining perfectly distinct from and unconnected with the Roman state, and who were not allowed to attain to the dignities of the Roman state. (Festus Epit., Municipium.) This first definition, which is as precise as a short one can be, still leaves room for many questions. Niebuhr is of opinion that the author of the first definition is mistaken in saying that such municipes were not Roman citizens; but his reasons for disputing the accuracy of the definition do not seem conclusive.

A second class of municipes is included in those who, whether born of part or or was blended with the Roman state, as was the case with the inhabitants of Caere, Aricia, and Anagnia. (Festus, Municipium.) But this would appear to be a misapplication or improper application of a general term to this class of individuals. It was handed over those that ceased to have a State of their own, but were incorporated with the Roman state on such terms as the latter chose to grant.

A third class is defined (but the definition is somewhat obscure to compare with those towns which received the Roman citizenship, and at the same time became municipes: Tibur, Prænesta, and other towns are mentioned as examples. Niebuhr observes that the places mentioned in this third class were either all antient municipes or Italy, such as the Julian Law, or by those which followed and gave a wider application, became municipes in the later general sense. It seems to be clear from this definition that municipium must here be understood not in the sense which it has in the first definition, but in the latter sense of a town called a municipium.

For the first part of the definition gives to the municipes of this class the full Roman citizenship; and the second part adds (what might very well have been understood without the addition) that the towns included in the first class, which were not the Roman administration. Those towns in effect became integral parts of the Roman state, having before been separate, and as consequence their local administration, which must still have subsisted, became afterwards to the Roman state, instead of being independent of it. Such towns were the municipia of the Imperial period. The definition of municipes by Paulus is, 'those who are natives of the same municipium.' Ulpian, who also (Dig. 50, tit. i., s. 1) gives the same definition of municipes, refers to the original signification of the term: 'muneris participes recepti in civitate ut munera nobis acceperint.' He adds: 'but now, by an abuse of the term, municipes is the name given to the citizens of any particular town, as for example, a Campanian. His father and mother is therefore a Campanian: if his mother be of Puteoli, he is still a Campanian municeps, unless by some special privilege (privilegium) he is a municeps of his mother's city, a favour which is granted to some cities.'

It appears then that the municipium, as an antient Roman institution, may be defined generally as the communication of the rights of Roman citizens (and as a consequence, their liabilities) to Italian towns by treaty or agreement, with the exception of the Indians and Greeks. It is easy to conceive that the rights thus conferred might be either the whole rights of Roman citizenship or only part of such rights. After the freedom of the city was extended to all Italy, and subsequently the whole of Italy except the islands became a municipium, though the origin of their connection with the Roman state was very different. [COLONY.] Thus, under the emperors, all the inhabitants of the same town, whether it was a colony or a municipium, might with propriety be called municipes, notwithstanding the criticism of Gellius (xvi. 13).

Under the emperors we find various towns in the provinces, as well as in Italy, which were erected as municipia. The members of these towns were Roman citizens, and administered the affairs of their own community, subject to the general laws by which all Roman citizens were bound. A municipium had a corporate character, and its council, or senate, held its own sessions; and, as the latter were in the city, were comprehended. It would appear as if the decretures were sometimes considered as the corporate body representing the municipium. The municipium could sue and be sued, and hold property. The decretures were the senate or council of a municipium; and the two chief magistrates were called duumviri. The municipia had also other local magistrates; and many of them had a mint, as we see from their extant coins. Thus the latter municipia of the empire were in all but name small corporate towns, of which they were undoubtedly the origin and the type.

It follows from what has been said, that an Italian town was originally called municipium, or the inhabitants municipes, solely with reference to the participation of the towns- men in the privileges of Roman citizens, and that under the republic such municipia were in all respects independent of Roman law in their internal organization. The municipes were the same as the coloniae, and the latter were erected under the emperors improperly so called, inasmuch as the inhabitants of these towns became or were Roman citizens, and in all respects subject to Roman law.

The original signification of municipium in the old Romish law has been somewhat confused; it is defined (invol. ii.) in an instructive chapter which contains all the necessary references. It is not easy however to ascent to all this writer's opinions.

MUNIMEN. This word is a derivation from munus, which signifies 'I defend,' and originally designated those writings in which are recorded the transactions of former times, out of which existing relations, in respect of political rights, social rights, or property, arise. Hence, by shewing their possession of these by them who have rightfully inherited them.

But munimenta has, in the course of ages, acquired a somewhat different sense; and from betokening the documents themselves, it is sometimes used to denote the deplor ariety of these documents.

Still, by those who sit at speaking with precision, it denotes the written documents themselves. It is also rarely used in reference to any small collection of such documents, or when the interest to be defended is small. In such cases the words evidence or evidence of evidence, which means however precisely the same thing, only on a smaller scale. But when we speak of the documents by which the rights of a person are defended in the courts of justice, or by which the property, whether movable or mortmain or ecclesiastical privileges, then the word of greater dignity, munimenta, is often used; and still more when the evidences are spoken of which are shown of which show the right of the crown or any kingdom to its possessions, or the right of crown or people as sustained by written documents.

Private collections of evidences rarely contain anything that is of earlier date than the reign of Edward I. The public muniments of the English nation are believed to have been first kept by any other nation, both in number, preservation, and the remoteness of the period at which series or classes begin. Yet there is little previous to the reign of Richard I. There is no series commencing before that reign, except that of the Pipe Rolls, the Great Roll of the Eschequer, in which were entered, year by year, the receipts of the crown, and many of its payments. This series begins in the second year of King Henry II., and from that remote period to the year 1835, when this mode of keeping them was discontinued. The muniments of date are in the whole series. For the times previous to the beginning of that reign, one roll, which belongs to the reign of Henry L only exists of this series; and the only other record of muniments in manuscript which are called 'Domesday Book,' a survey of nearly the whole of the kingdom, made by William the Conqueror, a book which is still sometimes appealed to in determining rights of the crown, or of a subject against the crown, or of one subject against another.
For the particular classes of public mementos, their depositories, presentation, and other information concerning them, see Records, Public.

MUNSTER, one of the four provinces into which Ireland is divided. It comprehends the southern part of the island, and is bounded on the west, south, and south-east by the Atlantic Ocean; on the north and north-east it is contiguous with the provinces of Connaught and Leinster. It is comprehended between 51° 25′ and 53° 12′ N. lat., and 6° 56′ and 10° 22′ W. long. Its general form is irregular: the greatest length is from the banks of the Shannon below Banagher to Mizen Head, 144 miles; the greatest breadth, at right angles to the length, is from Black Head, in Galway Bay, to the mouth of Waterford Harbour, 119 miles. The area is estimated at 5,210,472 statute acres, or 8,141 square miles: the population at different periods has been as follows, giving, in 1831 273 or 274 to a square mile.

Population.

<table>
<thead>
<tr>
<th>Date</th>
<th>How ascertained.</th>
<th>Inhabited Houses.</th>
<th>Total Number of Families</th>
<th>Families chiefs employed in Agriculture.</th>
<th>Families employed in the pasture, &amp;c.</th>
<th>Families not included in the preceding classes.</th>
<th>Total.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1792</td>
<td>Estimated by Dr. Beaumont</td>
<td>184,546</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,086,080</td>
</tr>
<tr>
<td>1821</td>
<td>Under Act 55 Geo. III. c. 120</td>
<td>306,995</td>
<td>337,366</td>
<td></td>
<td></td>
<td></td>
<td>1,573,493</td>
</tr>
<tr>
<td>1831</td>
<td>Under Act 1 Will. IV. c. 19</td>
<td>330,444</td>
<td>376,051</td>
<td></td>
<td></td>
<td></td>
<td>1,903,411</td>
</tr>
</tbody>
</table>

The general character of the surface is mountainous. The north-western extremity beyond the Shannon is overspread by an irregular group of hills or mountains, of which Slievy or Slievemore, Brandon, and Inchinoin, the principal, form part. Two ranges of mountains extend nearly across the province from east to west, enclosing the long narrow basin of the Blackwater. The northern range includes the Bogs of Companagh, the chief height, and Galtee Mountains (3,000 feet high); Ballibrough Mountains; Slievy Mash, or Sliebbhmish, near Tralee; and at the extreme west, Mount Brandon (3,150 feet high), and the heights about Dingle: the southern range includes the Bogs of Noghr and Bregagh Mountains; Magillycuddy's (or Magillycuddy's) Reeks (3,405 feet high) and the other mountains of Killarney; and, in the extreme west, the mountains of Iveragh and Dunkerron. The Shien and Glanoriger Mountain, and others which sound to the westward. The western side of the province is the most elevated; and the principal streams (except the Shannon) flow between the mountain ranges from west to east.

The mountainous character of the province, and the general direction of the mountain-chains from east to west (or, more accurately, from east-north to west-south-west), determine the outline of the coast. From the mouth of Waterford Harbour, the boundary of Munster and Leinster; to Baltimore, the coast runs west-south-west, marked out by the small bays, with intervening headlands, and by the sastrities of several rivers, most of which turn rather abruptly to the south a little above their outfall. These sastrities form the excellent harbours of Waterford, Dun- ganstown, and of the native country: the western extremity of this line of coast is Cape Clear Island, which takes its name from a well-known promontory, the last point of British ground usually seen by vessels in their departure for America, and the first on their return.

The south-western and western coasts from Cape Clear are marked by a succession of bluff promontories, formed by the extremities of the mountain ranges, with the deep intervening bays of Dunmanus, Bantry, Kenmare, and Dingle. From Dunmore Head, which forms the northern extremity of Dingle Bay, the coast stretches away to the north-east, retaining its irregular and broken outline. It is marked by the bay of Tralee and the sastrity of the Shannon.

The chief rivers are the Suir, the Blackwater, the Lee, and the Bandon, all of which, except the Suir, in the upper part of its course, and the others just above their outfall, have a general direction from west to east. There are not many lakes, nor any of great extent; the principal are those of Killarney, Killaroe, or Killaroe, Killiloe, Waterford, Lismore, Cork, Ross, Cloyne, Limerick, Ardferg, and Aghadoss, several of which are already united, or are to be so at the decease of the present holders, by virtue of the late act for regulating the dioceses of the Irish Established Church.

This district, at an early period, consisted of two districts; one of these, which was sometimes designated South Munster, and included the district of Desmond, and province of Cork; the other was the province of Thomond, or Burren, which is the southern part of the province (Finglas's Breveit of Ireland) and is now divided into the five counties of Waterford, Tipperary, Cork, Kerry, and Limerick. The other part was north-west of the Shannon (Finglas's Breveit), and comprehended the present county of Clare. This part was antiently known as Thomond, North Munster, or O'Byen's Country.

The kingdom of Munster existed at an early period of Irish history and tradition. In the seventh century Brian, surnamed Borromeo or Ben, acquired so high a reputation for virtue and wisdom as to be enabled to usurp the sovereignty of Ireland antecedently held by the king of Meath. [Meath.] Brian fell at Clontarf, fighting against the Danes and such of the Irish as supported them. The sovereignty of Ireland (which was indeed little more than nominal) did not remain in his family, which at the time of the English invasion seems to have retained only Thomond, the sept or family of MacArthy or MacCarty having acquired the chief dominion in Desmond. It was Edward I, and after him Roderic O'Connor, king of Connaught and paramount of the Irish princes, who was recognised by these chieftains. At an early period of the contest between the Anglo-Normans and the insular Irish, the south-west province of Munster formed part of the invaders (A.D. 1171); and when Henry II. in person landed at Waterford, the prince of Desmond made his submission (A.D. 1172), and was admitted to retain his principality on condition of homage and tribute. Waterford had been previously taken by storm, and Cork and Limerick were occupied; and the inferior chieftains vied with the superior in the readiness of their submission. Henry's war had obliged him to weaken his army in Ireland, the natives rose in rebellion, and among them the princes of Thomond and Desmond. When the English rallied, Thomond was the first attacked; Limerick (which appears to have belonged to this principality) was taken (A.D. 1174 or 1175), and O'Brien, after a stout resistance, was obliged to submit (A.D. 1176). The province being obliged to come to terms with Cogan and Fia Stephen, two Norman adventurers, who acquired large possessions round Cork. Dissension among the natives themselves, or between them and the new comers, continued however for a long time to distract the province. South Munster was divided into counties, and was present, in the reign of Henry VIII., when Finglas drew up his 'Breveit'; but Thomond continued till after that time under its native princes. The chief family in the Anglo-Norman race who settled in Munster were the FitzTheobalds, lords of Desmond, the Butlers earls of Ormond, the Geraldines, Barrys, Roches, and Cogans.

In the time of Elizabeth, an attempt was made to establish an English colony in the province, on the land of the earl of Desmond and his adherents, attained for treason, but the attempt met with but little success. In this period
but his cruelty and debauchery have marked his character as one of the worst princes of the Ottomans. (Rycault, Turkish History.)

Muraenidae, or Anguillidae, a family of fishes belonging to the section of the Malaconopterygiid called Anguilla. There are several species of this genus; the eels have a cylindrical body, covered by a thick and soft skin in which the scales are deeply imbedded and scarcely apparent. They have no cilia, but nearly all are furnished with a natatory bladder. In the first group, which constitutes the great genus Murinae of the order, the opercula are enveloped in the skin; the Gill-opening is small, and is situated far back, an arrangement which, by more completely protecting the branchia, permits these fishes to live a long time out of water. They are no more fresh-water.

The species of the genus Anguilla are distinguished by the possession of pectoral fins; the dorsal, anal, and caudal fins are united. The dorsal commences at a considerable distance behind the pectorals; the upper jaw is shorter than the lower; the gill openings by a small aperture on each side, situated beneath the pectoral fin. Three (if not four) species of Anguilla, or eel, are found in this country—the sharp-nosed eel, the broad-nosed eel, and the snig.

The sharp-nosed eel (Anguilla anguilla, Yarrell) may be distinguished from the other large eels by the perpendicularly narrow and sharp muzzle. The head is compressed, the top convex, depressed as it slopes forwards; the eyes small, placed immediately over the angle of the mouth; the upper jaw wider than the lower, the gill-opening by a small aperture on each side, beneath the pectoral fin; the scales on the body rather small; the dorsal fin extending over more than two-thirds of the whole length of the fish; the anal fin occupying more than half of the whole length; both these fins formed into a narrow high margin, at the end; the lower jaw the longest of the nostrils with two openings on each side, one tubular, the other a single orifice; both jaws furnished with a narrow band of small teeth; grope small; various mucous pores about the mouth and others; the gill opening, which is vast, attains immediately before and rather below the origin of the pectoral fin, the scales on the body rather small; the dorsal fin extending over more than two-thirds of the whole length of the fish; the anal fin occupying more than half of the whole length; both these fins formed into a narrow high margin, at the end; and one elongated lateral opening on each side communicating with the cavity of the abdomen, as in other bony fishes. Colour of the upper surface of head and body very dark olive-green; under surface silvery; the colouring however varies somewhat according to the nature of the water in which the animal lives, as in other fishes; those found in clear streams the colours are bright, whilst those found in muddy waters are dusky.

This species is common in streams, lakes, &c., throughout the country. The eel is said to be averse to cold, and in the autumn migrates down the rivers to reach the warm brackish water, where it passes the winter and deposits its spawn. In the spring, when the young are to be seen, their way up the streams, sometimes in immense numbers. Such a desire do the young eels (about three inches in length) appear to have to go up the stream, that their course is not easily stopped. The writer of this has seen a flood-gate, six or seven feet in height, in parts covered with them, and has observed many succeed in passing over this perpendicular barrier, by availing themselves of the trickling water which escaped through the crevices of the wood-work.

The eels which live in ponds do not therefore migrate, bury themselves in the mud during the winter months. In these cases however they will sometimes leave the water, and, availing themselves of the wet grass during the day, travel considerable distances, in order to reach a stream. They are known also to leave certain ponds, the water of which does not suit them, and to make their way over land to other and more favourable situations.

The question as to whether the eel be an oviparous or viviparous animal has been much disputed. Many have imagined that it brought forth its young alive, but there appears to be better grounds for the belief that it is oviparous.

The London market," Mr. Yarrell informs us, "is principally supplied from Holland by Dutch fishermen. There are several species; the common eel of the Dutch fisheries, and their vessels are built with a capacious well, in which large quantities of eels are preserved alive till wanted. One or more of these vessels may be constantly seen lying off Bil-linggate; the others go to Holland for fresh supplies, each bringing a cargo of 15,000 to 20,000 pounds weight of live eels, for which the Dutch merchant pays a duty of 18s. per cargo, for his permission to sell.

The broad-nosed eel (Anguilla labrata, Yarrell) is an uncommon species, inhabiting the same waters as the sharp-nosed species, from which it is readily distinguished by the comparatively greater breadth of its head, and the situation of the eye, which is placed in advance of the angle of the mouth. The body is moreover thicker in proportion to its length, the number of gills, and the distance between the pectoral fins, stronger; the dorsal fin commences farther back; the dorsal and anal fins are much deeper and thicker. The number of vertebrae is 115.

The slender- or mediterranea, Yarrell is in some respects intermediate between the common or sharp-nosed species and the broad-nosed eel. The general colour above olive-green, and beneath yellowish-white. In the comparison breadth of the nose, the snig is intermediate in reference to the sharp and broad nosed eel, but rather more resembles that with the sharp nose," says Mr. Yarrell; "it has a slight but elongated depression extending from the anterior edge of the upper jaw to the upper and back part of the head. The tubular openings of the nostrils are longer, and the snig has a much larger and more prominent eye. Both species have described, but their anatomy is not more perfect. Both species have described, small and sharp teeth, and the pectoral fins are prolonged in a more decided manner, the only marked difference between them the slender eel.

But the distinguishing characters above pointed out there is a snig, or eel, the most important of which perhaps is the difference observable in the form of the vertebrae—see Yarrell's History of British Fishes, where the skulls and adjoining vertebrae of these three species are figured.

The conger eel (Anguilla congerea, Cuvier) and Conger anguila is easily distinguished from the fresh-water species by the upper jaw being the longest, and the dorsal fin commencing much nearer the head—characters which have induced Cuvier to separate it from these as a separate species.

This marine species is common on many parts of our coast, and is indeed found in most of the European seas. It attains a very large size, being often five or six feet in length and occasionally as much as ten feet or upwards; the thickness bearing about the same proportion to the length as in the common eel. The upper parts of the body are brownish and the under parts dirty-white; dorsal and anal fins whitish margined with deep bluish-black; the lateral line is brownish and the edges white.

In the Mediterranean another species of conger (the Anguilla myrus) is found. It resembles the common species, but is of a smaller size, and is known by having spots on the snout, a band across the occiput, and two rows of spots on the back. It is caught and is seen marked with a white cross.

Nearly allied to Anguilla, is the genus Ophichthus of Lacépède, the species of which differ from the true eels by their dorsal and anal fins terminating before they reach the end of the tail, which has no fin. The posterior operculum of the nostrils opens on the edge of the upper lip.

One species inhabits the Mediterranean, the Ophichthus serpenne; it is about five or six feet in length and about three inches in thickness, of a brown colour above and a yellow below, generally seen at night, and is supposed to be the same species as a yellow eel found in the rivers of Asia Minor (Ophiceus panthera). It has been noticed before that the genus Anguilla, the eels, which are no pectorals; their branchial openings are small; the opercula and branchiostegi rays are connected by the skin.

Many of the species of this genus are beautifully marked or spotted; several are found in the Mediterranean, and one species, the Murana Helena, L., has been found on the coast of Africa. The beautiful eels of this genus are much admired.

Several other genera belonging to the present family, among which the genus Gymnotus (which contains the electric eel) may be mentioned, are noticed under their proper headings, because these genera are not much known. HILDEBRAND, JOACHIM, one of the most celebrated of the French imperial marshals, and by Napoleon created king of Naples, was born at a village in Provence, in 1767. He was a country innkeeper, who had been a sword u
Governo as this Father Istituzioni self-examination reproaches time Annali the I hut Dissertazioni vols. (beau Rerum sartaies. srted he lingdom, ivas if wordsman kingdom, 1750; he wrote by being invested and having been unbreak- ing out of the Revolution, when he obtained his enrolment into the constitutional guard of Louis XVI, from which he passed as sub-lieutenant into a regiment of chasseurs. During the reign of himself an enthusiastic champion of liberty and equality, and rose rapidly to the rank of colonel; but his Jacobin predilections did not prevent him from making himself useful to Bonaparte in the affair of the Sections in 1793; and he was rewarded by being invested with the grand-ducal title of the future emperor in his glorious Italian campaign of 1796.

From that hour the fortunes of Murat closely followed those of his patron. The fiery valour, which the "handsome swordsmen" (beau sabreur), as he was called, showed in a hundred fights, the splendid though somewhat fantastic costume in which he delighted to figure, and the love of daring achievement which threw an air of antient romance over all his actions, invested him, in the eyes of his admiring followers, with a halo of the glorification Rome, and he was the most promising and the enterprising talents in the field obtained for him the greater distinction, in the cool judgment of Napoleon himself, of "the best cavalry officer in Europe." He com- manding that arm in the campaigns of Egypt, Italy, Austria, and Prussia, in the service of the house of Tena, Eylau, and Friedland, his services were brilliantly conspicuous.

After the Egyptian campaign, he obtained the hand of Carolina, youngest sister of Napoleon; and in 1806 was raised to the dignity of a sovereign prince, and recog- nized by the continental powers as grand-duc of Berg and Cleves.

In 1808 he commanded the French army in Napoleon's unreeled invasion of Spain; from which country he was recalled and sent to Naples to ascend the throne of that kingdom, vacated by the elevation of Joseph Bonaparte to the Spanish crown. In 1812 he accompanied Napoleon on the expedition to Russia, in the command of the cavalry of the grand army—the most numerous and splendid body of horse perhaps which the world has ever seen arrayed in the ages of civilised warfare. During the advance to Moscow, Murat displayed his accustomed prodigies of personal valour; but it was the stroke of the retreat that fated him; reproaches heaped upon Napoleon and himself aggravated the recol- lection of some former slights and wrongs of which he seemed that his brother-in-law had been guilty to him; and though he again sought the imperial favour in 1813, finally, after the disastrous battle of Leipzig, de- parted his waning fortunes, and allied himself with his enemies. By this defection he forfeited a time saved his own throne; but the delay of the Congress of Vienna to recog- nize his regal title alarmed his suspicions, and hurried him, as the re-appearance of Napoleon in France, in 1815, into ostilities against the allied powers. In an attempt to in- troduce the Italians to arm for their national independence, he ignobly failed; he was compelled to flee from his kingdom by the Secondly landing in again on the coast of Cala- ria with a few followers, he was captured and shot by the force of a Neapolitan court-martial. As a sovereign fust had shown himself mild, liberal, and merciful; as a military leader in his own service, he was the "best cavalry officer in Europe" was assuredly no general; as a man he had many warm and noble feelings; ut of fixed principle, either in private or public life, he was utterly destitute.

Among Murat’s other works we must mention—1, ‘Governo politico, medic, ed ecclesiastico della Peste,’ 1720, written on the occasion of the plague of Marseille, and showing the methods to be counteracted it. 2, ‘Difetti della Giurisdizione,’ 1748, in which he attacks the rolo of judicial forms in most countries. 3, ‘Moralè Filosofia,’ 1735. 4, ‘Istituzioni di pubblica felicità,’ 1745. 5, ‘Della regolata divisione dei Feudi.’ In this last treatise, Muratori, who, though by nature pious, was enlightened to be superstitious, combated several popular devotional practices which were merely external, and recommended in preference internal habits of self-examination and prayer. His successor, the pope Benedict XIV, wrote to the cardinal Muratori in answer, and ask for his judgment on the matter of contention. That enlightened pontiff wrote him a kind letter in answer, telling him that ‘those passages in his works which were not found at all perfect to Rome did not touch either the dogma or the discipline of the church; but that had they been written by any other person the Roman congregation of the Index would have forbidden them; which however had not been
The hermit of Muratori is clearly seen in his works. Modest though learned, indefatigable, intent upon the improvement of mankind, charitable and tolerant, sincerely religious and strictly moral, he was one of the most distin-
guished and yet most unobtrusive among the learned of Italy.

He was rector of the parish of Pomposa at Modena, but his literary occupations did not make him neglect his flock: he assisted his parishioners with his advice and his money; founded several charitable institutions under and relighted the parish church. He died at Modena, in 1750. His minor works were collected and published at Arezzo, in 1757, in 19 vols. 4to. His tomb is in the church of S. Agostino at Mo-
dena, near that of his illustrious countryman Sigonio.

MURAVIEV, MIKAEL NIKITYITCH, a Russian author of some distinction, was born at Smolensk, October 15-27, 1737. His literary requirements and talents obtained for him the notice of Catherine the Great, by whom he was appointed, in 1765, preceptor to the young grand-
dukes Alexander (afterwards Alexander I.) and Constan-
tine; and it was for the instruction of his imperial pupils that he wrote the greater portion of his prose works, con-
sidered, with respect to moral necessity, by which are meant 'Epochs of the Russian Empire,' and 'Geographical Sketches of North and South Russia.' His 'Dialogues of the Dead' are also intended to characterise the more re-
mote periods of Russian history and are the chief work of a
together in a different spirit from those of Lucian, Ponte-
nelle, and their imitators, who employed that form of com-
position chiefly as the vehicle of satire. One of his most
admired productions is his 'Oskol,' which describes the mar-
ches of the northern nations against Constantinople, and which, though in itself a mere fragment, proves its author
to have possessed talents capable of giving his countrymen
a prose epic. To these productions, all of which are distin-
guished by great correctness and energy of style, and by
less by the moral feeling which pervades them, may be added his 'Letters of Emilius,' and a series of reflections
or sketches, entitled 'The Solitary of the Suburb.' His
poetical compositions are of less importance; for though
admired in their day, they now possess little interest. Mur-
aviev died June 29 (11th July), 1807, and his histori-
hcal pieces were collected and edited by Karamzin in 1810.
The first complete edition of his works appeared in three
large volumes 8vo., 1829, to which is prefixed a biographical
and critical sketch, written by his nephew and pupil, Con-
stantine Batishkov, the distinguished poet.

MURCHISONITE, a variety of moon-stone or felspar. Occurs in crystals and in crystalline masses; primary form an olivine; fracture subconchoidal. Hardness 5½-6. Transparent. Opalescent. Colour white, with a slight red tint. Specific gravity 2.590. Occurs in the new red-sandstone near Exeter.

Analysis by Phillips.

| Silica | 68% |
| Potash | 14.8% |
| Alumina | 16.6% |

100°

MURCIA, a province or kingdom of Spain, situated be-
tween 37° 10' and 39° 10' N, lat. and 5° and 3° 5' W, long. It is bounded on the north by the province of Cuenca in New Castile, on the north-west by the province of La Mancha, on the west by the kingdoms of Jaen and Granada in Andalucia, on the east by that of Valencia, and on the south by the Mediterranean. It is about 120 miles long from north to south, and 110 in extreme breadth from east
to west. Its area is 5921 square miles. Its population
is computed at more than 490,000.

The province is divided into nine partidos, or districts, viz., the district of Murchison, Cartagena, Lorca, Chinchilla, Villena, Cieza, Hellin, Algeciras, and Segura, each of which is a capital town of the same name. The province contains 212 cities, towns, and villages, one bishopric, six military commanderies, 91 religious houses, 12 hospitals, four seminaries, five colleges, and Segue-
tEgas and Las Aguilas, the former being one of the grand
depths of the marina. In military matters the province is
subject to the captain-general of Valencia; in civil and
criminal, to the chancery of Granada. The annual returns
done in the case of Muratori's works, because it was well
known that he, the pope, shared in the universal esteem in
which his merit was held, &c.

The principal mountains in the province are the sierras of Pinoe and Lanzada in the west, those of Orhuuela and Monteseguro in the east, those of Chinchilla and Almansa in the north, and those of Monturque and Castellon in the south-east. Thorp, Manchuela, 

Lanzada, and Castellon intersect the province from south
west to north east. The sierra of Espur is the loftiest in Murc.

The soil is generally parched for want of water. The
only rivers being the Segura and its tributaries the Mundo, Taivilla, Moratalla, Caravaca, Quipar, and Segue-
ners; the valleys in which these rivers flow are in general
very fertile, particularly that called the Huerta or Gar-
den of Murcia, but the unwatered low lands are and
will be the desert, and those, with the mountainous parts
are mostly bare and uncultivated, cover two-thirds of the
surface of the province. Both mountains and plains how-
er yield in parts excellent pasturage.

The coast between Cartagena and the kingdom of Gra-
 nada presents a series of steep and lofty cliffs, eastward
from that port it is low and sandy; the whole coast is
studded with watch-towers at intervals.

The climate of Murcia is varied; temperate and deli-
icate, though cooler in the interior than on the coast, but
insufficiently hot in the plains. Storms are not frequent in the spring, but the summers are exceedingly hot, the mercury often rising above 100° Fahr. in the shade; the autumns are delightful.

The sierra of Espur is unknown, and the foliage is always green. Clouds and fog are rare, and the sky is throughout the year so blue and bright as to have gained for Murcia the title of 'the most serene kingdom.' But on the other hand rain is very scarce; in some parts a whole year will elapse without the
fall of a shower.

Of the geology of this province little is known; the
mountains are principally of limestone; the Sierra de Segura in the west is one mass of grey and white limestone near the vale of Segura greenstone is found; trachyte and volcanic rocks at Almazarro on the coast, where is also an alumirous rock, which is quarried. The chain between Murcia and Cartagena is of sandstone, with mica, lignite and gypsum; the latter is also found in great quantities on the chalky range to the east of the city of Murcia. For-
phry, primary slates and schist, fine marbles, rock-crystal, freestone, boulder, and nitre are found in various parts of the province. Near Hellin is a mine of sulphur, at Villena a saltpetre, and saltpetre abounds in the neighbourhood of Car-
tagena. There are several lead-mines in the province, and
report says that there are veins of silver and copper, but
they are not worked; there are also some hot-springs and curative springs.

The vegetable productions are wheat, of which the
ordinary harvest amounts to 701,923 quarters, or about
1,001,066 bushels, but in rainy seasons nearly double
the quantity is grown; barley, rye, rice, tobacco, and fruit of superior quality, particularly oranges, lemons, and pomegranates. The most common trees are
the mulberry and the olive; evergreen and other fruit

trees are in some parts numerous. The pasture on the Sierra de Segura form the finest forest in the north
of Spain. The neriun oleander, eucaliptus, tamarindus, parkia, biruta, prickly pear, chamerops humilla, and American
rose are also grown and luxuriantly. Hemp, flax, and cotton are also grown in the interior, and quantities of barilla are produced on the sea-coast; and
oil and wine are also extensively produced, with some olive
and wine. The esparhoi grape grows most luxuriantly in the
neighbourhood of Almuñecar. At this time of the year, who, on this account, gave that city the name of Carthage.

Spartaria.

Cattle are not numerous in Murcia; they are principally
sheep and goats, harned cattle being rare; the pigs are very
small; the goats are mostly white, and in some parts white
on the coast. Wolves, foxes, and wild bears inhabit the
mountains.

Of manufactures there are very few, and of none enough to supply the consumption. The principal is silk, which is wrought into ribands, tafetans, and damask, and all of inferior quality; knives and other cutlery are made
at Alboxen, a small quantity of soap at Villena and Muro,
and a little earthenware, with some salt-petre and gunpowder.
at the latter city; the manufacture of coarse linen, bristles, hemp, and flax is very insignificant.

Commerce in Murcia is at a very low ebb, owing to the indolence of the inhabitants in agriculture and manufactures. If the wretched state of the roads did not prevent much intercourse with the rest of Spain, the port of Cartagena, where the orange trees are said to have been planted, might be made the outlet for the exports of the inland provinces. The other seaport, that of Las Aguas, a small town built by Charles III, is now falling into decay. Near the coast of Valencia is the bay of Albufera, 12 miles long by three broad, called La Enceñalda de Murcia, but it is adapted only to very small vessels. Corn and wine are exported when the harvest or vintage is good, otherwise they are imported from Valencia; the wine is sent to Madrid, and a great quantity of rice is brought from the latter place by the close of the last century, 32,000l. Sterling. Silk to the amount of 230,000l. is exported to Estremadura and New Castile; of barley, above 100,000l. to foreign countries; of cotton 300,000l. and of saffron 4700l. to Valencia, New Castile, and La Mancha; and of articles made of the esparto-rush, 4000l. to Madrid and other parts of New Castile. Murcia imports fruit and vegetables from Valencia; beef and mutton, oil, spices, ironware, linen and woolen goods, and many silk stuffs, for there is not industry enough in the province to manufacture the raw produce.

The principal towns in this province are, Murcia, the capital; Cartagena [Cartagena.] Lorca [Lorca]; Chinchilla, a linen-merchant's house; Villena, with 9300; Hellin, with 8000; Cieza, with 6500; Almansa, the Almunita of the Romans, with 6000; Segura de la Sierra, with 4000; Jumilla, with 8000, celebrated for its wines; Muro de Alcoy, with 2000, which is said to have secured the crown of Spain to Philip V, the first of the Bourbon dynasty; Tuta, with 12,000; Alhama, with 4000, renowned for its baths and hot-springs; and Molina, with 3000 inhabitants.

The Murcian is tall and well-made, with good features but a slow livid complexion, and very African in appearance. His leading characteristic is sloth, for he is preeminently the sluggard of Spain, and spends the greater part of his time in idleness or idleness is very increase in disposition, yet very choleric, litigious, and revengeful; suspicious and frugal, and therefore not fond of society or amusements; bigoted to old customs, and profoundly ignorant. The women are said to be mild and amiable, and less attentive to dress than most of their countrywomen. They wear the national costume—the basquina and mantilla. The peasantry wear close-fitting caps, white jackets, loose and short linen drawers girt round the middle with red ribbons, and the men have very narrow and long narrow strips of striped wool. The language of Murcia is Castilian, corrupted by Arabic and Valencian.

Murcia was the part of Spain first colonized by the Carthaginians, who, about a. d. 250, founded Cartagena, as also Cartageno, the rest of the peninsula, under the dominion of the Romans and Goths; from the latter it was conquered, a. d. 552, by Justinian, emperor of the East, and it remained in the hands of the Greeks till 624, when it was recovered by the Gothic king Justinus. In 712 it was conquered by Abdolazis, son of Murza, the Arab invader of Spain. It continued subject to the khalfis of Cordoba till a. d. 1144, when, after the disruption of that khalfat, it fell under the dominion of the king of Leon and Castile, but in 1211 was conquered by Ferdinand I., king of Castile, and in 1239 it was raised into a distinct kingdom by Hugol de Ablaza, who, following the year submitted to Ferdinand the Saint, king of Castile, consenting to pay tribute on condition of being allowed to retain the ecclesiastical and feudal rights, was dethroned and independence, but was conquered and dethroned in 1266 by Alfonso X. of Castile and James I. of Aragon. Murcia has ever since remained in the hands of the Christians, and now forms one of the kingdoms of Spain.

MURCIA, a city of Spain, the capital of the province of that name, lies 36° 2' N. lat. and 1° 14' W. long. It is distant 328 miles from Madrid, 36 from Cartagena, and 48 from Lorca, and is situated in a valley on the left bank of the river Segura. This valley is called the liberta Gar-
secret destruction of life, witnessed and known by none besides the slayer and any accomplices that he might have; so that the hue and cry, which the law required to be made after malefactors, could not be raised.

Murdram was also the name of an amercement or pecuniary penalty imposed, until the reign of Edward III., upon the county or district in which such a secret killing had taken place. One of the modes of escaping from this penalty was, a presentation of Englishly; in other words, a finding by the coroner's inquest, upon the statement of the relations of the deceased, that he was an Englishman; the sole object of the amercement having been the protection of Daies, and afterwards of the Normans, from assassination by the English. (Glauville; Reeves.)

By 'Murdram,' which is commonly found in ancient charters of franchises, the right to receive these amercements within the particular districts, passed from the crown to the grantor. Amercements for non-presentation of Englishly were abolished in 1546, by 14 Edw. III., st. 1, c. 4.

As the law formerly stood, every destruction of human life, not effected in this secret manner, with whatever circumstances of malignity and cruelty it might be accomplished, was treated as simple homicide. The law appears to have been gradually altered by the judges, in order to reach atrocious criminals whose offences would not formerly have been punishable as murder. As the law now stands, murder is the destruction of human life, accompanied with an intention on the part of the slayer to kill or do great bodily harm, or wilfully to place human life in peril; or resulting from an attempt to commit some other felony; or occurring in the course of resistance offered to mere resistance or to the apprehension of justifiable or illegal armed in carrying the law into execution. All other cases of culpable homicide, in which death is produced involuntarily, but is occasioned by want of due caution; or where, though death is produced voluntarily, the crime is extenuated by circumstances; or where a minister or officer of justice is killed, but sufficient authority did not exist, or was not communicated to the party before the fatal blow was given; or where any other circumstances essential to the crime of murder are wanting; to simple felonious homicide, or, as it is commonly called, without regard to the age or sex of the party killed, manslaughter.

The law recognises the right of taking away life in the necessary defence of person or property, and it admits, in some cases, previous provocation as an extenuation of the offence. On the other hand, it makes special provision for the protection of officers and ministers of justice, where the killing of such officer or minister, though culpable, does not amount to manslaughter.

In the modern law of England the crime of murder is characterised by having been committed with malice aforethought, or, as it is sometimes called, malice prepense; which term, though in its original signification it imports a purpose of killing, may, instead of being limited to the offender acts from a motive of ill-will towards another, with an express intention to destroy or injure him, but also where, without the existence of express malice, it is considered necessary, on grounds of policy, to punish homicide with the highest degree of severity.

The term 'malice aforethought' is therefore frequently applied to a state of things in which no malice is felt in the ordinary sense of the term, but is only malice in a legal sense of law.

If A shoots at B with intent to kill him, but by mere accident kills C, this is a killing from implied malice. If A, by throwing a heavy stone from the roof of a house into the street in which he knows that people are continually passing, kills B, a mere stranger, this also is a killing from implied malice.

Implied malice is however very loosely defined in the law of England, if it can be said to be defined at all. It is stated, that an implied malice is where a thing is done in violation of the law, or a conclusion of law to be drawn from all the circumstances of the case; and it is in some cases made to depend upon a very abstract technical doctrine. The existence or quality of such criminal intention, even when that intention has no reference to any personal injury, but happens to be accompanied with a killing which is altogether accidental, is made to constitute the distinction between the higher and lower species of culpable homicide; and in other cases the existence of such criminal intention brings even an accidental killing within the scope of manslaughter.

Mr. Justice Foster says, 'When the law maketh use of the term "malice aforethought," as descriptive of the crime of murder, it is not to be understood in that narrow restricted sense which it was apt to lead one, a principle of malevolence to particular, for the law, by the term "malice" in this instance, means that the fact hath been attended with such circumstances as are of an ordinary degree of wickedness, depravity, and malignant spirit. The malice anusus, which is to be collected from all circumstances, and of which the court, and not the jury, is to judge, is what brings the offender within the denomination of wilful malicious murder. And I believe from not all the cases in our books are arranged under the head of implied malice, will, if carelessly adverted to, be found to turn upon this single point—that the fact hath been attended with such circumstances as carry them along with a indication of a hatred of" regardles of sexual duty and fatally bent upon mischief.' (Discourse on Homicide, 256, 257.)

This vague and figurative description of that which is propounded as a legal definition appears to furnish us with no certain test of the crime of murder. It amounts to no more than this: that, to constitute the crime of murder, the act must have been attended with such circumstances as in the opinion of the court, and not of the jury, are "the ordinary circumstances of wickedness, depravity, and malignant spirit; of a heart regardless of all the ordinary duties of human life, which is an inference to be deduced from the evidence, and in arriving at which no assistance can be derived from the application of mere technical rules. The presence of that evil disposition of the mind of the offender which makes the offender himself, if he had the evidence in his power, or by evidence of an act or omission by which human life is wilfully or wantonly exposed to peril. Every homicide is presumed to be malicious until the contrary is proved by the accused. But upon the investigation, circumstances may transpire which extenuate the offence, and reduce it from the crime of murder to that of manslaughter. The act may appear to amount either to justifiable or excusable homicide. In cases of justifiable homicide, and according to modern practice, in cases of excusable homicide, the party causing the death is discharged from responsibility.

To constitute legal homicide, the death must result from injury to the person (as contradistinguished from injury operating upon the mind) occasioned by some act done by, or some unlawful omission chargeable upon, the party to whom such homicide is imputed. The terms "wilful omission" apply to every case of noncompliance with a legal obligation to which the party under whom such omission was made is subject, to refrain from wearing clothing, or to furnish any other assistance, or to do any other act, for the support of life or for the prevention of injury to it. It is not homicide unless death take place within a year and a day after the injury; or, in other words, if a not considered homicide when the party injured survives a whole year, exclusive both of the day of the injury and of the day of the death; nor where the death is to be attributed to unskillful treatment, or other cause not resulting from or aggravated by the injury sustained.

The law of homicide applies to the killing of animals, except animal enemies slain in the heat and in the exercise of war; to felonies, except when executed according to law, and to persons outlawed, when on civil or criminal process. But a child in utero (in its mother's womb) is not a subject of homicide, unless, subsequently to the injury, it be born alive, and die, within a year and a day from its birth, from the injury received whilst yet unborn.

Criminal homicide is one of three kinds, murder, manslaughter, and self-murder. (Suicide.)

I. Murder is committed by:
1. Voluntary homicide, without circumstances of justification, excuse, or extenuation.
2. Involuntary homicide, resulting from the commission of a felony, or from an attempt to commit felony.
3. Homicide, whether voluntary or involuntary, committed in unlawfully resisting officers or ministers of the law, or other persons lawfully acting for the advancement or in the execution of the law.

11. Manslaughter consists in:
   1. Voluntary but extenuated homicide, committed in a state of provocation, arising from a sufficient cause.
   2. Involuntary homicide, not excused as being occasioned by mere misadventure.

This second class may be subdivided into:
   1. Involuntary homicide, resulting from some act done, or from the wilful omission to do some act, with intent to occasion bodily harm.
   2. Involuntary homicide, without giving any wrongful act done to the person.
   3. Involuntary homicide, in committing, or in attempting to commit, an offence attended with risk of injury to the person.

4. Involuntary homicide, resulting from some act done without due caution, or from the unlawful omission to do some act.

Homicide not criminal is:
   1. Justifiable, as done for the advancement or in the execution of the law; or
   2. Excusable, as done for the defence of person or property; or because it has, without the fault of the party, become necessary for his preservation.

The offence is extenuated where the act, being done under the influence of excitement from sudden provocation, or of fear, or of alarm, which may, for the time, suspend or weaken the power of judgment and self-control, is attributable to transport of passion or defect of judgment so occasioned, without any deliberate intention to kill or do great bodily harm; regard still being had to the nature and extent of violence used by the party inflicting the injury which is delivered to subdue, as far as may be, the cause of provocation.

The offence is not extenuated where the cause of provocation being but slight, a return is made so excessive and disproportionate, that the killing cannot be attributed to mere heat of blood arising from the provocation given.

Homicide is neither justifiable nor extenuated by reason of any consent given by the party killed, as in cases of duels.

Homicide is justifiable, where the act is done in a lawful manner, by an officer or other person lawfully authorised, in execution of the sentence of a court of competent jurisdiction.

Homicide is justifiable, where an officer of justice, or any other duly authorised to arrest, detain, or imprison for any felony or for any dangerous wound given, and using lawful means for the purpose, cannot, otherwise than by killing, overtake the party in case of flight, or prevent his escape from justice; provided the officer knew, or had reason to believe, that the party attempting to escape was aware that he was pursued for such felony or wound given.

Also, where any officer of justice, or other person lawfully executing in a lawful manner any civil or criminal process, or any other authority for the advancement of the law, or interfering in a lawful manner for the prevention or suppression of any breach of the peace or other offence, is unlawfully and forcibly resisted, and using no more force than is necessary to overcome the resistance happens to kill the party resisting; or being, by reason of the violence opposed to him, under reasonable fear of death if he proceed to execute his duty, and because he cannot otherwise both execute his duty and preserve his life, kills him who so resists—in either of these cases the homicide is justifiable.

Homicide is also justifiable, when necessary for preventing the perpetuation of any felony attempted to be committed by violence or surprise against person, habitation, or property; and property is lawfully possessed, using no more force than is necessary for the defence of such property against wrong, happens to kill the assailant; or being, from the violence of the assailant, unable to defend himself, or cannot otherwise both defend his property and preserve his life, kills the assailant: also where one in lawful posses-

sion of house or land, after requesting another, who has no right to be there, to depart, is resisted, and using no more force than is necessary to remove such wrong-doer and retain his possession, happens to kill such wrong-doer without being, from the violence with which such wrong-doer endeavours to deprive him of possession, under reasonable and bond fide apprehension that he cannot otherwise both maintain possession and preserve his life, kills such wrong-doer.

Homicide is excusable, when a man is voluntarily placed in such a situation that he is under the necessity of killing another in order to save his own life; as where, in a shipwreck, A pushes B from a plank which can save one only.

Homicide is not criminal, when it occurs in the practice of any lawful sport or exercise with weapons not of a deadly nature, and without intent to do bodily harm, and where no unfair advantage is taken, or any unlawful attempt to manslaughter where weapons are used, the use of which is attended with probable danger; or where, in case of friendly contest, without the use of such weapons, death results from any unfair advantage taken, either as regards the nature of the instrument, the mode of using it, the want of due warning given previously to violence used, or from any want of due caution. Tournaments, though a sport in which deadly weapons were used, yet, being considered a useful exercise, were lawful; such were likewise, where lawful, if held with the consent of the king. In case of death therefore, in the course of one of these exhibitions, the criminality of the act appears to have depended upon the royal licence for the holding of the tournament.

The statute of 9 Geo. IV., c. 31, s. 3, enacts, that every person convicted of murder, or of being accessory before the fact to murder, shall suffer death; and that every accessory after the fact to murder, shall be liable, at the discretion of the court, to be transported for life, or to serve a term of years, with or without hard labour, for any term not exceeding four years. By an act passed in 1732 (25 Geo. II., cap. 37), the bodies of persons executed for murder were directed to be buried in chains. The 2 & 3 W. IV., c. 75, required that such persons should be hung in chains, or buried within the precincts of the prison. The 4 & 5 W. IV., c. 36, s. 1, has taken away one part of the alternative, and the mode of burial is the only circumstance which distinguishes sentences upon a conviction for murder from those pronounced in other capital cases. Formerly the murder of a bishop, abbot, or prior, by a person owning him canonical obedience, or the murder of any of the royal family, or of a great-grandmother, was capital by law, or the wrong-doer; but by 3 & 4 Geo. IV., c. 31, s. 2, petty treason is to be treated as murder only.

The offence of manslaughter is punishable with transportation for life, or for not less than seven years, or with imprisonment, with or without hard labour, not exceeding four years, with fine, by 9 Geo. IV., c. 31, s. 9. (Foster; East; Fourth Report of Criminal-Law Commissioners.)

MURE, SIR WILLIAM, of Rowallan, in the county of Ayr, was born about the year 1594. He was the eldest son and heir of a knight of the same name, and the family to which he belonged was one of the most ancient and distinguished in that part of the country: it terminated in Jane Mure, great-grandmother of the present countess of Loudoun and master of Hastings. Of this poet the early life few memorials have been preserved. It would appear however that his character and genius were soon developed: there is a specimen of his verses in English, dated in 1611, when he could be little more than seventeen years old: before his twentieth year he attempted a version of the classic story of Dido and Aeneas; and in 1617, when he was scarce four-and-twenty, he addressed the king at Hamilton, on his progress through the country, in a poetical piece which is embodied in the collection entitled 'The Muse's Welcome.' Previous to this time he had become a student of St. John's, where he had succeeded to his paternal estate, he married for his first wife Anna, daughter of Dundas of Newbiston, by whom he had five sons and six daughters. His second wife was Jane Hamilton, widow of Lord Blantyre; and of this marriage there were two sons and two daughters. During the civil war, Sir William took the popular side,
in the first army raised against the king, he commanded a company of the Ayrah regiment. He was a member of the convention in 1613, when the solemn league and covenant was ratified with England; and the next year he accompanied the troops, which, in terms of that treaty, were detached in aid of the parliament. He was also present, and wounded, in the decisive battle of Long Marston Moor; and in the succeeding month he was engaged at the storming of Newcastle, where, in consequence of being an imperial officer, he remained for some time the command of the regiment. Little further is known of him, except that on the revision of Roos’s Psalms by the General Assembly in 1650, a version by Mure of Rowallan is spoken of as employed by the committee appointed for the improvement of the psalms. He died in 1657.

By far the greater portion of Sir William’s writings remain in manuscript. Various specimens of his compositions however may be found in a volume entitled ‘Antient Ballads and Songs, chiefly from Tradition, Manuscripts, and scarce works, with Biographical and Illustrative notices, including Original Poetry, by Thomas Lyle,’ London, 1827, to which Chambers himself devoted his materials for the notice concerning Sir William in his ‘Biographical Dictionary of Eminent Scotsmen.’ To this latter we also refer.

MURET, MARC ANTOINE FRANCOIS (MURETUS) in the Latinised form of his name), was born near Langres in France, in 1613, of a great family, Greek and Latin, and at the age of eighteen gave lectures on Cicero and Tertullian in the college of Ach. He afterwards went to Paris, where he taught philosophy and civil law; and in 1640 he was granted a professorship. Being accepted, according to Scaliger and some others, of an unnatural vice, he quitted Paris for Toulouse, which he was also obliged to leave. He proceeded to Italy in the greatest distress, and on his journey fell ill at an obscure inn on the road. The medical men of the place, having examined his condition, proposed among themselves in Latin (which they thought he did not understand) to try upon him some new experiment: ‘Facsimile experimentum in corpore vivente! He was therefore shot at breakfast, and that he mustered strength enough to pursue his journey.

All this account however is contradicted, or rather discredited with disdain by his biographers, B. Bemi and Lazeri, whose notices of Muret’s life are annexed to Rubenken’s edition of Muret’s works, 4 vols. 8vo., Loyd, 1665. It is certain however that Muret repaired to Venice in 1634, where he became intimate with Paolo Manuzio, who published several of his commentaries on the classics. In 1559 he acted as a secretary of Cardinal Ipolito d’Este, and went to live with him at Ferrara, and afterwards accompanied the cardinal to Rome, from whence he repaired to France with the papal legate in 1632. In the following year he returned to Rome, where he was finally esteemed by Paul V., and afterwards by his successor Gregory XIII.

He entered into holy orders, obtained several benefices, and was appointed professor of philosophy, and afterwards of civil law at Rome. He died at Rome in 1639. His principal works are—1. Commentarius de Origine Iuris; 2. Commentarius de Legibus, Senatusconsultis et Longa Consuetudine; 3. Commentarius in Titulos ad Materiarum Jus, dictiones pertinentes; 4. Notitia in Justinianian Institutiones; 5. Orationes. Several of these are funeral orations in the uncles of deceased relations. In that on the occasion of the death of Charles IX., king of France, delivered at Rome in 1574, he prays that king for having extinguished heresy in his kingdom. In fact Muret was a lapsed huguenot, which, by no means a philosopher. His ‘Poema’ has grace and fluency, but little of invention or poetical genius, excepting perhaps some of his epigrams. His commentaries and scholia upon Aristotle’s ‘Ethics and Rhetorica;’ Cicero’s ‘Republic;’ on Caesar, ‘Adressae’ et saccharo, on Seneca’s ‘Epistles,’ on Sallust and Cicero, on Terentius, Catullus, and Horace, are truly valuable, as well as his nineteen books ‘Variarum Lectiorum’ of different classical authors.

MURIAEAC. [Chlorine.]

MURIDE, the name of an extensive family of rodents, comprising, when taken in its largest sense, a great number of genera and species, which, through the efforts of them all to a common name, became worthy of serious notice from their prodigious multiplication and the destructive influence which they exert over vegetation and the frame of the labour of the agriculturist. The Leucopogon mus is thus characterised in the last edition of the ‘Systema Naturae,’—‘Dentes praeuros anteriori et posteri oribus subulati;’ and, as might be expected from such a definition, it is made the receptacle not only for such rodents as are vernacularly known as field mice, or Mus, but for the Lemmings, or Scirius. The genus being considered by Buffon in his ‘Histoire Naturelle’ (vol. ii. p. 92.) as included in Leucopogon subulatus, known under the common name of the ‘Field Mouse,’ or ‘Field Rat,’ consists of two species, Mus, or ‘Scirius leucopogon’ (for which, however, Mus is generally considered by naturalists to be the correct specific epithet), and Scirius or ‘Scirius leucopogon’ (for which, however, Mus is generally considered by naturalists to be the correct specific epithet). The former of these is a common rodent of the plains of Asia, and is said to be the most destructive of crops in that country. The latter is a smaller species, found in the northern parts of Europe, and is said to be the most destructive of crops in that country.

MURIDÆ, or MURIDAE, a family of rodents, comprising many genera and species, which are generally known as house mice, field mice, or field rats. The family is divided into two sub-families, the first consisting of the genera Mus, Rattus, and Leucopogon, which are the common house mice, field mice, and field rats of Europe and Asia; and the second consisting of the genera Apodemus, Microtus, and Desmarestia, which are the common house mice, field mice, and field rats of America. The family is characterized by the presence of a single tooth in each upper and lower jaw, and by the absence of a premaxillary bone. The members of the family are generally small animals, with short tails, and are commonly found in houses, fields, and forests. They are active and agile, and are able to climb and run with great speed. They are generally nocturnal in their habits, and are often found in packs. They are omnivorous, and feed on a variety of plants and animals. They are generally considered to be pests, as they are known to damage crops and other foodstuffs.
that Cuvier has formed two subdivisions of the Arvicolidae, namely, first, the *Campanogale monge*, of which M. Levaillan gives *Arvicolus amphibius*, Desm., *Mus amphibius*, Lin., as an example; and second, the *Campanogale Terrestres*, which may be exemplified by *Arvicoia agrestis*.

Adopting this latter subdivision of *Arvicolus* in its restricted sense for convenience, there being hardly sufficient difference in the structure, whatever there may be in habits, to justify the breaking the true *Arvicolus* down into two groups, we shall, before we proceed to the description of these examples detected, detain the reader very shortly with the views of two modern English naturalists of note with respect to the *Arvicolus*.

Mr. Gray raises this group to the rank of a family under the name of *Arvicolidae*, and under it places his genus *Ctenodactylus*, erected by the way of a correction to Dejean’s name for a genus of Coleopterous insects, *Ctenodactylus*.

N. B. *Mr. Yarrell is of opinion that *Ctenodactylus Masonii* of Gray, is, as suggested by Mr. Ogilby, identical with the *Mus Gundi of Rothmann, on whose Circuit of the world;* and *Ctenodactylus* was taken from the description of the *Gundi of Gmelin and others, and the Gundi Mor" of Pennant’s ‘Zoology.’*

Mr. Bell, in his British Quadrupeds, observes that the verification of this genus *Ctenodactylus* with the *Ctenodactylus* of Gray, was an inconsistency which was early detected, and the correction of which has been universally recognised and followed.

The characters of the teeth, he remarks, as well as the general form of the body, and the habits of all the species, remove them not only generally from the *Mus*, but even put out their association with a different family of the Rodentia, and their affinity to the beaver, he adds, appears to have forcibly struck Linnaeus himself, who, in his *Fauna Suecica*, applied the name Castor to the European *Water-Vole*, or *Water Rat*. Mr. Bell then continues thus: *‘The generic term *Arvicolus*, if not absolutely unobjectionable, must be retained, as having the sanction of priority over the name *Microtus of Sebrank,* *Hypnomus of Brant,* or *Lemmus* of F. Cuvier. With regard to the name of the family, I have ventured to change that of Mr. Gray, *Arvicolidae*, to *Castoridae*, because the generic Castor must be considered as the type of the family, of which the present can only be an aberrant form."* [BAYR.

§ 1. Water or Swimming Arvicolids or Voles.

The author last quoted gives the following synonyms for—


Description.—Head thick, short, and blunt; eyes small, not very prominent; ears short, scarcely conspicuous beyond the fur; the cutting-teeth of a deep yellow colour in front, very strong, chisel-shaped, considerably resembling those of the beaver; the surface of the grinding-teeth formed of alternate triangles arranged on each side of the longitudinal axis; fore-feet with four complete toes, the last phalanx only of the thumb being conspicuous beyond the skin; hinder feet with five toes not well formed, though connected to a short distance from the base; tail more than half the length of the body, covered with hairs, of which those on the inferior surface are rather long, and probably assist the animal in swimming by forming a sort of rudder of the tail. Fur thick black and shining; of a rich reddish-brown, mixed with grey above, yellowish-grey beneath. Dimensions,

—Length of the head and body 8 in. 4 lines. 

| of the head | 10 |
| of the ears | 0 |
| of the tail | 8 |

(Bell.)

This appears to be the *Sordo morgance* of the Italians; *Wasser-maser-Rat* of the Germans; *Water-rot* of the Dutch; *Watt-ratte* of the Swedes; *Vand-ratte* of the Danes; *Lagorn* of the French; and *Water Vole and Water Rat* of the modern British.

Ray names it *Mus major aquaticus, seu Rattus aquaticus*, and he, as well as Linnaeus, states that the *Water Rat* is web-footed. The naturalists of Seilborne, who, in one of his letters to Pennant, writes, ‘I have seen Mrs. Cuvier after him, that the water rat is web-footed behind. Now I have discovered a rat on the banks of our little stream that is not web-footed, and yet is an excellent swimmer and

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species are given by Mr. Bell:—*Mus agrestis brachyrurus* (Ray). *Mus agrestis* (Linn.). *Mus arvalis* (Pall., Graen; Lemmus arvalis (P. Cuv.). Arvicola ruigera (*Selys-Longchamps*). *Arvicola arvalis* (Selys-Longchamps). Campagnol (Bull.). Short-tailed Field Mouse (Penn.). Meadow Mouse (Shaw).

Description.—Head large; muzzle very obtuse; seen just appearing above the fur; body thick and full; tail more than one-third the length of the body, bearingly covered with hair; thumb of the fore feet rudimentary, without a claw. Upper parts reddish brown, mixed wax grey; of the under parts ash-colour; feet and tail dusky.

Dimensions:—

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This appears to be *Le petit Rat de Campagne* and Le Campagnol of the French; Campagnolo of the Italian Skier. *Mus* of the Danes; *Llygoden guottiar* more of the ancient British; Field Vole, Short-tailed Field Mouse, and Meadow Mouse of the modern British.

Habits, Food, &c.—Small and insignificant as the animal is in appearance, there is scarcely a species among the rodents more destructive to the fields, gardens, and woods, which have been rendered fruitful by the industrious labours of man, than the Short-tailed Field Mouse. In the cornfield, in the rick-yard, in the granary, in the extensive plantation, its depredations are often severe, and sometimes overwhelming. The following instance will shew what damage these mice are capable of doing when they become multitudinous. Lord Glenbervie, in a letter to Sir Joseph Banks, dated 30th June, 1814, observes that the whole back of Dean and New Forests appeared to be numerous, stacked with mice; at least, wherever the large furze-broken in the open parts had been burnt, their holes and nests covered the surface. Haywood Hill, a new plantation of about 500 acres, in the forest of Dean, was particularly infested. This enclosure, after being properly fenced, was planted with oaks in 1810, and in the following year about one-third came up; the rest of the seed having been probably destroyed by mice principally. The young shoots of the natural hollies of the tract, which had been cut down to favour the plantation, were not attacked by the same as the winter of 1811, though their runs were numerous. In the autumn of 1812 a large quantity of five-year-old oaks and chestnuts, with ash, larch, and fir, were planted in the enclosure. In the winter the destruction began, and numbers of the hollies, then two, three, or more feet high, barked round from the ground to four or five inches upwards, and died. In the spring of 1813 a number of the oaks and chestnuts were found dead, and when they were pulled up it appeared that the roots had been gnawed through two or three inches below the surface of the ground; many were also barked round and killed, like the holly-shoots; whilst others, which had been begun upon, were sickly. The evil now extended to the other enclosures; and becoming very serious both in Dean Forest and the New Forest, cats were turned out, the bushels, fars, rough grass, &c. were cleared away to expose the more to beasts and birds of prey, poisons in great variety were laid, and seven or eight different sorts of traps were set for those some of which, made of tin, succeeded very well. These were however superseded by the plan of a professional ratter, who, having been employed to catch the mice, had observed, on going to work in the morning, that some of them had fallen into wells or pits, accidentally formed, and could not get out again; many of them dying from hunger or fatigue in endeavouring to climb up the sides. Such pits were therefore, on his recommendation, immediately tried: they were at first made three feet deep, three feet and two wide; but these were found to be unnecessary large, and, after various experiments, it appeared that the answered best when from eighteen to twenty inches deep at the bottom, about two feet in length, and one foot and a half in width, and, at top, only eighteen inches long and nine wide, or indeed as small as the earth could be got out of a hole of that depth; for the wider they are below and the narrower above, the better they answer their purpose. They were made about twenty yards asunder, or about

* Mr. Hogg suggested the generic name Khiamaps for the animal, from the root-eating propensity.
tire on an acre; or, where the mice were less numerous, thirty yards apart. Nearly 30,000 mice had been caught, principally by this last method, in Dean Forest, up to the 22d of December; and Mr. Davies (the deputy-surveyor) was convinced that the greater number had been taken out of the holes, either alive or dead, by weasels, kites, owls, &c., and even by crows, magpies, jays, &c. The success of these holes in Dean Forest was so great, that the use of a bait in them was soon discontinued; but the digging of the burrows by the mice for other causes, they were far less efficacious in the New Forest, where the mice continued still, though less numerous, to infest our plantations. It was hoped that the severe weather would have either totally destroyed or greatly diminished the number of these numerous mice, which had ventured out during the hard frosts. In a letter from Mr. Davies, dated the 8th of March, 1814, he gives only 1246 as the number taken from the 7th of January to the 5th of March, and he says the whole of these had been caught in a few days of open weather which intervened about that time. The total number taken in Dean Forest to the 8th of March, 1814, did not much exceed 30,000; and in the New Forest only about 11,500 had been taken up to the same period. Both forests in other respects resembled one the Short-tailed, the other the Long-tailed Field-Mouse; but the former was by far the most numerous, particularly in Dean Forest, where it was in the proportion of upwards of five to one Long-tailed.

Burton speaks of similar depredations by plantations by the species under consideration; but though he seems to have tried the same sort of trap which was used in the English forests above-mentioned, he does not appear to have resorted to the plan of making holes, which is stated to have been successfully employed by the farmers in the neighbourhood of Liege; but though they make the holes round, and not more than four inches in diameter, and a foot deep, the success seems to be complete.

This destructive Arvicola is a burrower, though it frequently takes up the subterranean retreat of another animal, that of the mole, for instance. The wheatrick and the barn are not infrequently infested by them, but their favourable situations are low and damp. Dry seasons are fatal to them. The nest is formed in some bank or meadow, generally of dry grass, and from five to seven young ones are produced at birth. To this species, or to the Long-tailed Field-Mouse, the latter most probably (see post, p. 205), White appears to allude in the letter containing anecdotes of the maternal affections of animals, when he speaks of a remarkable mixture of instinct and sagacity which occurred to him one day, when his people were threshing the timothy of a herd, in order to add some fresh dung:—"From out of the side of this bed leaped an animal with great agility that made a most grotesque figure; nor was it without great difficulty that it could be taken, when it proved to be a large white-bellied Field-Mouse, with three or four young clinging to her teats by their months and feet. It was amazing that the dexterity and rapid motions of this dam should not oblige her litter to quit their hold, especially when it appeared that they were so young as to be both naked and blind."

Geographical Distribution. Europe.

Mr. Bell is of opinion that the Arvicola riparia of Yarrell (Zool. Proc., 1820) is no other than the Arvicola pratensis of Haillon and the Arvicola rubescens of Selys-Longchamps.

Octodon.

Mr. Bennett observes that "in the structure of its molar teeth, Octodon may be regarded as occupying an intermediate station between Poephagomy and Ctenomy. In Octodon the molars of the upper jaw differ remarkably in form from those of the lower. The upper molars have on their inner side a slight fold of enamel, indicating a groove running to separate the two canines. The four molar teeth of the tooth into two cylinders: on their outer side a similar fold penetrates more deeply, and behind it the crown of the tooth does not project outwardly so great an extent as it does in front. If each molar tooth of the upper jaw be separately disposed, they are composed of two partially united cylinders, slightly compressed from before backwards, and somewhat oblique in their direction, the anterior of these cylinders might be described as entire, and the posterior as being transected by the removal of its outer half. Of such teeth there are, in the upper jaw of Octodon, on each side, four; the hindermost being the smallest, and that in which the peculiar form is least strongly marked. In Ctenomy, all the molar teeth, both of the upper and the lower jaw, correspond with the structure that exists in the upper jaw of Octodon, excepting that their crowns are more slender and more obliquely placed, whereas the external emargination becomes less distinctly defined; and also excepting that the hinder molar in each jaw is so small as to be almost atrophied: as in generally the case, however, the relative position of the teeth is counterchanged, and the deficiency in the outline of the crown of the tooth, which in the upper jaw is external, is, in the lower jaw, internal. In the lower jaw of Octodon the crowns of the molars assume a figure very different from those of the upper, depending chiefly on the prolongation of the hinder portion of the tooth to the same lateral extent as its anterior part; each of them consists of two cylinders, not disposed in the middle, but the lower portion of the crown is continuous, but partially separated by a fold of enamel on either side producing a corresponding notch; placed obliquely with respect to the jaw they resemble, in some measure, a figure of 8 with its elements flattened obliquely, pressed towards each other, and not connected by the transverse middle bar. With the lower molars of Octodon those of Poephagomy, as figured by M. Cuvier, correspond in structure in both jaws. Octodon thus exhibits, in its dissimilar molars, the types of two genera: the molars of its upper jaw represent those of both
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irruptions. 'They march like the phatically described by the prophet of grass before them, and spread they infect the very ground, and cattle a taste of the grass which they have y myriads in regular lines: nothing eather fire, torrents, lake, or morass. straight forward, with most amazing over the lakes; the greatest rock check, they go round it, and then ooily on, without the least division: , they persist in their course, and see in defence of their progress: are of a stick, and suffer themselves to they quit their hold: if struck, they will make a noise like a dog.' lose attendants upon these wander- Olaus and others believed to have louds and to have fallen from thence. They are, says Pennant, 'the prey of nes, who follow them in great num- sh, either through want of food or by or in some great water, or in the sea. the country: in former times spir- erted against them; the priest exor- form of prayer to arrest the evil: on; once or twice in twenty east colony of emigrants from a na- scharge of animals from the great se poured out its myriads of human n Europe. Where the head-quarters is not very certainly known; Lin- an and Lapland Alps; Pontopiddan lunes rock, which divides Nordland stive place; but wherever they come air course is predestinated, and they rein-deer lichen in the winter, the the snow, making lodgments and he surface to secure air: the Arctic ese retreats. It does not appear that nes of food, and to this improvidence serves, may be traced the great mi- compelled to make in certain years; quit their usual residences. the course of a year, producing five . and they bring forth sometimes on y are said to carry some of their and some on their backs. to compare their flesh to that of ooff.; Loncheres, Ill. part.) Four unguiculate toes and a vestige or feet. Tail very long, scaly, and especially those on the upper parts, olars with transverse laminae, united one end or isolated.

Incisors $\frac{2}{2}$; molars $\frac{4-4}{4-4} = 20$. 

notyline, young) enlarged. (F. Oer)
Example.—Echimys chrysutus (Echimys cristatus, Desm.? The Gilt-tail Dormouse of Pennant; Lerot a queue dorée of Almannaud.

Description.—Ears short and broad, whiskers strongly developed, a gold-coloured line extending longitudinally from the nose to the space between the ears; head, body, and upper part of tail maroon or shining purplish chestnut, ruddy marginate bristles being scattered between the hairs, which give the splendour to the animal; lower part of tail, which is thick at the base and longer than the body, golden. Length from nose to tail, five inches.

Habits, Food, &c.—This species is said to climb trees, and live principally on fruits.

Locality, Surinam.

Cercomys. (F. Ouvier.)

Generic Character.—In shape resembling the Black Rat, but with the chanfrein more arched and the ears larger. Anterior limbs considerably shorter than the posterior, which are terminated with five toes, the middle ones longest; the anterior with four only, and the rudiment of a thumb with a small flat nail; all the other toes with compressed nails curved and pointed, and seeming more proper for climbing than burrowing. Tail very long, and like that of the Brown Rat. Fur composed of long, straight, firm hairs of a uniform texture, and of hairs which are finer, softer, and much thicker; no bristle as in Echimys. Molars with distinct roots of equal size, and their slightly elevated crown nearly circular, presenting at the surface a notch and three ellipses surrounded with enamel, as in the teeth itself. The notch is on the internal side in the upper molars, and on the external side in the lower molars. Great suborbital hale considerably extensive.

Dental Formula:—Incisors 2 \(\frac{2}{2}\); molars 4 \(\frac{4}{4}\) = 20.

Example, Cercomys antecularius.

Description.—Deep brown above, paler on the sides and the sides of the cheeks; jaws and neck beneath, as well as the under parts generally, whitish. Eyes and ears large.

Locality, Brazil.

Myoxus. (Schreber; Gmelin.)

Generic Character.—Four toes and the vestige of a fifth on the anterior feet; five toes behind. Fur very soft and fine. Tail very long, sometimes well clothed with hair and round, sometimes depressed, and sometimes tufted at the extremity only. Molars with transverse ridges of enamel projecting and hollowed.

Dental Formula:—Incisors 2 \(\frac{2}{2}\); molars 4 \(\frac{4}{4}\) = 20.

Example, Myoxus alleniarius.

Description.—Head proportionally large; eyes large, black, and prominent; muzzle not blunt; ears broad, about one third the length of the head; body plum and round; tail flattened, the hairs rather long and bushy; head, back, sides, belly, and tail tawny red; length that of a common mouse.

Young of a mouse-grey, head and flanks only tinged with red.

This is the Muscardin, Croque-noir, and Rat-d'or of the French; Muscardino of the Italians; Liros of the Spanish; and Muscardino of the Romans, authors. True Pine, in his chapter, De fagiis glandes, &c. (xvi. 6), says, 'Fagi glandes marone gltissima est... Gloriae quoque sagittis;' and Martial (i. 59, 'Glires') writes—

Tota minime dormitor hystae, et plagiatrix ut
Tempura suas, quem non affligat omnem.

Nor does the occasional short awakening caused by a warm sunny day, to which the animal is subject, militate against the application of Artial's lines; for the occasional excitement is the exception to the rule.

Mr. Bell places the Dormouse among the Sciuridae (Squirrels); and indeed zoologists have assigned it to the genus Sciurus and Mus. In its habits it comes near to the squirrel, but in its dentition it is nearer to the mice. It is in truth one of those forms by which Nature glides from one race of animals to another. Mr. Bell gives the following synonyms:—Mus alleniarius minor (Kay), Mus alleniarius (Linn.), Sciurus alleniarius (Denn.); Myoxus Muscardinus (Schreb.), Myoxus alleniarius (Denn.). Le Muscardin (Bug.), Dormouse (Penn.) He considers the specific name Alleniarius as not well chosen, inasmuch as the hazel-nut is not the principal food of the Dormouse; 'indeed,' he continues, 'I have never seen any that could gnaw through the shell of that nut when fully ripe and dry.'

Habits, Food, &c.—Dense thickets, bushy dells, and tangled hedgerows are the favourite retreats of the Dormouse. There it constructs its easy dormitory, and there provides a store of food, consisting of acorns, beetles, and grubs, small hazel-nuts, haws, &c. It seems inclined to be suspicious; and indeed Mr. Yarrell told Mr. Bell that he had seen not less than ten or a dozen, or even more, of their nests built in the shrubs of a thicket. The better zoologist well describes its habits.

'It takes its food holding it in its hands, and sitting on its haunches like a squirrel, and often suspending itself by its hind-feet, in which position it feeds as easily and comfortably as in the more ordinary position. Towards the winter it becomes exceedingly fat; and having had its store of food, retires to its little nest, and coiling itself up into a ball, with the tail over the head and back, becomes completely torpid. A mild day calls it into transient life; it then takes a fresh supply of food and relapses more or less, and finally awaking in the spring, at which time it has lost much of its fat. It enters upon its usual habits, and the enjoyment of the conjugal and parental affections. The young, which are generally about four in number, are born blind; but in a few days the eyes are opened, and in a short time they are enabled to seek their'
food independently of the parent's care. I have reason to believe that in some cases at least the Dormouse has a Size of the Lerot, Buff., Mus quercinus, Linn.
the colour of the animal, are woolly, and, when viewed through a microscope, appear to be formed of very small rings, alternately bright and obscure; the others, rare and longer than the first, are also stouter and more stiff; these, when viewed through a microscope, present only a uniform texture, and so it is with the whiskers. The woolly hairs are of a slaty-grey for two-thirds of their length, and then of a yellowish-white, with the point black, whence results the dirty yellow tints with which the animal is coloured above; below, yellowish-white predominates. The very short hairs of the tail are of the colour of those of the back; the extremities have the tint of the under parts. Length about six inches (French), from the tip of the muzzle to the origin of the tail, which last measures three inches and a half. Mean height, two inches and a half. (F. Cuv.)

Habits, &c.—The habits of this species do not appear to be known, nothing respecting them having been found in the notes of M. Delalande. M. F. Cuvier thinks that it is doubtless omnivorous, like the rats; but from the size of its eyes, it may be conjectured that its life is not passed in such obscurity as theirs; and from the delicacy of its sharp claws, and the softness of its fur, that it does not burrow

Obliquely quadrangular lobes, the summits of which hollowed into a spoon-shape.

Dental Formula:—Incisors $\frac{2}{2}$; molars $\frac{2-2}{2} = 2$.

Example, Hydromys leucogaster.

Description.—Fur short, soft, maroon-brown above, white below; tail black at the base and white at the other extremity. Size sometimes twice that of the Common Brown Rat.

M. Geoffroy has recorded two species, that described above, and another with a yellow belly, H. chrysoastus—the last he states to be nearly one-half less than the Cos, but they are generally considered to be only varieties of the same species. M. Geoffroy speaks highly of the quality of the fur of the yellow-bellied variety, and says that it is more valuable than that of the Cospus.

Habits, Locality, &c.—These animals are aquatic, and were found in the islands of D'Entrecasteaux Channel. That named H. Chrysoastus was killed by a sailor at the moment when it was taking refuge under a heap of stones. H. Leucogaster was taken in the island Maria, in the same channel.

Hydromys leucogaster.

True Rats and Mice.

M. F. Cuvier (Dents des Mammiferes) observes that up to the time of his writing, animals provided with the same teeth as the Rat (*Mus Rattus*), the Brown Rat (*Scurii*: of the French—*Mus decumanus*), or the Mouse (*Mus Mus*).
EUROPEAN RATS AND MICE.

The long-tailed Field Mouse, Wood Mouse, or _Mus sylvaticus_, and the Harvest Mouse, _Mus minutus_ of White, as well as the Mountain or Shaw, may be considered as indigenous in Europe. We find the Old English or Black Rat (_Mus rattus_), and Domestic Mouse are argobines, or imported, is not so clear. The latter is only found in inhabited countries; and, like the Black Rat and Brown Rats, is a cosmopolite, following civilized man wherever he is to be found.

The _long-tailed Field Mouse._—This is the _Lycodons granulatus_ and _Lycodons y maez_ of the ancient Britons; _Le Mulet of the French_; and _Veddo of the Danes_; _Mus syvaticus_ or _M. sylvestris_ of Burnard, and _Mus domesticus medius_ of Ray. The length of the head and body, as given by Mr. Bell, is 3 inches 8 lines, and that of the tail 3 inches and 6 lines. Pennant makes its measurement from the outer extremity of the ears to the brush of the tail, 6 inches and 3 lines half, and the tail four inches. If the last-mentioned dimensions are correct, they must have been taken from a very large individual. Mr. Macgillivray gives the dimensions of three individuals; the length (to the end of the tail) of the largest was 6 inches 9 lines, that of the next 6 inches 6 lines, and that of the least 6 inches only.

The animal is well described by Mr. Bell as larger than the Common Field Vole, but varying considerably in size; the hairs which are raised, the muzzle tapering; the ears very broad, the tail long, and the animal very robust, and of a considerable size; the ears large, oblong, oval, with the anterior margin turned in at the base, and a projecting lobe arising within the ear, near the base of the posterior margin; the tail nearly as long as the body, slender and tapering: the legs long. The upper part and sides of the head, neck, and body, and the outer surface of the legs, of a yellowish brown, darker on the back, each hair being grey or ash-coloured at the base, then yellow, and the tips of some of them black; under part of the head, yellow; tail long and very dark, and a yellowish grey patch on the breast. Tail brown above, white beneath. (British Quadrupeds.)

This is a most destructive species, and a bitter enemy to the grain, and at the same time is a very prolific, bringing forth from seven to ten at a birth, and is not always stinted to one brood in a year. The boards that it collects in its subterranean retreats (which are sometimes the results of its own labour, but more frequently excavations which it finds ready made, but which it enlarges, such as those under roots of trees, old mole-runs, &c.) are enormous for the size of the animal, and Pennant is of opinion that the great damage done by hogs in rooting up the ground, or 'mothing,' as it is called in some counties, is caused chiefly by the search of the swine for the concealed treasure of this Field Mouse.

**Geographical Distribution.**—The whole of temperate Europe.

**The Harvest Mouse.**—White, of Selborne, who suggests the name of _Mus minutus_, appears to be the first who drew the attention of naturalists to this the smallest of British quadrupods. He wrote an account of it to Pennant, who called it the _Leet long-tailed Field Mouse_ and the _Harvest Mouse_. It is a species which was observed by Sir W. Shaw, and Mr. Bell adds the following synonyms:—_Mus minutus_ (Pall.); _M. mulot nat. n._; and _Rat des Mousains_ (F. Cuv., 'Mamm.'); _Minute Mouse of Shaw._

Description, Food, Habits, &c.—White thus introduces his discovery to the notice of the reader, 'I remember some of these mice mentioned in my former letter, a young one and a female with young, both of which I have preserved in brandy. From the colour, size, shape, and manner of nesting, I make no doubt but that this is the same species. They are much smaller and more slender than the _Mus domesticus medius_ of Ray, and have more of the squirrel or dormouse colour; their belly is white; a straight line along their sides divides the shades of their back and belly. They never enter into houses; are carried into ricks and barns with the sheaves of corn when the harvest is gathered in, and are afterwards found amid the straw of the corn above the ground, and sometimes in thistles. They breed as many as eight at a litter, in a little round nest composed of the blades of grass or straw. One of ours, after being caught and starved, was especially plated, and composed of the blades of wheat, perfectly round, and about the size of a cricket-ball; with the aperture so ingeniously closed, that there was no discovering to what part it belonged. It was so compact and well fitted that it would roll on the table with the plainest cover to it, though it contained eight little mice that were naked and blind. As this nest was perfectly full, how could the dam come at her litter respectively so as to administer a test to each? Perhaps she opens different places for that purpose, adjusting them again when the business is over; but she could not possibly be contained herself in the ball with her young, which moreover would be daily increasing in bulk.

This wonderful progenet cradle, an elegant instance of the efforts of instinct, was found in a wheat-field suspended in the head of a thistle.' And again:—'As to the small mice, I have further to remark, that though they hang their nests for breeding up amid the straw of the standing corn above the ground, yet I find that, in the winter, they burrow deep in the earth, and among the loose clods of the farm beds, and on the back of the marshy and grassy ground, of a very rendreous seems to be in corn-ricks, into which they are carried at harvest. A neighbour housed an oat-rick lately, under the thatch of which were assembled near an hundred, large and small, and some of them, and found that from nose to tail they were just two inches and a quarter, and their tails just two inches long.

Two of them, in a scale, weighed down just one copper halfpenny, which is about the third of an ounce avoirdupois; so I suppose they are the smallest of the British Island.

A full-grown _Mus medius domesticus_ weighs, I find, one ounce lumping weight, which is more than six times as much as the mouse above; and measures from nose to tail just four inches and a quarter. As to the harvest mice. . . . As my neighbour was housing a rick, he observed that his dogs devoured all the little red mice they could catch, but rejected the common mice; and that his cats ate the common mice, refusing the red.' Thus far White.

Dr. Glazer describes one of these nests as beautifully constructed of the panicles and leaves of three stems of the common reed interwoven together, and forming a roundish ball, suspended on the living plants about five inches from the ground. On the side opposite the stems, rather below the centre, there was a tiny entrance, which was covered over during the absence of the parent, and was scarcely observable even after one of the young had made its escape through it. The inside, when examined with the little finger, was very full, and the walls were as smooth as if rounded, but very confined; it contained only five young; but another less elaborately formed sheltered no less than nine. The panicles and leaves were slit into minute strips or strings by the teeth of the animal; in order to assist the neatness of its weaving. Mr. Macgillivray found one of these nests in Fifeshire composed of dry blades of coarse grass, arranged in a globular form, and placed in the midst of a tuft of _Aira compressa_, nine inches from the ground: it contained six or seven young naked and blind. The food of this little mouse consists of corn and grass seeds, insects, and earth-worms: one to which a bit of the tail of a dead blind worm, _anguis fragilis_, was presented, devoured it greedily. Of insects it is very fond. Mr. Bingley says, 'One evening, as I was sitting at my table, a mouse was playing about in the open part of its cage, a large blue fly happened to buzz against the wires. The little creature, although at twice or thrice the distance of her own length from it, sprang along the wires with the greatest agility, and would certainly have seized it, had the space between the wires been sufficiently wide to have admitted her teeth or paws to reach it. I was surprised at this occurrence, as I had been led to believe that the Harvest mouse yields nothing, and was somewhat annoyed at it. I made it buzz in my fingers against the wires. The mouse, though usually shy and timid, immediately came out of her hiding-place, and running to the spot, seized and devoured it. Princess I fear I shall ever get hold of them; and she always preferred them to every other kind of food that I offered her.' **_Mac._**

**Vol. XV.**—3 T.
scarlet dress embroidered with yellow worked, on which an
to figures of mice or rats destroying wheat-abundance, owed to
office in this kingdom to the Black Rat. It is believed
says Mr. Macgillivray, 'to have been originally imported
from the Continent, where it first made its appearance
the beginning of the sixteenth century, and is supposed to
have come from the East. Vessels in port were formerly
liable to be infested by it, so that it soon became as
common in America as in Europe; although in the maritime part
of that country it has now become nearly as scarce as with
us, and from the same cause, the predominance of the two
enterprising and stronger Brown Rat. Mr. Bell has
previously fixed the middle of the same century for its appear-
ance in this country. 'At least,' says he, 'no author more
autient than that period has described or even alluded to
Gessner being the first who described and figured it.'
The figure of Gessner leaves no doubt that the animal rep-
cented is the Black Rat, and it is spoken of in such terms
that it may well have been a long resident in England—
Mus domesticus major, quen Rattum appellatrum en
Alberto, quosque hoc nomine non Germaniae tenui,
Itali etiam, Galli et Angli utuntur;' and again, among the
names given to the animal by various nations, 'Anglia.
Rat, Rattus.' Shakespeare's lines,

'Not in a slave I'll whither sail,
And, like a Rat without a tail,
I'll go—and I'll go—and I'll go!'

show that the animal must have been familiarly known to
his audience; and it must have been very common early
in the seventeenth century, when the white variety was probably well known; for we read in the 'Dysart Lie
Session Minutes' (May, 1636), that a suspected white
Janet, came to John White's house, 'and span on the
wife's wheel in her absence, and thereafter there came a
white Rattun at sundrie times and sat on his cow's back;
that thereafter the cow dwined away.' Mr. Bell
notices the usurpation of the haunts of this species by the Bru-
Rat. The Black Rat, he says, 'is now rarely found,
except in old houses of large cities, as in London, in Ed-
burgh, and some other places, where it still exists in con-
siderable numbers, especially in the cellars and stais of
the city of London, in many of which it is more com-
mon than the other.' Mr. Macgillivray remarks that in Ed-
burgh it appears to be completely exterminated. 'I have not
seen a specimen obtained there within these
fifteen years.' The last-mentioned author also tells us that the
Rev. Mr. Gordon, minister of Birnie, some years ago
sent him several individuals alive, which were caught in
Elgin, where however the species is much less frequently
met with than the Brown Rat. In Leith, he says, which
is at a greater distance from the coast, it is not very un-
common; and in other inland towns and villages in Scotland
it is still to be procured. 'Whether,' adds Mr. Macgillivray,
'the destruction of this animal has been effected by the
larger and more ferocious Brown Rat, or, like that of many
 tribes of the human species, has resulted from the diminu-
tion of food, caused by the overwhelming increase of an
unfriendly race, it is impossible to determine.'

The Black Rat is greyish black above and ash-coloured
beneath; the ears are half the length of the head, and
the tail is rather longer than the body.

Mr. Bell gives the following dimensions:

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<th>In.</th>
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<tbody>
<tr>
<td>Length of the head and body</td>
<td>7 6</td>
</tr>
<tr>
<td>Length of the head</td>
<td>7 6</td>
</tr>
<tr>
<td>Length of the ears</td>
<td>0 11</td>
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<tr>
<td>Length of the tail</td>
<td>7 7</td>
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</table>

It breeds often in the year, and the female ordinarily pro-
duces from seven to nine at a birth. Like the Brown
species, it is omnivorous. Mr. Bell thinks it probable, from
the proximity of the two countries, that it was introduced
into this kingdom from France, and observes that the
Welsh name for it, which signifies 'French Mouse,' appears
to favour this opinion. From Europe, he adds, it has been
sent with the Brown Rat to America, the islands of the
Pacific, and to many other places.

Mr. Thompson (Zool. Proc., 1837) notices an Irish Rat
with a white breast, which he is inclined to consider distin-
guished from Mus Rattus, and which he names Mus Habitat-
us.

Dr. Richardson did not observe the Black Rat in the For
Countries; and he says that he may venture to affirm that
it had not, when he wrote, advanced farther north than the plains of the Saskatchewan.

*Broom Rat*  This is *Le Surrulentus* of the French; *Norway Rat* is *Rattus norvegicus* of Pallas and Gmelin; and *Rattus Macrogaster* of Richardson.

Why this overwhelming pest has obtained the name of *Norway Rat* does not appear: so far from its being abor- iginally native to Norway, the name was first applied to it. 'It is,' says Pennant, 'an animal quite unknown in Scandinavia, as we have been assured by several natives of the countries which form that tract, and Linnaeus takes no notice of it in his last 'System.' It is here to be remembered that the animal is one of the commonest in France, where it is so abundant that the simplest of the speaking of the common Rat, which he says was first brought from America into Europe by means of a ship bound to Antwerp. The fact is that both Rat and Mouse were known in the Old World before it was discovered by the Europeans, and the first Rats in America were introduced there by a ship from Antwerp. This animal never made its appearance in England till about forty years ago. . . . I suspect that this Rat came in ships originally from the East Indies. They are found there, and also in vast numbers in Persia, from whence they have made their way westwardly even to Petersburgh. It made its appearance in the neighbourhood of Paris about 1750. Mr. Bell states that the original country of this Rat can no longer be ascer- tained, owing to its having spread itself from a warmer climate than our own. Mr. Macgillivray says that it is supposed to have been introduced from Persia and the East Indies about 1730, and gradually to have spread out to the remotest parts of the continent of Asia as well as America, by means of the frequent commercial intercourse established among the nations of these regions. It is not, he observes, confined to cities and villages, but establishes colonies in farm-buildings, on the banks of canals and rivers, and even in islands at a considerable distance from the mainland, or from larger islands, to which it has been introduced by shipping. Thus, he states, it is found on many of the islets of the Hebrides in consider- able numbers, of both sexes; for it is usually seen burrowing in the banks; 'for although not essentially amphibious, like the Water Rat, it does not hesitate on occasion to betake itself to the water, and flacks have been seen swimming from one island to another.'

According to Dr. Harlan the *Brown Rat* did not make its appearance in North America until the year 1775. When Dr. Richardson wrote (*Fauna boreali-Americana*) it was very common in Lower Canada; but he was informed that, in 1841, Mr. Broom wrote a specimen (Rattus norvegicus) in Upper Canada. He did not observe it in the Fur country, and if it does exist there, he thinks that it is only at the mouth of the Columbia river, or at factories on the shores of Hudson's Bay.

This Rat is not only an eminently carnivorous, bold, ferocious, and most destructive in the game-preserve and poultry-yard, where the eggs and young birds are preyed upon by them without mercy. In towns carrion and offal form their chief subsistence. An official report to the French government was on the proposition for removing the establishment for slaugthering horses at Montfouquet gives an account of their numbers and voracity almost appalling; indeed one of the chief arguments against the removal was the danger to the neighbourhood of suddenly depriving these voracious ani- mals of their usual food. The carcasses of the slaughtered horses, sometimes to the amount of thirty-five per diem, are found next morning picked to the bare bone by the rats. A part of this establishment is enclosed by solid walls, at the length of which several holes are made for the entrance and exit of these vermin. Into this place Dusau- sois, the proprietor, put the dead bodies of two or three horses; and having stopped up all the holes towards mid- night, with as little noise as possible, he, with several work- men, each bearing a torch in one hand and a stick in the other, suddenly entered the enclosure, shut the door, and began a general massacre. Wherever a blow was directed, even without aim, a rat was killed; and those which escaped were very quickly knocked down. The dead of one night amounted to 2650; the result of four hunts was 9101; and by repeating the experiment at intervals of a few days, Dusau- sois destroyed

16,050 rats in the space of a month. Now when it is re- collected that the yard in which these numbers were killed does not contain more than a twentieth of the area over which the dead animals were cast, and adding to the numbers of the multitudes that infest this place; indeed the adjoining fields and Eminences are riddled with their burrows, and their paths thereto may be traced from the enclosures where they have been slaughtered.

This rat is grey-brown above and greyish-white beneath, and the tail is shorter than the head and body. Mr. Bell gives the following dimensions, from which its superiority in size to the Black Rat will be evident:

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<th>Length of the head and body</th>
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<th>8</th>
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<tbody>
<tr>
<td>head</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>tail</td>
<td>2</td>
<td>2</td>
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White or yellowish-white varieties, being albinoes with red eyes, and variegated individuals, sometimes occur.

The *Common or Domestic Mouse* needs no description. It seems to be entirely domesticated on civilised man, and has never been found in a distance from his dwelling. White varieties with pink eyes are kept and propagated as pets by those who admire such albinoes: they are pretty little animals, and soon become familiar. This well-known species is *Le Sourici* of Buffon; *Mus* of the French; *Mus Musculus* of the Italians; *Rat* of the Spanish; *Rattino* of the Portuguese; *Maus* and *Haussmaus* of the Germans; *Mys* of the Dutch; *Mus* of the Swedes; *Mus* of the Danes; *Mys* of the Romans; *Mus* of the Indians; *Mys communis* of Miller; *Mus domesticus vulgaris* s. minor. of Ray; and *Maus Musculus* of Linnaeus.

Dr. Richardson saw a dead mouse in a storehouse at York Factory filled with packages from England, and he thinks it probable that the species may have been introduced for all the rats on the shores of Hudson's Bay; but he never heard of its being taken in the Fur Countries at a distance from the sea-coast. Mr. Say informed him that it was intro- duced as Engineer Cantonment on the Missouri, by Major Long's expedition.

Asiatic Rats и Mice.

It seems to be certain that the *Brown Rat* is an Asiatic species, and the *Black Rat* is not without claims to a similar geographical origin; but among the most formidable of the Oriental Rats is the *Mus Magnus* of Harwood, *Mus mac- baricus* of Shaw. Of this rat General Hardwicke gives a faithful figure, of the size of life, in the seventh volume of the *Transactions of the Linnean Society*; it has the appearance of *M. giganteus* of Linnaeus. The colour of its body is a light brownish colour, and it is impos- sible to look at it without thinking what the consequences might be if it were ever to be imported and naturalised in Europe. Above it is most hairy and black; beneath inclining to grey. The animal figured was a female, and weighed two pounds eleven ounces and a half; its total length was 26$\frac{1}{2}$ inches, of which the tail measured 13 inches. The male grows larger, and weighs three pounds and upwards.

'This rat,' writes the late lamented General, 'is found in many places on the coast of Comorandal, in Mynsee, and in several parts of Bengal between Calcutta and Hardwar. It is partial to dry situations, and hardly ever found distant from habitations. The lowest caste of Hindus eat the flesh of this rat, in preference to that of any other species. It is a most mischievous animal, burrows to a great depth, and will pass under the foundations of granaries and storehouses, if not deeply laid. Mud, or unburnt brick walls, prove no security against its attacks, and it commonly perforates such buildings in all directions. It is destructive in gardens, and roots up the seeds of all leguminous plants within its haunts. Cucurbitaceous plants and fruits also suffer by its depredations. When grain and vegetables are not within its reach, or scarce, it will attack poultry; but the former is its lowest food. Mr. Gray remarks that the geographical range of *M. giganteus* appears to be very extensive, Mr. Charles Hardwicke having transmitted to the British Mu- seum a specimen from Van Diemen's Land.

*Mus Steifer.* (Hodgson) The *Tikus* of the Javanese was considered by *Dr. Horsfield* to be one of the commonest and others to be the young of this species; but this opinion is corrected by Mr. Gray (*Zool. Proc., 1832*), who points out the differences. Dr. Horsfield states that it is found in Java at the confines of forests and woodland. According to Mr. Gray, it approaches the villages and dwellings of the natives, who describe it however, as a bold and mischievous animal, and

N. B. Linnaeus only mentions this on the authority of another. His words are: *Et America nostro quidem Alpensiam primam in Europam pervenisse.*

3 T 2
the Doctor says, that the robustness of its form and the remarkable size and strength of its front teeth agree with this character; its nose, he adds, is evidently employed in burrowing the ground in search of its food, and its tail has the character of those species which are in the habit of frequenting the water. Mr. Hodgson states that *Mus decumanus* and *Mus Rattus* are both very numerous and troublesome in the islands; that *Mus Musculus* is very uncommon, and that Field Mice are frequently met with.

African Rats and Mice.

*Mus Barbarus*, the *Barbary Mouse*, will serve as an example of the African species.

*Description.*—Darkish brown with five or six yellowish longitudinal stripes on each side, about half as wide as the intervening spaces, and becoming confused towards the under parts, which are nearly white. Mr. Bennett observes, that on the fore-feet only three of the toes are at first visible; and that this circumstance, mentioned in the specific character given by Linnaeus, has led many subsequent naturalists to doubt whether the *Barbary Mouse* really belonged to the genus with which it was associated. Linnaeus himself, continues Mr. Bennett, had however stated, in his description of the species, that rudiments of a thumb, and also of a fifth toe, were observable on a closer inspection; and this statement, he adds, was fully confirmed by the examination of the specimens in the Maneguer of the Zoological Society of London, which were intermediate in size between the Common Rat and Common Mouse.

*Locality.*—Barbary, where they are not rare, and where the name given to them by the natives is *Phûr-Aùzîf*, the *Palmetto Mouse*.

Barbary Mouse.

American Rats and Mice.

Some of the best examples of the forms of American Mice will be found in the *Zoology of H. M. S. Beagle*, where many species are figured: they were collected by Charles Darwin, Esq., at various parts of the southern coast of South America, viz. Coquimbo, Valparaiso, Port Desire, Maldonado, Bahia, Blanca, &c. Mr. Waterhouse first described these in the *Proceedings of the Zoological Society of London* (1837), dividing them into several subordinate groups, to which he assigns the subgeneric titles of *Scapteromys*, *Muscastor*, *Calomys*, and *Phyllotis*, which last, in Mr. Waterhouse’s opinion, indicates an aberrant form of the *Muridae*.

We select as an example *Mus (Phyllotis) Darwini*.

*Description.*—Fur above, cinnamon and blackish intermixed; in front of the eyes, tawny; cheeks, sides, and tail, near the base, yellow cinnamon; under parts and feet white; ears very large and leaf-like, nearly naked; the tail, which is nearly equal to the head and body, blackish brown above, white beneath. Length from the tip of the nose to the end of the tail 10 inches, 9 lines, of which the tail measures 4 inches, 9 lines.

*Locality.*—Coquimbo.

Mr. Waterhouse also characterises from the same collection two new genera of small Rodents, *Rathrodon* and *Abrocoma*. The affinity of the first is stated to be with the *Muridae*, and the second Mr. Waterhouse considers to be evidently allied on the one hand to *Octodon*, *Chenomys*, and *Pepostragomys*, and on the other to the *Chinchillidae*. See further, post, §18.

*Mus Darwini.*

Before we leave this part of the subject, we must refer to an observation of Mr. Gray, who remarks (*Zool. Proc.* 1835) that the comparative length of the hinder feet, and the relative distance of the tubercles of the sole from the end of the toes and from the heel, appear to furnish very good distinctive characters for the species of this difficult genus. Thus in the *Wood Mouse*, *Mus sylvestris*, the hinder tubercle of the sole is about a line nearer to the heel than to the end of the toes, while in the *Common Mouse*, *Mus Musculus*, which has a shorter hind foot, the hinder tubercle is nearly equidistant between the heel and the tip of the toe.

Mr. Darwin (Journal and Remarks) observes that mice, and other small rodents, subsist in considerable numbers in very desert places, as long as there is the least vegetation. In Patagonia, even on the borders of the Salinas, where a drop of fresh water can never be found, they swarm. Next to Lizards, he adds, mice appear to be able to support existence on the smallest and driest portions of the earth, even on the islands in the midst of the great ocean. He believes it will be found, that several islands, which possess no other warm-blooded quadruped, have small rodents peculiar to themselves. Sir Woodbine Parish (*Buenas Ayres*, &c.) states, that after the great drought of 1830, 1831, and 1832, there was a prodigious increase of all kinds of vermin, especially field mice, myriads of which overran the country, and entirely destroyed the maize harvest of 1833.

*Capromyas.* (Desmarais; *Ictodon*, Say.)

*Generic Character.*—Fore-feet four-toed; thumb rudimentary. Hind-feet strong, thick, five-toed. Tail moderate, thick at the base, scaly, with few hairs. Molars prototomes, with their crown traversed by folds of enamel, which penetrate rather deeply, and resemble those in the crown of the teeth of the Beavers.

*Dental Formula.*—Incisors 2 2; molars 4 4.

**Example.** *Capromyas Furtinari, Deau.*; *Ictodon philadelphia*, Say.

*Description.*—Size of a rather small rabbit. Fur coppery greenish or blackish brown, tinged with specks of ochreous yellow above, except on the rump, where the hairs are stiffer...
and which is reddish-brown; belly and chest dirty brownish-grey; muzzle and feet blackish.

Habits, &c.—M. Desmarest was presented with two males from Cuba by M. Fournier. Of the habits of these animals in the wild state, the latter knows only that they are found in woods, that they climb trees with great facility, and that they live on vegetables. In the domesticated state, M. Desmarest remarked that their intelligence appeared to be developed as much as that of rats and squirrels, being much beyond that of rabbits and Guineas pigs. They showed great...

when at play, making a considerable noise with the soles of their feet. They climbed with ease, assisting themselves with their tails as a support and using the same in descending. In certain positions, on a stick for example, the tail served as a balance to preserve equilibrium. They often raised themselves to a listening posture, sitting erect, with the hands hanging down, like rabbits and hares; and, in eating, they employed, sometimes both, at other times one of their hands only. The latter happens when the substance they are holding is small enough to be held between their fingers and the tuberole at the base of the thumb.

This species is known in Cuba by the name of *Uita*, and M. Desmarest thinks that it is the animal described by Bomare, Oviedo, and others, more than 300 years since. According to Bomare, the *Uitas* is a species of rabbit of the size of a rat, which inhabits the West Indies, and is hunted at night by the light of a luminous insect, named *Acadia* (probably *Elater noctilucus*), of which M. Fournier brought large quantities from Cuba.

Another species, also from Cuba, *Capromys prehensilis* (Kippig), is also recorded, but Dr. Fischer places the mark of doubt before it.

For Mr. Owen's observations on the comparative anatomy of *Capromys* see the Zool. Proc. for 1832 and 1833.

Cricotus [Hamstyr]. And see further, p. 518. Jumping Mice.

The race of Jerboas, or Dipodidae, appears to be ordained by nature for living upon desert and sandy plains. Schreber, and he was followed by Gmelin and others, appears to have been the first who characterised the genus *Dipus*.

Mr. Gray (Annals of Philosophy, 1825) makes the Jerboa*ride* the fourth family of the *Gères*, and thus characterises it: cutting-tooth two in each jaw; grinders simple or compound, rooted; ears moderate; eyes large, prominent; clavicles distinct; fore feet short (used as hands); hind feet very long; tail long, hairy, used in leaping or walking; fur soft. And he thus divides the family—

Grinders compound or rootless.


Grinders simple, roots divided; legs nearly equal.


Mr. Swainson (Classification of Quadrupeds) observes that the Jerboas (*Dipus*) are remarkable for possessing the longest hind legs of any quadrupeds yet discovered, while the fore legs are disproporportionally short; this structure he remarks is seen also in the Kangaroos, which seem to be represented in miniature by these little animals, which, like their pouched prototypes, use the fore feet only as organs if Yap upon the ground; for if they are frightened or wish to proceed at a quick pace, they stand upon the hind legs only, and take prodigious leaps. That the tail is necessary for the efficient performance of these feats, is proved by the fact that individuals of their tails were unable to assume the erect position or to leap at all. The fore feet are employed in conveying food to the mouth, and seem to be of little or no use as organs of progression. Those that we have seen alive seemed to use their posterior extremities only as organs of locomotion, and appeared to walk on the toes of those extremities. They are very bird-like in some of their movements, and there is something in their general appearance that would lead an imaginative mind to the fancy that they were birds suddenly transformed to quadrupeds and were hardly reconciled to the change. Parts of their internal structure, in the skeleton particularly, are bird-like.

Mr. Swainson says, 'The best-known species is the Gerbo, or Egyptian Jerboa (Dipus Sagitta), in which country it is very common. It lives in large societies and constructs burrows under ground: it is shy and timid, nor can it be kept in confinement any considerable time. Of four typical species already known, three inhabit the sandy deserts in the heart of Asia, and the shores of the Caspian sea have been separated as a subgenus, under the name of Ger- il (Gerbillus); but their distinctions are so very slight that we have not adopted the name. The genus Pedetes, repre- sented by the Cape Jerboa, clearly belongs to the same group, America, which has no Jerboas, nevertheless presents us with their prototypes in the Jumping Mice of Canada (Meriones, Illig.).' The Jerboas have, in truth, presented considerable diff.
of all the species referred to that group. To these he adds another species, the habits of which he describes, and to which he gives the name of Gerbillus Burtoni. The species he includes are:—1. Gerbillus Aegyptiacus. Syn. Dipus Gerbillus, Meriones quadrimaculatus, Ehrenberg. 2. Gerbillus pyramidalis. Syn. Dipus pyramidalis, Geoff.; Meriones robustus, Rüpp. 3. Gerbillus pygargus. Syn. Meriones Gerbillus, Rüpp. 4. Gerbillus Indicus. Syn. Dipus Indicus, Hardwicke. 5. Gerbillus Africanus. Syn. Meriones Schlegelii, Smuts; G. Afra, Gray. 6. Gerbillus brevicaudatus. 7. Gerbillus Otaria. 8. Gerbillus Burtoni. For the detailed descriptions of some of these, we must refer the reader to the 'Transactions of the Zoological Society,' in which will also be found M. F. Cuvier’s views with regard to the affinities of the Gerbilloidea to the Jerboas, and which lead him to the conclusion that the Gerbillos have a much nearer affinity to the Muridae.

Habits, &c.—General Hardwicke gives the following interesting account of his Dipus Indicus:—‘These animals are very numerous about cultivated lands, and particularly destructive to wheat and barley crops, of which they lay up considerable hoards in spacious burrows near the scenes of their plunder. They cut the culms of the ripening corn just beneath the ears, and convey them thus entire to one common subterraneous repository, which, when filled, they carefully close, and do not open for use till supplies abroad become distant and scarce. Grain of all kinds is their favourite food; but, in default of this, they have recourse to the roots of grass and other vegetables. About the close of day they issue from their burrows, and traverse the plains in all directions to a considerable distance; they run fast, but oftener leap, making bounds of four or five yards at a time, carrying the tail extended in a horizontal direction. When eating, they sit on their hind legs like a squirrel, holding the food between their fore feet. They never appear by day, neither do they commit depredations within doors. I have observed their manners by night, in moonlight nights, taking my station on a plain, and remaining for some time with as little motion as possible. I was soon surrounded by hundreds at the distance of a few yards; but on rising from my seat, the whole disappeared in an instant, nor did they venture forth again for ten minutes after, and then with much caution and circumspection. ‘A tribe of low Hindus, called Kunjers, whose occupation is hunting, go in quest of these animals at proper seasons, to plunder their hoards of grain; and often, within the space of twenty yards square, find as much corn in the ear as could be crammed into a common baskel. They inhabit dry situations, and are often found at the distance of some miles out of the reach of water to drink. In confinement this animal soon becomes reconciled to its situation, and doxies; sleeps much in the day, but when awake feeds as freely as by night. The Hindus above mentioned esteem them good and nutritious food.' (Linn. Trans., vol. viii.)

In concluding this sketch, which we hope will be found to contain the leading information on the subject of the Jerboidea, we must not omit to mention Mr. Ogilby’s notice of the discovery of a true Jerboa on the central downs of
Australia, by Sir Thomas Mitchell, an event, as Mr. Ogilby justly says, of no small interest to the scientific zoologist who occupies himself with the important question of the geographical distribution of animals. The arid deserts of Asia and Africa, the solitary steppes of Southern Siberia, and the boundless prairies of America, have been long known to be inhabited by numerous species belonging to this or the closely allied genus of Gerbillines; in short, wherever extensive and open plains were found to exist, whether in the Old World or in the New, there likewise were found these little two-legged rats, hopping along or running with great velocity upon their hind legs, and appearing as if nature had expressly intended them to occupy such a situation. Australia alone was believed to form an exception to the general rule in this instance, as in so many others. Who will undertake to say that the progress of discovery may not destroy its anomalous character in many other instances, as it has done in this? (Linn. Trans., vol. xviii.) Mr. Ogilby then proceeds to name this species Dipus Mitchellii, after its meritorious discoverer, and gives a detailed description of the species, for which we refer to the vol. of the 'Linnean Transactions' last above quoted. The animal was found on the reedy plains near the junction of the Murray and the Murrumbidgee, on the northern boundaries of Australia Felix. The cut is taken from the figure in Sir T. Mitchell's account of 'Three Expeditions into the Interior of Eastern Australia.' Sir T. Mitchell states that its fore and hind legs resembled in proportion those of the Kangaroo; and it used the latter by leaping on its hind quarters in the same manner. It was not much larger than a common field-mouse, but the tail was longer in proportion even than that of a Kangaroo, and terminated in a hairy brush about two inches long.

Dipus Mitchellii.

Here we may perhaps notice that Mr. Ogilby, in the same paper as that wherein he describes D. Mitchellii, characterizes another new genus of Australian Rodents, which he thinks most probably belongs to the extensive and complicated family of the Muridae. In some of the characters the genus very much resembles the Campagnola (Arrecolus) and Gerbillinae (Meriones), to the latter of which genera Mr. Ogilby says that Conturis is more particularly related by the length and development of the posterior members.

Meriones. (Ill, F. Cav.)

Generic Character.—Differing from the other Rats with long feet in the form of its molars, which are composite.

Dental Formula: — Incisors 2, 1; molars $\frac{3}{3} = 18$.

Example, Meriones labrador; Labrador Jumping Mouse.

Description.—Back and upper parts of the head dark liver-brown mixed with brownish-yellow; sides brownish-yellow slightly sprinkled with black; margin of the mouth, chin, throat, and all the lower parts of the body white; yellow-brown of the sides joining the white of the belly by a straight line extending between the fore and hind extremities. Tail long and very fine, and it appears to be of the same texture as the meadow mice. Total length nine inches nine lines, of which the tail measures five inches three lines; this last impen, slightly, is scaly, and thinly set with short hairs.

Dr. Richardson, from whose Puncta Boreae-Americanica the above description is abridged, states that in some specimens the yellowish-brown colour occupies as much space as the darker colour of the back; in others the latter excavates so much on the sides as to leave merely a narrow yellowish line next the white; whilst in autumn specimens, where the animal has just acquired a new coat of fur, the dark colour of the back adjoins the white of the belly.

This appears to be the Labrador Rat of Pennant; Gerbillus Hadeniour of Rafinesque-Smalts; Mus labrador of Sabine; Gerbillus Labradori of Harlan; Labrador Jumping Mouse of Godman; and Kater (the leaper) of the Chepeywan Indians.

Dr. Richardson refers to the 'Arctic Zoology,' first described a specimen of this animal, sent from Hudson's Bay by Mr. Graham, to the museum of the Royal Society. Afterwards, in the third edition of his 'History of Quadrupeds,' he is inclined to consider it as identical with the mus longipes of Pallis (the anomalous mus longipes of Gmelin), an inhabitant of the warm sandy deserts bordering on the Caspian Sea. This opinion, which, in the opinion of the Doctor, can scarcely be correct, was, he says, formed from an imperfect inspection of the Hudson's Bay specimen whilst it was suspended in spirits, and is opposed by differences in colour and other characters which he himself points out. From Pennant's time until Mr. Sabine described an individual brought from Cumberland Land, on Captain Franklin's first journey, the Labrador Jumping Mouse does not, continues Dr. Richardson, appear to have attracted the notice of naturalists. Pennant, he observes, mentions a yellow lateral line in its specimen, which did not exist in the one Mr. Sabine described, but this difference Dr. Richardson attributes solely to the season in which they were procured. Mr. Sabine's specimen, he remarks, was mutilated in the tail, an accident very common to the whole family of rats; and Pennant, under the name of Canada Jumping Rat, and Colonel Davies, under that of Dipus Canadensis, describes another Jumping Mouse, which seems to differ from this in having ears shorter than the fur, but in other respects to be very similar to it.

After further observing that the Gerbillus Canadensis of Dr. Godman agrees in description with Rafinesque-Smalts's Gerbillus boreum (Desm.), but has larger ears than the Canada Rat of Pennant, and that a specimen in the Philadelphia museum, described by Dr. Hallowell, under the name of Gerbillus Canadensis, appears to be entirely similar to the Labrador species, Dr. Richardson concludes...
by remarking that it is evident that the Jumping Mice inhabiting different districts of America require to be compared with each other before the true number of species and their geographical distribution can be ascertained.

Locality.—Common in the Fur Countries as far north as Great Slave Lake, and perhaps farther; but Dr. Richardson was not able to gain any precise information respecting its habits.

**Teeth of Helamys.**

This is the Grand Gerbo of Allamand, Sprung-Häs or Jumping Hare of the Dutch, Aerdemannetje of the Hottentots, Dipus Capfer of Zimmerman, Schræber, and Gmelin.

Locality. Habitats, &c.—Cape of Good Hope, where it sleeps during the day, going forth by night, and leaping twenty or thirty feet at a bound. It eats sitting nearly upright, with the hind legs extended horizontally, and using the small fore-feet to bring the food to its mouth. It is a very strong animal, and with these same fore-feet, which are admirably formed for digging, burrows so expeditiously as quickly to hide itself. It sleeps in a sitting position, placing the head between the legs, and holding its ears over its eyes with its fore-legs.

**Tail moderate or short. Sand and Mole Rats.**

**Pouched.**

The genera Saccophorus, Kuhl; Pseudoloma, Say; Geomys and Diplostoma of Rafinesque; Acomys of Lichtenstein; and Sascomys of F. Cuvier, are given by Dr. Fischer as synonymous; and indeed the distinctions, except perhaps in the case of Geomys and Diplostoma, do not appear to be sufficiently marked to warrant their separation.

Dr. Richardson remarks that M. Rafinesque-Sultz, in 1817, founded his genus Geomys on the hamster of Georgia (Geomys pinetis), described by Mitchell, Anderson, Meares, and others, and referred to it as a second species, the Canada pouched Rat (Mus bursarius of Shaw). Under another genus, Diplostoma, he arranged some Louisiana or Missouri animals, known to the Canadian voyagers by the appellation of gaouisses, and remarkable for their large cheek-pouches, which open forwards exterior to the mouth and incisors, to which they form a kind of hood. These two genera, observes the Doctor, have been adopted by few naturalists; and the American systematic writers have either overlooked M. Rafinesque's species entirely, or referred them all to Mus bursarius. In the latter case, Dr. Richardson says, they are undoubtedly wrong, for there are at least six or seven distinct species belonging to one or other of these genera, which inhabit America, and he thinks that both Geomys and Diplostoma will eventually prove to be good genera. The Sand-rats belonging to the former having cheek-pouches, which are filled from within the mouth, and the gaouisses or cannas-rats of the latter genus having their cheek-pouches anterior to the mouth, and entirely unconnected with its cavity. Dr. Richardson had no opportunity of examining Geomys pinetis, the type of the genus, but he had inspected an undescribed species from Caddagouine and another (Geomys Douglassii) from the banks of the Columbia; from these two Dr. Richardson's characters of the genus were drawn up. With regard to the Canada pouched Rat, great doubt, he observes, still exists as to whether it belongs properly to Geomys or to Diplostoma. Judging from the description of Dr. Shaw and the figure in 'Linn. Trans.' (vol. v., pl. 8), Dr. Richardson has little doubt of the cheek-pouches opening into the mouth, and of their being precisely similar in form and functions to the cheek-pouches of the Sand-rats; but he states that he was told, on good authority, that the identical specimen described by Shaw (which, at the sale of Bullock's museum,
passed into the hands of M. Temminck) is, in fact, similar to the <i>gaufr</i>, in having cheek-pouches that open externally, and that consequently Darwin's drawing represented them in an unnatural and inverted position. Mr. Say gives the characters of a Missouri <i>gaufr</i>, with cheek-pouches opening exteriorly; and he identifies his specimen with <i>Mus tenuis</i>. The same zoologist alludes to the Georgia hamster as belonging to the same genus, without giving any further account of its characters than merely quoting Dr. Barton's remark of its being only half the size of the Missouri one. His account of the dentition of the Missouri <i>gaufr</i>, observes Dr. Richardson in conclusion, corresponds, as far as it goes, pretty closely with that of the Columbia <i>Geomys</i>. Dr. Harlan and Dr. Godman refer the Georgia, Canada, and Missouri animals to one species. (Fauna boreali-americana.)

The following is the dental formula of <i>Geomys</i> given by Dr. Richardson:

2
Incisors, 2; canines, 0—0; grinders, 4—4; 6, first upper grinders, unaltered.

and below is given the skull and teeth of the genus from the same authority.

![Skull and teeth of Geomys. (Richardson.)](image)

The dental formula of M. F. Cuvier's genus <i>Saccomys</i> is:

Incisors, 2; molars, 4—4; 20, and the following cut

as taken from his figure of the dentition.

The following is Dr. Shaw's description of <i>Mus tenuis</i>:

'Ash-coloured rat, with short nearly naked tail, pouches cheek, and the claws of the fore-feet very large and formed for burrowing.' (Mus tenuis, Linn. Trans., vol. v., p. 227, pl. 8.)

'This, which is a species but lately discovered, seems to be the most remarkable of all the pouch rats for the proportional size of the receptacles. It is a native of Canada, and the individual here figured was taken by some Indians in the year 1798, and afterwards presented to the lady of Governor Prescott. It is about the size of a brown or Norway rat, and is of a pale greyish-brown colour, rather lighter beneath: the length to the tail is about nine inches, and that of the tail, which is but slightly covered with hairs, about two inches: the legs are short: the fore-feet strong and well adapted for burrowing in the ground, having five claws, of which the three middle ones are very large and long; the interior much smaller, and the exterior very small, with a large tubercle or knob beneath it. The claws on the hind-feet are comparatively very small, but the two middle are larger than the rest, and the interior ones are never visible: the teeth are extremely strong, particularly the lower pair, which are much longer than the upper, the ears are very small. This species is described in the 22nd vol. of the Trans. of Linn. Soc., but I must observe, that by some oversight in the conduct of the figure there given, the claws on the fore-feet are represented as only three in number, and are somewhat too long, strong, and curved: the engraving in the present plate is a more faithful representation, and is accompanied by an outline of the head in its natural size, as viewed in front, in order to show the teeth and cheek-pouches. The manner of this species are at present unknown, but it may be concluded that it lays a stock of provisions, either for autumnal or winter food. The pouches of the individual specimen above described, when first brought to Governor Prescott, were filled with a kind of earthy substance: it is therefore not improbable that the Indians who caught the animal might have stuffed them thus, in order to preserve them in their utmost extent.'

In Dr. Richardson's <i>Geomys douglasi</i>, the length of the head and body was 6 inches 6 lines; and that of the tail (vertebral) 2 inches 10 lines. Cheek-pouches less much resembling the thumb of a lady's glove in form se1
size, and hanging down by the sides of the head. The specimen was a female, and was taken in her nest with three young ones, near the mouth of the Columbia, by Mr. Douglas. When it came into the hands of Dr. Richardson, the fur had mostly fallen off, but the specimen was in other respects perfect, and what was wanting to the description was supplied from Douglas's notes. The state of ossification of the skull showed the animal to be an old one. Douglas informed Dr. Richardson that the outside of the pouches was cold to the touch, even when the animal was alive, and that on the inside they were lined with small, orbicular, indurated glands, more numerous near the opening into the mouth. When full, the pouches had an oblong form, and when empty, they were corrugated or retracted to one-third of their length; but, it is added, they are never inverted so as to produce the hood-like form of the pouch of a Diplostoma. When in the act of emptying its pouches, the animal sits on its hams like a Marmot or squirrel, and squeezes his sacks against the breast with his chin and forepaws. (Fauna Boreali-Americana.)

Habits, &c.—Dr. Richardson states that these little sand-rats are numerous in the neighbourhood of Fort Vancouver, where they inhabit the declivities of low hills, and burrow in the sandy soil. They feed on acorns, nuts (corvulus roseatus), and grass, and commit great havoc in the potato-fields adjoining the Fort, not only by devouring the potatoes on the spot, but by carrying off large quantities of them in their pouches.

The following figure is copied from Dr. Richardson's Diplostoma f bulvorum.

**Diplostoma bulvorum.**

**Not Pouched.**

_Aplodontia._

**Generic Character.**—Head large, depressed; ears short and round; no cheek pouches. Feet five-toed, with large, strong, and compressed claws. Tail very short and concealed by the fur. First molar in upper jaw small, cylindrical, and pointed, placed within the anterior corner of the second one, and existing in the adult.

**Dental Formula:**—Incisors, 2, 2; molars, 5–5, 4–4 = 22.

**Example, Aplodontia leporina.**

**Description.**—Head large; nose thick and obtuse, covered with a coat of short fur; eye very small; ear resembling the human in form. Body short, thick, and rabbit-like. Legs very short, and covered down to the wrists and heels with fur similar to that on the body: a little above the wrist joint, on the inner side, is a small tuft of stiff white hairs. Fur like that of a rabbit out of season, amber and chestnut-brown above; greyish or clove-brown beneath; lips whitish; a rather large spot of pure white on the throat; some white hairs dispersed through the fur. Tail slender, cylindrical, hardly half an inch long.

Dr. Richardson gives the following as the synonyms of this animal: _Sowellia, Lewis and Clark; Antionys P rufa, Rafinesque-Smalitz, De-m.; Arctomys rufa, Harlan; Marmot, No. 17, Hudson's Bay Museum; and he says that amongst Mr. Douglas's specimens there was a young one, with more white hairs interspersed through its fur, and some differences in the form of its skull, which seem to point it out as a second species, but the specimen was not sufficiently perfect to enable Dr. Richardson to give its characters as a distinct species, though he has little doubt of its being so. The Doctor adds, that since the account of the genus was published in the 'Zoological Journal' (vol. iv.), Mr. Douglas had placed on his hands an Indian blanket or robe formed by sewing the skins of the _Sewellel_ together. The robe contained twenty-seven skins, which had been selected when the fur was in prime order. In all of them the long hairs were so numerous as to hide the wool or down at their roots, and their points had a very high lustre. The general colour of the surface of the fur was between chestnut andumber-brown, lighter, and with more lustre on the sides. Some of the skins, which were in the best order, had the long hairs on the back of the head and between the shoulders almost black. Dr. Richardson observes further, that it is probable that there were the skins of two species of _Sewellel_ in the robe, and that one of them wants the white mark on the throat. The down of all the skins of the robe had a shining blackish grey into the

**Habits.**—These animals live in small societies, in burrows, and feed on vegetable substances.

**Locality.**—Neighbourhood of the Columbia river, most abundant near the great falls and rapids.

Mr. Gray makes the _Aplacidae_ the fifth family of the _Glirrae_, with the following character:

Cutting teeth two in each jaw, lower chisel orawl shaped, often very much exposed; grinders compound or simple, rarely rootless; ears and eyes of very small, sometimes hid; clavicles strong; limbs proportionate; tail none, or hairy, cylindrical; fur very soft. He thus subdivides it into five subfamilies.


Dr. Fischer thinks that Crestchimar's genus _Pammomys_ should be placed before _Aspalax_. (See Répét, Zool. Atl.) _Pammomys obesus_, on which the genus is founded, lives gregariously in the sandy deserts of Australia, forming multiform burrows, and is a nocturnal and root- eating animal, without cheek-pouches.

_Aspalax_ (Oliv. and others; Spalax, Güld., Ill., and others).

Dental Formula:—Incisors $\frac{2}{2}$; molars $\frac{3}{2} = 16$.

Example, *Aspalax typhlus.*

Description.—Head broader than the body, no aperture for the rudimentary eyes, which, no bigger than poppy-seeds, are hid beneath the skin; no external ears; end of the nose covered with a thick skin, nostrils very remote, and placed below; limbs very short, toes separated, except a thin membrane at the base, claws short; hair of fur short, thick, and very soft, dusky at the bottom and cinerea grey at the tip, sparse about the nose and above the mouth white.

Length between 7 and 8 inches.

This is supposed by some to be the *Aegolchus* of Aristotle (Hist. Anim., i. 9, and iv. 8). It is evident, from both the passages quoted, that he had accurately examined that part of the animal where the eye should be, and the result of his examination clearly agrees with the condition of those parts in the *Aspalax* of the moderns; but it must not be forgotten that those and other passages will equally apply to a second species of Mole (*Tulpa*), now named *Tulpa cava* which inhabits Europe, and in which the eyelids are closed, whilst in the common species they are open. It appears to be the *Spalax typhulus* of Illiger; *Aspalax typhulus* of Desmarest; *Mus typhlus* of Pallas and others; *Marmota typhlus* of Blumenbach; *Greycrus typhlus* of Lessen; the *Zemni* of Raceynski; the *Spalax* of Gmelin; the *Podolius* of Pennant; and the Blind Rat of Shaw.

Habits, &c.—This species, which the Russians name *Slepez*, or the blind, and the Cossacks *Slochor Nomon,* signifying the same defect, burrows extensively beneath the turf, driving at intervals lateral passages in its search for roots, particularly that of the bulbous *Cherophyllum.* Openings to the surface occur at distances of some yards from each other, and there the earth is raised into hillocks, sometimes of two yards in circumference, and of considerable height. It works stoutly and rapidly, and on the approach of an enemy instantly digs a perpendicular burrow. Though it cannot see, it lifts its head in a menacing attitude towards its assailant, and, when irritated, snorts and grashes its teeth, but emits no cry: its bite is very severe. In the morning it often quits its hole, and during the season of low banks in the sun with the female. It is worthy of notice that there runs a superstition in the Ukraine that the hand which has suffocated one of these animals is gifted with the virtue of curing the king's evil (as it is still called), in the same way that it was supposed to vanish before the royal touch of the Stuart in this country.

Locality.—The southern parts of Russia, from Poland to the Volga, but not to the east of that river; common from the Saryan to the Sarpa; frequent along the Don, even to its origin, and about the town of Rostok, but not in the sandy parts.

Coast Rat.

The following genera are placed by Mr. Swannson among the Squirrels, and, indeed, there is much about them to indicate a near approach to that family of Rodents.

Not Pouched.

Arctomys. (Gmelin.)

Generic Character.—Head and eyes large; ears short; body stout; fore feet with four toes and an obsolete thumb, hind feet five-toed. Tail short. Upper surface of molars ridged and tuberculous.

Dental Formula:—Incisors $\frac{2}{2}$; molars $\frac{3}{3} = 22$.

Examples, *Arctomys Marmota,* Schreb, and *Arctomys Empera,* Schreb.: the latter as an example of the American Marmots.

*Arctomys Marmota.*—This is the *Mus Ahinus* of Geisser and others; *Mus Marmota* of Linnaeus and others; *Gla
Marmota of Klein: Marmota Alpina of Blumenbach; Marmota of Buffon; Marmota of Kramer and of Meyer; and Alpenmarmuthier of Schrank.

Description.—Cheeks large; ears round and short, hid in the fur; body stout; head and upper parts brownish ash mingled with tawny; legs and under parts reddish; tail rather full; length from nose to tail, about 16 inches; of the tail, 6.

Habits, Locality, &c.—This well-known species is found in the Alps and Pyrenees, even, it is said, on the summits of those mountain-chains. They live in little societies, feeding on roots and vegetation, and occasionally on insects. Their holes are formed in the ground, generally with three chambers in the shape of a Y, with two entrances. These apartments are comfortably lined with moss and hay, and to them the Marmots retire about Michaelmas, having stopped up the entrances with earth, there to doze away the inclement months, till the warm suns and showers of April arouse them from their torpidity to partake of the renewed vegetation. From five to a dozen are said to be lodged in a chaucer. They lift their food to their mouths with their fore-feet, eat it sitting, and will walk on their hind-feet. When on their feed a sentinel is placed to watch, and on the approach of danger his whistle drives them instantly to their subterranean retreats. They are playful creatures, but when angry or before a storm pierce the ear with their whisk shrill. Though they soon become tame, and will eat almost anything, they bite very hard when offended. Milk pleases them greatly, and they lap it with satisfactory murmur. They become fat, and are sometimes eaten; but they are taken by the Savoyards and others principally that they may be exhibited by those itinerants. The number of young at a birth is generally three or four.

Alpine Marmot.

Arctomys Empeatra.—Heady above, mixed with black, and bright brown shining through; reddish orange beneath; head and feet blackish brown; cheeks whitish; ears flat, round, moderate; tail about half the length of the body, black at the tip. Length of head and body, from 17 to 20 inches; of tail (vertebra), 54 inches. This is the Quebec Marmot of Pennant and Godman; the Common Marmot of Langedorff; the Thick-wood Badger of the Hudson's Bay residents; the Siffleur of the French Canadians, who apply the same name to the other species of Marmot and to the Badger; Tarbugan of the Russian residents on Kolaik?; Feemath of the Cree; Kith-hillia-Kunny of the Chepewyas; Mus Empeatra of Pulaski; and Arctomys Empeatra of Sabine and others.

Locality, Habits, &c.—Dr. Richardson, who gives the above synonyms, states that the Quebec Marmot inhabits the woody districts from Quebec to lat. 61°, and perhaps still farther north. He says that it appears to be a solitary animal, inhabits burrows in the earth, but ascends bushes and trees, probably in search of buds and other vegetable productions, on which it feeds. Mr. Drummond killed two, one on some low bushes, and the other on the branch of a tree. According to Mr. Graham it burrows perpendicularly, selecting dry spots at some distance from the coast, and feeding on the coarse grass which it gathers on the river-sides. The Indians capture it by pouring water into its hole. The flesh is considered delicate when the animal is fat. The fur is valueless. It much resembles the Hidube of Poland in form and general appearance. (Pentland Loelreal-Americana.) Pennant says, Mr. Brooks had one alive a few years ago; it was very tame, and made a baying noise.

Quebec Marmot.

N.B. This species has a slight folding of the lining of the mouth, forming the rudiment of a cheek-pouch. (Richardson.)

Pouched.

Spermophilus. (F. Cuvier.)

Dental Formula as in Arctomys. the molars are narrow. Cheeks with large pouches. Toes narrow and free. Heel covered with hair, hind toes naked. Example. Arctomys (Spermophilus) Parryi.

Description.—Ears very short, body thickly spotted above with white on a grey or black ground, pale rust-coloured beneath, face chestnut-coloured, the tail one-third longer than the hind feet, stretched out flat, black at the extremity, with a narrow white margin, rust-coloured beneath; length of head and body 8 inches 6 lines, of tail (vertebra) 1 inch 6 lines.

This, according to Dr. Richardson, who first named the species, is the Ground Squirrel of Hearne; the Quebec Marmot of Forster; the Seek-Seek of the Esquimaux; the Tha-tha-yai (Rock Badger) of the Chepewyas; and the Arctomys Al-ina of Parry's 'Second Voyage.'

Locality, Habits, &c.—The Doctor informs us that this Spermophile inhabits the barren grounds skirting the seacoast from Churchill in Hudson's Bay round by Melville Peninsula, and the whole northern extremity of the continent to Beltring's Straits, where specimens precisely similar were procured by Captain Beecher. It is abundant in the neighbourhood of Fort Enterprise, near the southern verge of the Barren Grounds, in lat. 65°, and is also plentiful on Cape Parry, one of the most northern parts of the continent. It is found generally in stony districts, but seems to delight chiefly in sandy hillocks amongst rocks, where burrows, inhabited by different individuals, may be often observed crowded together. One of the society is generally observed sitting erect on the summit of a hillock, whilst the others are feeding in the neighbourhood. Upon the approach of danger, he gives the alarm, and they instantaneously hurry to their holes, remaining however chattering at the entrance until the advance of the enemy obliges them to retire to the bottom. When their retreat is cut off, they become much terrified, and, seeking shelter in the first crevice, they not unfrequently succeed only in hiding the head and fore part of the body, whilst the projecting tail is, as is usual with them under the influence of terror, spread out flat on the rock. Their cry, in this season of distress, though resembles the loud alarm of the Hudson's Bay Squirrel, and is not very unlike the sound of a watchman's rattle. The Esquimaux name is an attempt to express this sound. Hearne states that they are easily tamed, and very cleanly and playful when domesticated. They never come abroad during the winter. Their food appears to be entirely vegetable; their pouches being generally filled, according to the season, with tender shoots of herbaceous plants, berries of the alpine arbutus, and of other trailer shrubs, or the roots of grasses and leguminous plants. They produce
about seven young at a time. (Zoon. Proc., 1839.)

Mr. Waterhouse has also characterized a new species of Hamster, Cricetus auratus. (Zool. Proc., 1839.)

The genus Aulacodus of Temmink is placed by Dr. Fischer between Dipus and Arctomys.

Mr. Waterhouse, in his interesting 'Observations on the Rodentia,' with a view to point out the groups, as indicated by the structure of the Crania, in this order of Mammals' (Mag. Nat. Hist., 1839), states the following as the principal genera of his section Murina: Scatopus, Arctomys, Myoxus, Dipus, Mus, Arvicola, Geomys, and Castor. The principal genera in the section Hystricidae are, according to the same author, Batheryxus, Poephagomys, Octodon, Abrocoma, Myopotamus, Capromys, Echimys, Aulacodus, Hystrichoryz, Dasyprocta, Chinchilla, and Hydrochoerus.

In the 'Zoology of H. M. S. Beagle' (Sept., 1839), Mr. Waterhouse says that he has been induced, by the differences there pointed out in the molar teeth of the two groups, to separate the South American Mice from those of the Old World, or rather from that group of which Mus decumanus may be regarded as the type, and to place them, together with such North American species as agree with them in dentition, in a new genus bearing the name of Hesperomys. Mr. Waterhouse will not venture to say whether this group be confined to the western hemisphere or not; but he thinks that he may safely affirm that that portion of the globe is their chief metropolis. In the species of Hesperomys, he observes, the molar teeth are always rooted; and in the form of the skull and lower jaw they agree with the Muridae, and do not present the characters pointed out by him as distinguishing the Arvicolidae; and, as regards the cranium and lower jaw, it is only in the genus Neotoma that any approach is evinced, in his opinion. Under the name Octodonidae he places the genera Ctenomys, Poephagomys, Octodon, and Abrocoma, which last he states to be allied to the one hand to the genera Octodon, Poephagomys, Ctenomys, and on the other to the family Chiromyidae. The Octodonidae appear to him to bear the same relation to Echimys as the Arvicolidae do to the Muridae. (Dent.)

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Myoxus.

1. Loix des plâtrières (Cuv.), Gypsum of Montmartre.
2. Second Loix des plâtrières (Cuv.), Gypsum of Mou martre. 3. Myoxus primigenius (Mayer, Arctomys pro genis, Kaup). Another Myoxus is recorded from the Eningen beds. Dr. Buckland, in his 'List of Vertebr. Animals found in the gypsum of the Paris Basin,' records two small species of Dornmice, those above noticed as probably, or extinct species.

Mus.

1. Mus Maculatus fossiles (Karg). (Eningen beds.) Remains of Mice have also been found in the bone-caves as osseous breccias. Thus Dr. Buckland describes and figures ('Reliq. Diluv.,' p. 15, pl. 11) the jaw and teeth of a mouse from Kirkdale Cave. In the Eocene formation (lastrum of Courson, in Auvergne, a Rat is recorded as one of the animals found with the fossil eggs of aquatic birds.

Cricetus. (Hamster.)

Dipus. (Gerbillus, Deam.; Meriones, Ill.)

Remains of this form are recorded in the Tertiary beds at Bean iron-ore of the Rauh Alp. (Joger.) Russia. (Fischer.)

Ctenomys.

Mr. Darwin found at Babia Blanca, in a cliff of red earth, part of the head of a Ctenomys; the species being different from the Tucutuco, but with a close general resemblance.

Spermophilus.

Spermophilus superstabilis (Kaup). Tertiary: Eppelsheim sand.